Mixed-Use Developments versus Single-Use Office Properties in Long-Term Commercial Real Estate Investments

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Dissertation written under the supervision of Professor Peter Rajsingh.

Dissertation submitted in partial fulfilment of requirements for the MSc in Management with specialization in Strategy, Entrepreneurship, and Impact, at the Universidade Católica Portuguesa, 06.01.2025.

Abstract

Commercial real estate (CRE) has long been a cornerstone of global finance, yet recent shocks, from the 2008 financial crisis to COVID-19, have exposed the vulnerabilities of single-use office properties. Meanwhile, mixed-use developments are gaining attention for their diversified tenant bases and adaptive potential.This study examined whether mixed-use developments are more resilient and involve less investment risk than single-use office properties. Specifically, it investigated how the future trends of space reduction, flexibility, sustainability, and digitalization influence their adaptability and long-term performance.

A mixed-methods approach was employed, integrating data from 18 semi-structured expert interviews and a quantitative survey of 263 participants. The interviews provided detailed industry insights on investment strategies and market shifts, while the survey captured broader tenant and workforce preferences related to office use, sustainability requirements, and shared amenities.

Results indicate that remote and hybrid work models significantly reduce traditional office demand, pushing investors toward risk diversification strategies. Mixed-use properties demonstrated higher occupancy rates, diversified income streams, and more substantial alignment with flexibility demands. Expert insights highlighted that flexible building design and advanced digital tools can enhance resilience and tenant satisfaction. However, regulatory constraints, limited application to date, and increased planning efforts continue to challenge widespread adoption.

Mixed-use developments appeared better suited to withstand market disruptions and fast-changing tenant needs, offering compelling opportunities for developers, policymakers, and investors seeking long-term stability and modern cities. These findings underscore the need for strategic collaboration to overcome regulatory and financial hurdles and help reshape CRE toward more adaptable, sustainable environments.

Keywords: Mixed-Use Developments, Commercial Real Estate, Risk Diversification, Hybrid Work Models, Sustainability & ESG Compliance, Flexibility, Urban Doom Loop

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Sumário

O setor imobiliário comercial (CRE) é um pilar fundamental finanças globais, mas choques recentes, como a crise de 2008 e a COVID-19, evidenciaram as vulnerabilidades dos imóveis de escritórios de utilização única. Em contraste, os empreendimentos de utilização mista destacam-se pela sua base diversificada de inquilinos e o seu potencial de adaptação.Este estudo procurou avaliar se os empreendimentos de uso misto apresentam maior resiliência e envolvem menor risco de investimento em comparação com os imóveis de escritórios de uso único. Em particular, analisou de que forma as tendências futuras relacionadas com a redução de espaços, flexibilidade, sustentabilidade e digitalização influenciam a sua capacidade de adaptação e o seu desempenho a longo prazo.

A metodologia inclui 18 entrevistas semi estruturadas com especialistas e um inquérito quantitativo a 263 participantes. As entrevistas forneceram insights sobre estratégias de investimento e mudanças no mercado, enquanto o inquérito captou preferências de inquilinos e trabalhadores em relação a sustentabilidade e comodidades partilhadas.

Os resultados mostram que o trabalho remoto e híbrido está a reduzir a procura por escritórios tradicionais, incentivando estratégias de diversificação de risco. Empreendimentos de utilização mista apresentam maiores taxas de ocupação, fluxos de rendimento diversificados e maior flexibilidade. Contudo, desafios como restrições regulamentares e maior esforço de planeamento dificultam a adoção em larga escala.

Conclui-se que empreendimentos de utilização mista estão melhor preparados para enfrentar perturbações do mercado e responder a necessidades em rápida evolução, oferecendo oportunidades atrativas para promotores, decisores políticos e investidores em busca de estabilidade e cidades modernas.

Palavras-chave: Empreendimentos de Uso Misto, Imobiliário Comercial, Diversificação de Riscos, Modelos de Trabalho Híbridos, Sustentabilidade & Conformidade ESG, Flexibilidade, Urban Doom Loop

Título: Empreendimentos de uso misto versus propriedades de escritórios de uso único em investimentos imobiliários comerciais de longo prazo

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Acknowledgments

Completing this work marks not only the conclusion of my master's thesis but also the culmination of my academic journey. I am deeply grateful for the experiences, lessons, and friendships I have gained along the way, and this is a moment to reflect on the many people who have supported, inspired, and guided me throughout this process.

First and foremost, I would like to express my heartfelt gratitude to my professor, **Peter Rajsingh**. Your mentorship, wisdom, and guidance have been invaluable not only in shaping this thesis but also in my personal and academic development. You are truly a person I look up to, and I am immensely grateful for having the privilege of learning from you.

To my **family**, thank you for your endless love, support, and encouragement. You have been my anchor throughout this journey, always standing by me, especially during the exhausting and challenging moments. I am deeply thankful for that.

To my **friends**, I am equally grateful for your constant support. Your ability to bring positivity into my life and the moments we shared that helped me disconnect and recharge have been really important for this journey. I am genuinely thankful for each one of you.

A special thanks goes to **Susanne**, whose expertise and passion for real estate have profoundly influenced me. Over the past years, you have not only shared your knowledge but also opened so many doors for me. I am super grateful for your mentorship and your trust in me.

I am particularly thankful to the **experts** I had the privilege of interviewing and the **participants** in my survey, whose insights and perspectives significantly enhanced the depth and scope of my research.

Finally, this milestone represents the end of my formal academic education and the beginning of new opportunities and challenges. To everyone who has been part of this journey:

Thank you; this accomplishment would not have been possible without you!

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List of Abbreviations

Abbreviation	**Definition**
AR	Augmented Reality
BIM	Building Information Modeling
CRE	Commercial Real Estate
DC	Dynamic Capabilities
DGNB	Environmental, Sustainable, Governance
ESG	Deutsche Gesellschaft für Nachhaltiges Bauen
FP	Futuristic Phenomenon
IoT	Internet of Things
LEED	Leadership in Energy and Environmental Design
NPL	Non-Performing Loan
Prop Tech	Property Technology
REIT's	Real Estate Investment Trusts
VR	Virtual Reality

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1. Introduction

Historically, real estate has been more than just physical structures; it has served as a critical asset class underpinning global financial stability. Real estate loans comprise a substantial portion of the balance sheets of banks and other financial institutions. AAA leases, which are long-term agreements with highly creditworthy tenants, make properties attractive collateral, further intertwining real estate with the banking system. This symbiotic relationship has made the sector sensitive to economic cycles, rendering real estate both a growth driver and a potential catalyst for systemic risk.

The 2008 financial crisis illustrated how vulnerabilities in the real estate market precipitated widespread economic turmoil. Rooted in the collapse of subprime mortgage-backed securities and excessive leverage, the crisis underscored counterparty risks inherent across banking, where failure of one institution cascading onto others. Stakeholders and counterparties, including investors, banks, tenants, and developers, were exposed to risks not fully understood or adequately managed. Even well-diversified portfolios incurred significant losses as correlations increased due to systemic contagion.

Today, the commercial real estate (CRE) sector faces new challenges. The COVID-19 pandemic accelerated adoption of remote work, dramatically reducing demand for traditional office spaces. As a result, vacancy rates have surged, leaving many buildings underutilized or empty. This situation has raised concerns about the so-called “urban doom loop,” where declining occupancy leads to downturns in national and the global economy (Forbes, 2023). Financial institutions heavily exposed to real estate, as seen by recent bankruptcies in China, represent a potential “Minsky moment,” a tipping point where excessive leverage and speculation lead to market collapse. This phenomenon illustrates how bubbles burst, triggering widespread financial distress (Moreno, 2023).

Amidst these challenges, mixed-use developments have emerged as a promising alternative. By integrating residential, office, commercial, and recreational spaces, these developments offer adaptability and resilience in a rapidly changing market. Unlike single-use office properties,

mixed-use developments can diversify income streams and better withstand volatility caused by trends like remote work, sustainability demands, and technological advancements. However, it's important to recognize that diversification may not fully protect investors during systemic crises.

The **Research Question** is: How are mixed-use developments more adaptable and less risky?

1.1 Research Aim and Questions

This work aims to fill the research gap on whether mixed-use developments are more attractive. In examining the RQ, we explore corollary issues that include:

1. Economic Advantages: What benefits do mixed-use developments offer over purely office-based properties?
2. Diverse Tenant Base: How does a mixed tenant composition influence CRE investment risk and return profiles?
3. The Impact of Office Vacancies: What are the consequences for financial institutions invested in single-use office properties in the face of increasing vacancies?

1.2 Significance

Global office vacancy rates have reached their highest levels in decades (JLL, 2020), severely impacting financial institutions heavily invested in CRE. Mixed-use developments offer a diversified portfolio of tenants and uses, enhancing resilience against market fluctuations and emerging secular trends. We seek evidence-based insights for developers, investors, and policymakers by examining factors justifying and driving mixed-used projects.

1.3 Structure of the Thesis

This thesis consists of six chapters that compare the attractiveness of mixed-use developments and single-use office properties. Chapter 2 reviews the literature, Chapter 3 details the methodology, Chapter 4 presents findings from 263 survey participants and 18 expert interviews. Chapter 5 synthesizes these findings and Chapter 6 summarizes key insights, addresses limitations, and suggests areas for further research.

2 Literature Review

This chapter reviews the existing literature.

2.1 Current State of Commercial Real Estate

2.1.1 Overview of CRE

The global commercial real estate (CRE) market is a fundamental pillar of the world economy, providing the infrastructure for businesses to operate and economies to grow. Accounting for approximately 10% of the global Gross Domestic Product (GDP) or $13.2 trillion in 2023, real estate significantly influences economic development, employment, and investment opportunities worldwide (MSCI, 2024). The CRE sector includes a diverse array of property types, such as office buildings, retail centers, industrial facilities, hotels, multifamily residential properties, and healthcare, all of which are integral to the functioning of modern societies.

Over the past decade, CRE has experienced notable growth. According to industry reports, global commercial real estate investment volumes have had a compound annual growth rate of approximately 10% from 2010 to 2020. This has been propelled by historically low interest rates and an abundance of investment capital, often referred to as “dry powder,” from institutional investors seeking higher yields in a low-interest-rate environment (Harris, 1989). Globalization, urbanization, technological advancements, and shifting demographic trends are driving the sector's expansion. These contribute to the growing demand for different commercial properties and influence investment strategies in an industry characterized by complex financing mechanisms, regulatory environments, and market dynamics (Correia et al., 2024). The basic principles described in this section form the basis for the research methods described in Chapter 3.

2.1.2 Stakeholders in CRE

Key players in CRE include real estate developers, banks, investment firms, REITs, private equity funds, and sovereign wealth funds. The interactions among these entities shape the CRE landscape, influencing trends and setting the course for future developments (Caputo, 2013).

In the CRE ecosystem, real estate developers acquire land, secure funding, and oversee construction of new properties, often navigating intricate zoning laws and regulatory requirements (Caputo, 2013).

Service providers like property management firms, brokers, and consultants deliver property maintenance, leasing, valuation, and advisory services. Effective management and operational strategies can significantly enhance property performance and investor returns (Li & Monkkonen, 2014).

Investors, including private equity and sovereign wealth funds, provide capital for development and acquisition, seeking returns through property appreciation and income from leases. As of recent estimates, real estate represents a substantial portion of global wealth. The total value of global real estate reached approximately $217 trillion in 2015, accounting for about 60% of all global assets. CRE comprised around 20% of this total, underscoring the significance of this asset class in the global economy (Savills, 2016). More recent analyses by Savills (2021) indicate that the total value of global real estate has risen to $326.5 trillion in 2020.

2.1.3 Factors Influencing CRE Performance

Macroeconomic factors such as interest rates, employment levels, vacancy rates, and GDP growth influence market dynamics in CRE (Geltner et al., 2007). Among these, interest rates are particularly crucial as they determine the cost of capital and affect investment decisions in real estate (Harris, 1989).

The regulatory environment also plays an important role in influencing zoning laws, environmental standards, taxation, and lending practices. For example, the Basel III regulations have impacted bank lending by increasing capital requirements for real estate exposure (Deutsche Bundesbank, 2024). Additionally, sustainability regulations, such as the European Union's Sustainable Finance Disclosure Regulation, prompt greener building practices (European Commission, 2021).

Industry trends affect demand for different property types. For instance, the e-commerce boom increased demand for industrial and logistics properties, doubling in 2022 from 2021 (JLL, 2024). Economic risk factors also affect real estate returns, such as unanticipated inflation and variations in risk premiums (Ling & Naranjo, 1997).

2.2 Evolution of Office Spaces and Tenant Needs

CRE has a rich history of adaptability, evolving in response to changing tenant needs. Initially, office properties were developed with standardized designs, prioritizing function over flexibility. Traditional office layouts featured enclosed offices and hierarchical structures, reflecting organizational norms of the time (Hysom & Crawford, 1997).

In the late 20th century, a shift towards open-plan offices began, influenced by the desire to enhance employee communication and teamwork (Brookes & Kaplan, 1972). This was further propelled by recognizing that office design impacts productivity, employee satisfaction, and performance (Haynes, 2008). The emergence of activity-based working environments offered a variety of work settings within a single office space, catering to different tasks and employee preferences. Tenant needs have evolved significantly due to shifts in work practices, demographic changes, and cultural trends. The rise of the knowledge economy has emphasized workplace creativity, collaboration, and flexibility (Wohlers & Hertel, 2016).

Co-working spaces represent another development in office space design. These shared work environments cater to freelancers, startups, and even large corporations seeking flexible space options. Co-working spaces emphasize community, networking, and collaboration, reflecting a shift towards more social and adaptable workspaces within the CRE sector (Berbegal-Mirabent, 2021). Demographic changes have influenced tenant preferences. Younger workers often value flexibility, work-life balance, and a sense of community, leading to increased demand for workplaces with amenities and environments that support these values (Babapour-Chafi et al., 2022).

2.3 Trends Influencing CRE

Thus, the CRE sector is undergoing significant transformations driven by global events, societal shifts, and technological advancements. COVID-19 reshaped office space demand and urban landscapes, while sustainability concerns are prompting a reevaluation of building practices. Meanwhile, flexibility in leasing, design, and digitalization drive adaptive, data-driven solutions. Together, these trends present new opportunities and challenges for CRE.

2.3.1 Impact of COVID-19 and Remote Work

The shift towards remote work prompted companies to reassess their office leases, reducing demand for traditional office spaces. At the same time, the growing volume of non-performing loans (NPLs) in CRE poses a risk of triggering another real estate crash. Rising interest rates and inflation drive up financing costs, leading to the devaluation of properties, particularly older or inefficient buildings. As vacancies increase and rental income falls, the likelihood of loan defaults rises, further depressing property values and creating the "urban doom loop" effect. With less investment and transaction volume, municipal tax revenues decline resulting in cuts to public services and infrastructure, perpetuating a cycle of urban decline (PwC, 2024).

Immediate Effects

Enforced lockdowns and social distancing prompted businesses to swiftly transition to remote operations (Belzunegui-Eraso & Erro-Garcés, 2020). This sudden shift resulted in a dramatic decrease in physical occupancy of offices. Companies began reevaluating their real estate needs amidst economic uncertainty and the demonstrated effectiveness of remote work. Many organizations opted to downsize their office footprints to reduce operational costs in the face of declining revenues (Pfnür & Wagner, 2020). Large corporations announced plans to sublease excess space or chose not to renew leases upon expiration, increasing available office space and vacancy rates in major urban centers (Ramani & Bloom, 2021). The pandemic's impact also halted construction projects due to supply chain disruptions and labor shortages. Development timelines were delayed, and some projects were put on hold indefinitely as investors exercised caution in the uncertain economic climate (Alsharef et al., 2021). This slowdown affected the pipeline of new office spaces entering the market.

Long-Term Implications

The pandemic accelerated preexisting trends and introduced new paradigms likely to have lasting implications. One is the hybrid work model, which combines remote and in-office work. Surveys indicate that the workforce prefers the flexibility of remote work, compelling companies to rethink their long-term real estate strategies (Barrero et al., 2021).

As organizations embrace hybrid models, the demand for office space is expected to decrease, leading to oversupply in specific markets (De Fraja et al., 2021). Companies may opt for smaller, more flexible spaces, prioritizing collaborative areas over individual workstations. This reinforces the office as a space for collaboration rather than routine tasks (van der Voordt, 2004). However, if oversupply is not managed effectively, cities may face repurposing challenges, where reduced occupancy leads to declining economic activity and overall urban degradation (Florida, 2020). The trend toward reduced traditional office footprints will likely continue (Pfnür & Wagner, 2020).

2.3.2 Flexibility

Flexibility has emerged as a critical factor for accommodating the changing needs of businesses and tenants. Flexible building designs and space configurations allow organizations to modify their physical environments without incurring significant costs or operational disruptions (Geraedts, 2016).

Rise of Flexible Workspaces and Leasing Models (Short Term)

Flexibility addresses the dynamic nature of today's work environments, necessitating adaptable spaces that respond swiftly to shifting demands (Appel-Meulenbroek et al., 2020). Flexible building designs enhance firms' ability to innovate and remain competitive (van der Voordt, 2004).

Beyond physical space, traditional long-term leases are being complemented or replaced by shorter, more flexible agreements that allow tenants to adjust space requirements in response to market conditions and internal changes (Fuerst et al., 2015) as more companies seek agility in their real estate commitments (Pfnür & Wagner, 2020). Flexible workspaces, such as coworking

spaces and serviced offices, have gained prominence with their ready-to-use facilities with minimal commitment, catering both to startups and established organizations seeking adaptability (Bouncken et al., 2020). These collaborative environments enhance innovation and networking opportunities (Parrino, 2015).

Flexible Building Design (Long Term)

Moreover, flexibility in building design contributes to sustainability, allowing spaces to be repurposed and reconfigured over time. This extends the lifespan of buildings and reduces the need for new construction (Schmidt III et al., 2010). Adaptive reuse and modular design principles enable buildings to accommodate different functions and tenant types, promoting efficient resource utilization and alignment with environmental considerations (Langston et al., 2008).

2.3.3 Sustainability and Environmental Considerations

Integrating sustainability and environmental considerations into CRE has increased (Hwang & Tan, 2012). Cities, which house more than half of the global population, account for approximately 70% of global CO_2 emissions, positioning them at the forefront of the climate crisis (IPCC, 2014). By 2050, 68% of humanity is projected to reside in urban areas, leading to heightened energy consumption, greater infrastructure demands, and increased carbon emissions (United Nations, 2018). Buildings are critical for sustainability as construction and operations account for 39% of global energy-related carbon emissions (UNEP, 2019).

Short-Term Environmental Responses

Therefore, the evolution of CRE is increasingly focused on environmental performance (Pivo & Fisher, 2010) and the demand for green buildings has grown (Miller et al., 2008). Green-certified office buildings tend to command higher rents and occupancy rates, reflecting sustainability as a value driver (Eichholtz et al., 2010). This is promising for CRE as sustainability becomes more integral to property development, management, and ownership (JLL, 2020). This reduces physical office footprints while accommodating the need for in-person collaboration when necessary (PwC, 2021).

Long-Term Sustainability Strategies

The existing building stock is expected to comprise 80% of the built environment in developed countries by 2050 (European Commission, 2013; UNEP, 2016). Only 1–2% of buildings are renovated yearly, a rate insufficient to meet net-zero carbon goals (IEA, 2019). To accelerate decarbonization, it is imperative to increase the energy retrofitting of old buildings. Retrofits reduce heating demands by two-thirds or more and lower CO_2 emissions by sourcing renewable or decarbonized energy (Ürge-Vorsatz et al., 2012).

An estimated 35% of lifecycle carbon emissions from a typical office building occur before it becomes operational; for residential buildings, this figure is 51% (Dixit et al., 2012). Thus, the carbon debt incurred during construction can take decades to offset despite the energy savings achieved by new buildings. Advocacy groups such as the World Economic Forum urge the industry to commit to the EU's Green Deal goal of carbon neutrality by 2050 (WEF, 2020).
A strategic approach involves adopting Circular Economy construction practices, redeveloping existing structures, and harvesting materials for reuse to reduce carbon footprints (Pomponi & Moncaster, 2017).

2.3.4 Digitalization and Innovation

Digitalization and innovation are transforming CRE, addressing longstanding challenges related to productivity and efficiency. Productivity has declined by 19% over the past 50 years, while the average for all other industries has increased by 153% (Teicholz, 2013). This has occurred despite an exponential increase in demand for real estate services.

Technological Adaptations (Short Term)

Adopting advanced technologies such as digital twins—virtual replicas of physical assets, processes, or systems—enables stakeholders to simulate, analyze, and optimize building performance in real-time (Boje et al., 2020). Digital twins can achieve cost savings of up to 20% and a hundredfold improvement in speed to market for new projects, creating significant social, economic, and sustainability benefits (JLL, 2020).

Technological Transformation (Long Term)

Moreover, even a 1% reduction in construction costs could save society approximately $100 billion annually (Barbosa et al., 2017). Building Information Modeling (BIM), the Internet of Things (IoT), and Artificial Intelligence (AI) facilitate more efficient design, construction, and management processes, contributing to cost reductions and enhanced productivity (Oesterreich & Teuteberg, 2016). These technologies enable better collaboration among stakeholders, reduce errors and rework, and improve project outcomes (Succar, 2009).

The integration of digital technologies supports better decision-making through data analytics, predictive maintenance, and enhanced tenant experiences. Smart building systems optimize energy usage, improve security, and provide personalized environments for occupants (Lee et al., 2019). Additionally, virtual reality (VR) and augmented reality (AR) tools are transforming property marketing and tenant engagement by offering immersive virtual tours and interactive design customization (Emenike, 2023).

2.4 Mixed-Use Developments as an Emerging Phenomenon

2.4.1 Definition and Characteristics

Mixed-use developments integrate multiple property types within a cohesive development, such as residential, commercial, retail, and recreational spaces. The key feature of mixed-use developments is their multifunctionality, allowing for diverse uses in the same area (Hoppenbrouwer & Louw, 2005). This integration creates dynamic environments where people can live and work without traveling long distances, offering a blend of convenience and community-building (Coupland, 1997). Multiuse developments tend to optimize urban space, promote sustainability, and encourage a vibrant local economy (Dovey & Wood, 2015). They accommodate evolving tenant needs and market conditions and attract diverse residents, businesses, and consumers (Miles et al., 2015). This flexibility is increasingly important in response to changing work patterns, such as the increase of remote work. Mixed-use developments offer an adaptable solution by repurposing office spaces and integrating them into multifunctional environments that suit new tenant and consumer demands (Pfnür & Wagner, 2020).

2.4.2 Rise in Popularity

Recent studies and data indicate a growing trend toward mixed-use developments as the demand for traditional single-use office spaces declines (PricewaterhouseCoopers, 2021). Moreover, research shows that mixed-use developments generally outperform single-use office buildings in terms of higher occupancy rates, increased rents, and faster absorption rates, further explaining their growing appeal among investors (Eichholtz et al., 2010). Additionally, the diversification of property types within these projects offers risk mitigation and higher long-term returns, making them a more resilient investment choice, particularly in uncertain economic times (Pivo & Fisher, 2010).

The rise in popularity is quantifiable. Mixed-use developments, increasing from 5% of the total transaction volume in 2023 to 7% in Q1-3 in 2024, reflect a 40% growth rate for multi-use properties within the German real estate market (Figure 1).

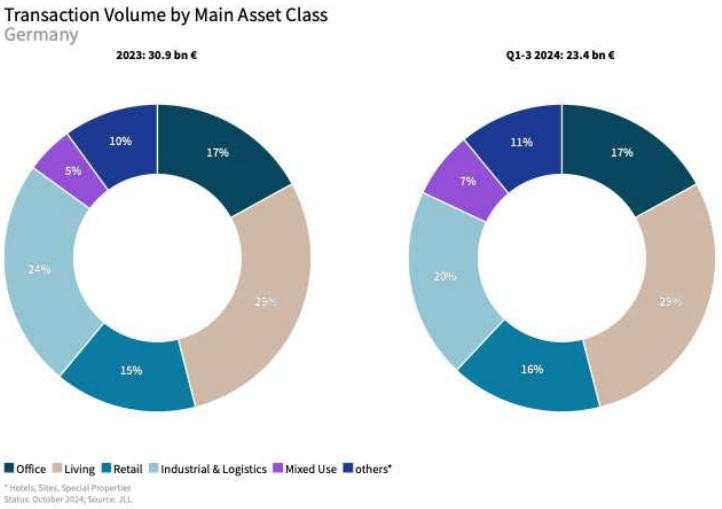

Figure 1: Transaction Volume by Main Asset Class (JLL, 2024)

Mixed-use developments reduce investor exposure to asset-specific risks, making them more resilient during economic downturns (Benjamin et al., 2004) as they generate income from various sources, including residential rents, retail leases, and commercial space (Miles et al., 2015). This provides a more resilient investment model (Wurtzebach et al., 1991).

2.4.3 Case Studies/ Examples

In New York City, Hudson Yards is a notable case of a mixed-use development that has revitalized a previously underdeveloped area, boosting property values and creating a thriving community of businesses and residents (Surico, 2019). Similarly, Canary Wharf in London created a bustling financial and residential hub, demonstrating the effectiveness of integrating commercial office spaces with retail and residential units (Orueta & Fainstein, 2008). Mixed-use developments also include green spaces, pedestrian-friendly environments, and access to essential amenities such as public transportation and retail outlets. This increases tenant satisfaction, encouraging longer commitments and reducing vacancy rates (Gehl, 2010).

Mixed-use projects stimulate local economies by generating higher pedestrian circulation and attracting businesses, increasing investments in previously neglected areas. This revitalization further drives property value appreciation, as seen in urban planning strategies prioritizing sustainable growth and the rejuvenation of urban cores (Porter, 1995) and are appealing to investors (Miles et al., 2015).

Figure 2: Mixed-Use-Project Hudson Yards (EDC/ NYC, 2024)

2.5 Identifying Drivers Influencing Mixed-Use Developments

The drivers presented in this section and the trends from Chapter 2.3 are used to discuss the empirical results in Chapter 5.

2.5.1 Urbanization and Demographic Shifts

Rapid urbanization and demographic changes positively influence the trend toward mixed-use. As urban populations grow, the demand for efficient land use intensifies. Mixed-use developments maximize land utilization, effectively addressing space constraints in densely populated cities (Hoppenbrouwer & Louw, 2005).

Demographic shifts, such as smaller household sizes and an aging population, have reshaped housing preferences toward convenience and accessibility (Myers & Ryu, 2008). Urban residents increasingly prioritize proximity to work, amenities, and social opportunities (Montgomery, 2007).

2.5.2 Changing Work Patterns and Lifestyle Preferences

The rise of remote and hybrid work and flexible schedules has diminished the need for traditional office spaces, increasing demand for environments that blend living, working, and leisure (Kniffin et al., 2021). Mixed-use developments cater to this shift by offering residential units, co-working spaces, and amenities in one location, enhancing convenience and work-life balance (Appel-Meulenbroek et al., 2020).

Lifestyle changes, especially among younger generations, emphasize experiences and community engagement over material possessions (van der Voordt, 2004). This preference boosts the attractiveness of mixed-use developments, which provide vibrant, amenity-rich environments, positively impacting the growth of multi-use CRE.

2.5.3 Economic and Risk Diversification Considerations

Combining residential, commercial, and retail tenants is a diversification strategy (Pivo & Fisher, 2010). This aligns with Modern Portfolio Theory, which posits that spreading

investments across different asset classes can improve returns relative to overall risk (Markowitz, 1952).

The influx of investment capital from institutional investors is driving growth of mixed-use developments. Institutional entities such as pension funds, insurance companies, and real estate investment trusts (REITs) seek diversified assets with stable returns to meet long-term liabilities (Baum & Hartzell, 2012).

Inflation and risk premia affect real estate valuations and investor returns (Hoesli et al., 2008). For example, residential rents might adjust quickly to inflation due to shorter lease terms, while commercial leases could include escalation clauses tied to inflation indices. This blended income approach helps preserve the real value of cash flows, affecting the attractiveness of mixed-use properties during periods of economic uncertainty.

Diversification within mixed-use developments mitigates risks of non-performing loans (NPLs) by spreading income risk across different property types (Allen & Gale, 2000). In cases where one sector underperforms—such as a downturn in retail due to changes in consumer behavior—the income from residential or office ensures cashflows. This cross-collateralization can lower the probability of loan defaults (McCue & Kling, 1994).

2.5.4 Sustainability and Environmental Concerns

Sustainability and environmental concerns positively impact the trend toward mixed-use developments in CRE. These developments integrate multiple functions within a compact area to promote efficient land use and reduce ecological footprints (Jabareen, 2006). By minimizing the need for long commutes and encouraging walkability and public transit use, mixed-use projects contribute to lower carbon emissions and enhanced urban sustainability (Cervero & Duncan, 2006).

The emphasis on sustainable design and resource optimization in mixed-use developments aligns with growing environmental priorities among consumers and regulators (Kibert, 2016).

2.5.5 Regulatory and Policy Factors

Governments and municipalities are implementing policies and incentives to encourage mixed-use developments and promote sustainable urban growth (Talen, 2013). Zoning reforms and incentives, such as tax breaks and expedited permitting processes, facilitate the development of multi-use projects (Porter, 2000), thus positively influencing the trend.

Conversely, complex regulations and bureaucratic hurdles can negatively impact the development of mixed-use projects by increasing costs and delays (Grant, 2002). Inconsistent zoning laws and stringent land-use policies may constrain developers, slowing the adoption of multi-use CRE in certain regions.

2.5.6 Technological Advancements and Digitalization

Adoption of Building Information Modeling (BIM), the Internet of Things (IoT), Artificial Intelligence (AI), and digital twins improve design accuracy, construction processes, and facility management (Oesterreich & Teuteberg, 2016). Digital transformation such IoT devices can optimize energy use and improve security across residential and commercial spaces within a mixed-use development (Gupta et al., 2020).

2.6 Management Theory

Management theory frameworks propose that external industry dynamics and efficient management by the firm of critical resources lie at the heart of superior performance (Porter, 1980, 1985; Wernerfelt, 1984). Dynamic Capabilities stresses the importance of continuous adaptation through routines and processes whereby firms reconfigure their assets to align with changing conditions (Teece et al., 1997).

2.6.1 Dynamic Capabilities

Michael Porter suggests that firms can create competitive advantage by analyzing industry forces and securing unique resources (Porter, 1980, 1985). Research indicates that valuable resources can become liabilities if organizations fail to respond quickly to disruptive

innovations (Christensen, 1997). Wernerfelt (1984) argued that valuable and rare internal firm resources can support a sustained competitive edge, although these resources alone may not suffice in volatile settings. Teece addressed this challenge by introducing Dynamic Capabilities, suggesting that organizations need ongoing processes of renewal to reconfigure their resource base in response to evolving circumstances (Teece et al., 1997). He identified three interrelated activities: sensing changes in the environment, seizing opportunities by reallocating resources and reformulating strategies, and transforming internal structures and practices to remain resilient over the long term (Teece, 2007). Barreto (2010) extended the discussion by showing that Dynamic Capabilities must encompass intentional, firm-specific processes that enable adaptation in a timely manner to opportunities and threats. Eisenhardt and Martin (2000) presented empirical evidence suggesting that in industries with high levels of uncertainty, the ability to reconfigure resources quickly can lead to superior outcomes. Wang and Ahmed (2007) similarly found that Dynamic Capabilities enhance firms' capacity for both innovation and strategic flexibility.

2.6.2 Application of Dynamic Capabilities to CRE

The CRE sector is characterized by significant capital investments, long development cycles, and exposure to various firm-exogenous economic and regulatory factors (Geltner et al., 2007). Sudden shifts in market demand, such as the recent rise of remote work and increased emphasis on sustainability, require an ability to sense changes early, deploy resources effectively, and continually reconfigure assets. The emergence of remote work models has reduced the traditional need for office space and has stimulated demand for more flexible and shared solutions, reflecting patterns observed in other industries that experienced disruption (Christensen, 1997; Kniffin et al., 2021). These conditions place a premium on an organization's capacity to adjust its strategy accordingly.

Another essential strategic move is seizing opportunities by mobilizing resources to capture value from identified market shifts. While the Resource-Based View emphasizes managing existing resources effectively (Wernerfelt, 1984; Barney, 1991), Dynamic Capabilities focus on the organization's ability to adapt and reconfigure resources in response to environmental changes (Teece et al., 1997; Barreto, 2010). CRE firms must adapt their investment strategies

and property portfolios to promote greater flexibility and resilience (Hoppenbrouwer & Louw, 2005). This might involve reallocating assets, investing in new technologies, or developing sustainable building practices to meet regulatory standards and tenant expectations (Hwang & Tan, 2012).

The literature review has highlighted the challenges and opportunities in the CRE sector, identifying the drivers and trends in the extant research. Building on insights and theoretical frameworks discussed, the following Chapter outlines the methodological approach and research design for investigating the Research Question.

3 Methodology

A mixed-methods approach was adopted, combining qualitative and quantitative methods. This allowed for data triangulation, enhancing the findings' validity and reliability (Tashakkori & Teddlie, 2010). Given the complexity of the CRE market and the evolving trends, this approach sought to capture and validate factors driving CRE change toward mixed-use developments.

3.1 Research Design

Triangulation integrated both inductive and deductive approaches and enabled collecting and analyzing of qualitative and quantitative, facilitating more nuanced exploration of the RQ (Johnson & Onwuegbuzie, 2004).

This research design is shown below:

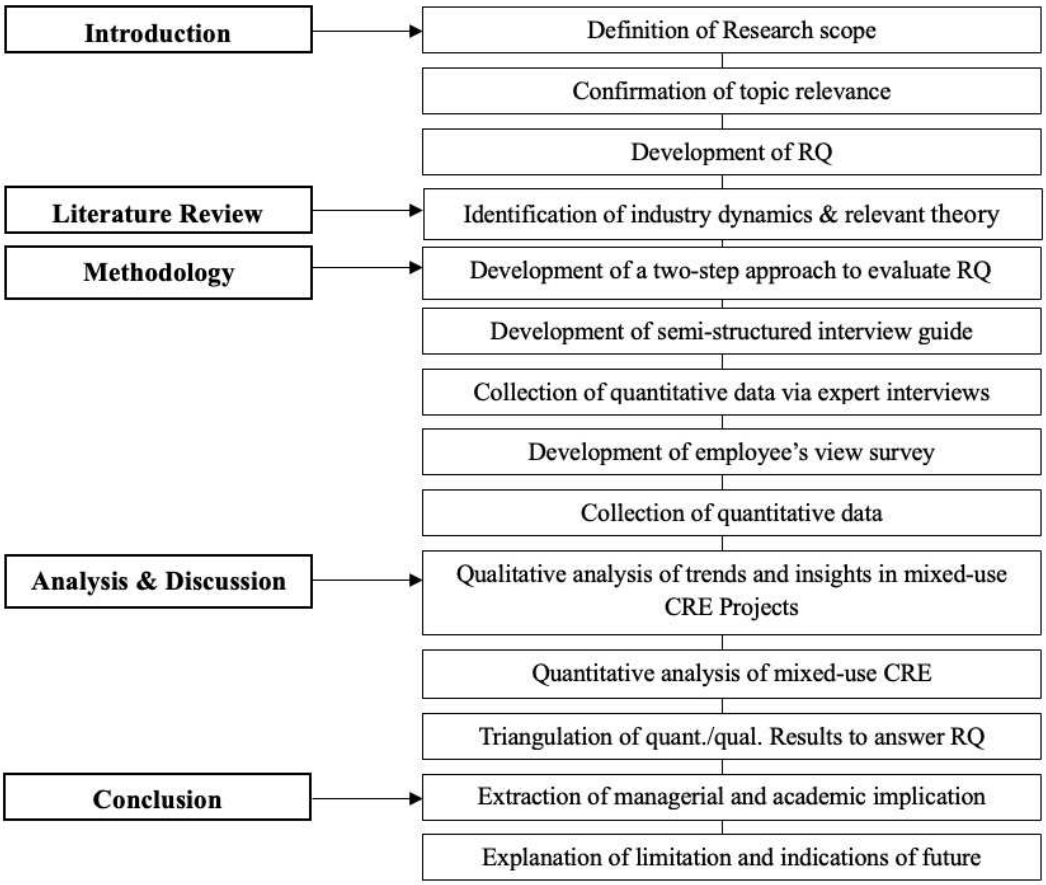

Figure 3: Research Design Framework

3.1.1 Inductive Approach

An inductive approach permitted patterns and themes to emerge from the data (Thomas, 2006). The inductive phase concentrated on understanding the reasons and motivations behind the shift toward mixed-use developments, as identified in sections 2.4 and 2.5 of the literature review.

3.1.2 Deductive Approach

Complementing the inductive strategy, a deductive approach was applied to test existing theories and hypotheses from the literature review using quantitative surveys. This method validated theoretical propositions and assessed their applicability (Bryman, 2012). The deductive phase aimed to quantify the impact of remote work trends and sustainability concerns, as discussed in sections 2.3 and 2.5.

3.2 Interview Methodology

Semi-structured interviews were conducted with 18 CRE industry experts specializing. Semi-structured interviews are effective for obtaining in-depth information while allowing flexibility to probe emerging topics (DiCicco-Bloom & Crabtree, 2006).

Selection of Participants

Participants were selected using purposive sampling to ensure they possessed relevant expertise (Etikan et al., 2016). Criteria included a minimum of 10 years of experience in CRE and project experience or insights related to mixed-use developments. Additionally, experts from various geographical regions were included to capture a global perspective on CRE trends, reflecting the international scope discussed in sections 2.1 - 2.4.

Interview Procedure

The interviews were conducted face-to-face or via videoconferencing platforms and lasted 30 to 70 minutes each. Based on themes identified in the literature review, an individual interview guide focusing on each interview partner was developed (Patton, 2015).

Data Recording and Transcription

All interviews were recorded with the participant's consent and transcribed verbatim for analysis. Transcription ensures accuracy and facilitates a detailed examination of the data (Poland, 1995).

3.3 Survey Methodology

A quantitative survey was designed to validate the qualitative findings from the expert interviews. The survey targeted professionals and students in various fields, representing the current and future workforce.

Survey Design

The survey instrument was crafted to capture attitudes and perceptions toward mixed-use and single-use developments. It included questions using a Likert scale (1 to 5) and open-ended questions. Questions were based on key themes identified in expert interviews and the literature and were pilot-tested to refine clarity and ensure alignment with the research objectives.

Sampling and Distribution

A stratified random sampling approach was employed to ensure representation across diverse professional backgrounds and demographic segments. Out of 263 participants, n=254 valid responses were collected, resulting in a response rate of 96.6%, which aligns with acceptable standards for professional surveys (Baruch & Holtom, 2008).

3.4 Data Analysis

3.4.1 Qualitative Analysis

Thematic analysis was used to analyze the interview transcripts, following the guidelines of Braun and Clarke (2006).

3.4.2 Quantitative Analysis

A quantitative approach was utilized to investigate the factors influencing participants' likelihood of living or working in a mixed-use development. After data cleaning and removing outliers, the dependent variable: “How likely are you to live or work in a mixed-use property in the future?” (1 = “very unlikely,” 5 = “very likely”), was used to create an ordinal regression model. The independent variables included demographic factors (e.g., age group, gender, household size) and attitudinal variables (e.g., sustainability importance and flexibility needs).

Categorical variables were encoded, missing values were removed, survey responses were transformed as needed, and results were presented (Field, 2018).

3.5 Triangulation

Data triangulation cross-verified information from the 18 interviews, survey, and the literature (Denzin, 2012). This approach confirms the consistency of themes across different data sources, strengthening the study’s validity.

Uncertainties about the validity of specific claims were flagged. Where triangulated sources matched, the findings were summarized rather than explained in detail, as the consistency across data sources provided validation (Figure 10). Following this triangulation, practical implications were developed for stakeholders in CRE to create actionable insights.

3.6 Ethical Considerations

Participants gave informed consent after receiving a detailed information sheet that outlined the study’s purpose, procedures, and their rights (Orb et al., 2001). Confidentiality was guaranteed through coded identifiers, secure data storage, and reporting only aggregate findings (Wiles et al., 2008). To improve data security, all digital data were encrypted and stored on password-protected devices (British Psychological Society, 2014).

4 Analysis

This chapter analyzes data gathered from 263 survey participants and 18 expert interviews. The survey captured working and living preferences presented in chapters 2.3 and 2.5. The expert interviews offered industry-level insights. Together, these findings and the literature presented a comprehensive understanding of current trends, drivers, and actionable opportunities for the CRE.

4.1 Quantitative Survey Findings

4.1.1 Overview of Survey Participants

Overall, 263 participants conducted the survey. Nearly half of the respondents, amounting to 49.6%, fell within the 25-34 age bracket, indicating that the preferences of younger professionals dominate the dataset. An additional 25.6% were aged 18-24, reflecting the views of a generation more receptive to flexible and urban-centric lifestyles. The remaining 15% were aged 45 or older, highlighting an intergenerational mix (Figure 4).

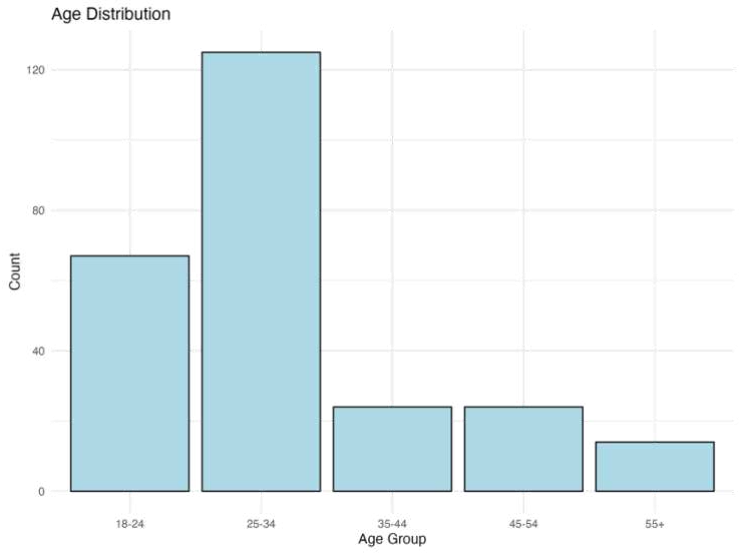

Figure 4: Survey Age Overview

Males represented 54.2% of the sample, females accounted for 45.4%, and 0.4% preferred not to disclose. This balanced gender distribution ensured diverse perspectives. Urban dwellers constituted 63.1% of respondents, affirming the relevance of urban-focused mixed-use

development research, while suburban and rural residents accounted for 27% and 9.9%, respectively. The cohort was highly educated, with 48.9% holding a master's degree and 36.3% at least a bachelor's degree. Full-time employment was the most common professional background at 64.1%, followed by students at 32.8%, representing a mix of current and future tenant demographics.

4.1.2 Impact of COVID-19 and Remote Work

Current remote work adoption varied significantly, with 20% of respondents not working from home, while 20.2% reported spending two days per week at home. A smaller subset of 13.7% worked remotely for five days per week. Hybrid models were preferred by 28.6% of respondents for two days per week, followed by 20.2% who favored three days per week and 16.8% preferred four days. Only 6.9% favored zero remote days, underscoring a pronounced shift toward hybrid work arrangements (Figure 5).

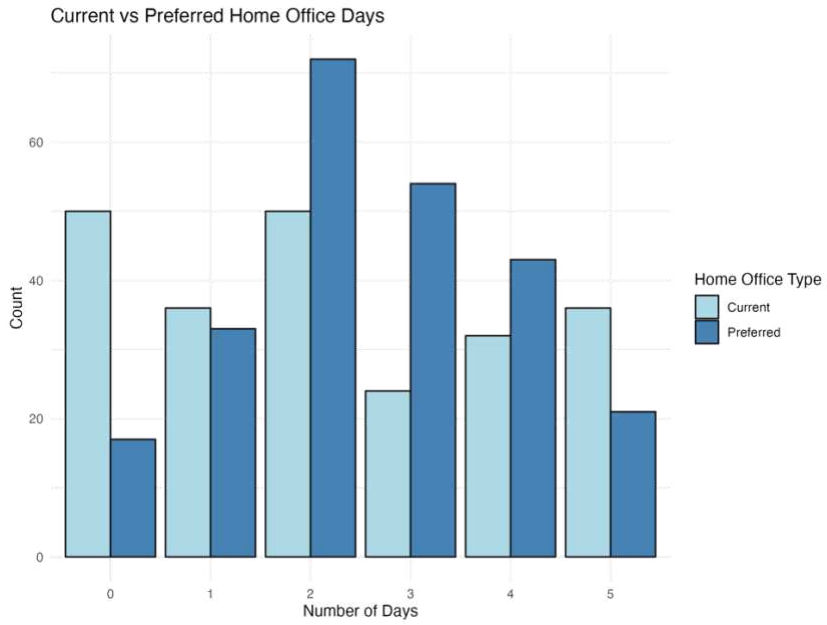

Figure 5: Current vs. Preferred Home Office Days

The findings indicated that mixed-use office settings appealed to 63.1% of respondents, reflecting a strong demand for integrated environments that include amenities and reduce commuting needs. In contrast, 74,1% of respondents preferred stand-alone residential buildings

over mixed-use residential settings. This suggested that while integrated workspaces are appreciated, privacy and separation were prioritized in living arrangements.

4.1.3 Flexibility

75.9% of respondents rated flexibility as very important (Likert Scale 4 or 5), highlighting the demand for adaptable living and working spaces that accommodate changing circumstances.

4.1.4 Sustainability and Environmental Considerations

Sustainability was rated as very important for residential properties by 40.8% of respondents, while 37% rated it highly important for workplaces. 63% of respondents expressed Willingness-to-Pay a premium for sustainable features, indicating a mindful attitude towards costs. The most valued sustainable features are energy efficiency, cited by 85.1%. Green roofs or green spaces were mentioned by 70.2%, and water and waste were highlighted by 72.9%.

4.1.5 Digitalization and Innovation

Intelligent heating and cooling systems were favored by 87.8%, and automated lighting was appreciated by 63.4%, suggesting strong interest in technological solutions that enhance comfort and efficiency while maintaining environmental sustainability (Figure 6).

While non-technical workplace features like good access to natural light were considered respondents' most critical design features, technological equipment came second. Ergonomic furniture, which focuses on health and quiet zones that boost productivity and comfort, were also important to most survey participants.

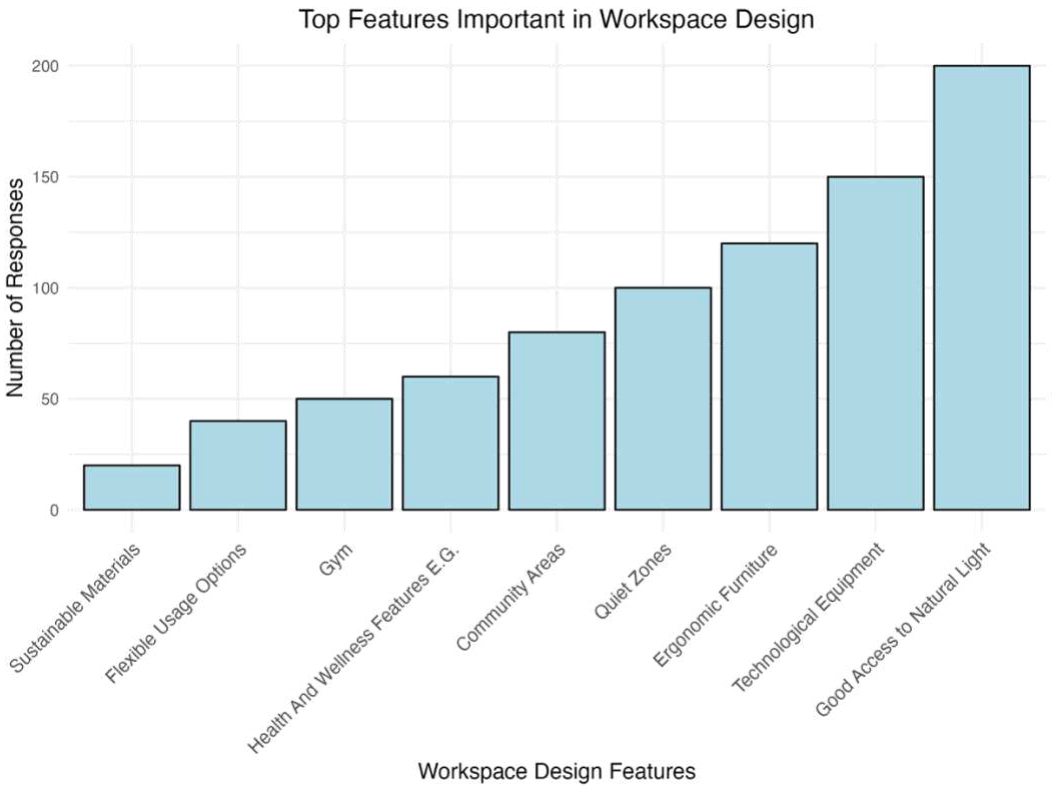

Figure 6: Survey Workplace Features

4.1.6 Mix-Use Developments

Respondents identified convenience, cost efficiency, and better utilization of urban space as the key advantages of mixed-use developments. These features aligned with the broader goals of urbanization and sustainability. However, significant concerns persisted, including noise and privacy issues and potentially overcrowded shared facilities, showing barriers to wider acceptance, particularly for residential mixed-use properties. While some shared amenities were not preferred, like locker storage or outdoor recreation places, the willingness to share elevators, garages, or local supply services was very high (Figure 7).

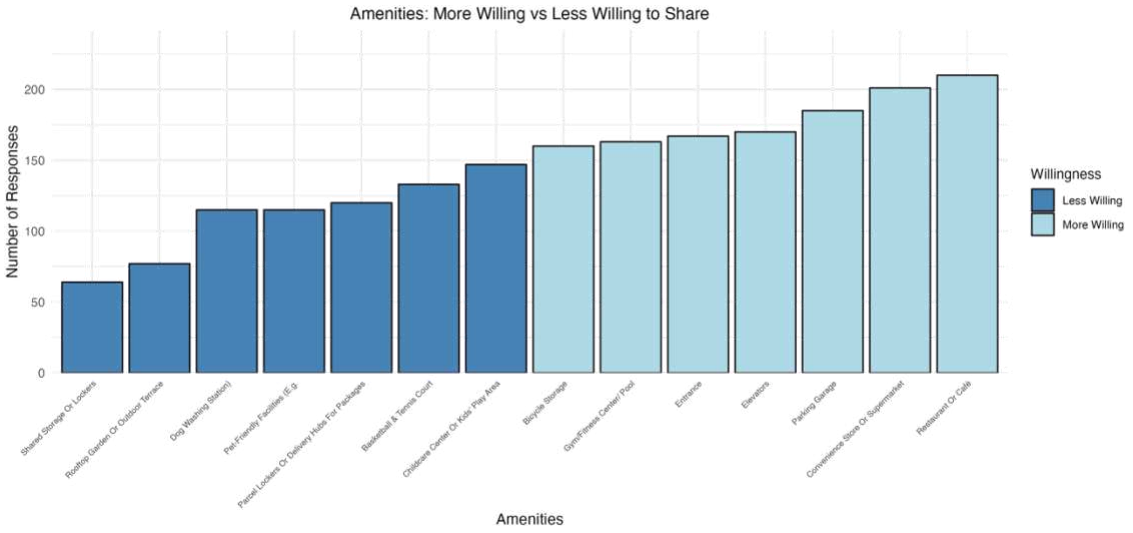

Figure 7: Survey Respondents Willingness to Share

4.1.7 Regression Analysis

Overview of the Model

The ordinal regression model provided a comprehensive analysis of the factors influencing the likelihood of individuals living or working in a mixed-use property. The dependent variable, measured on an ordinal Likert scale (1-5), captured preferences for mixed-use properties. This model included predictors such as demographic variables (age, gender, and household size) and preference-based factors (importance of sustainability at work and the perceived value of flexible concepts). The model was chosen based on its relevance to the research objectives, statistical significance, and theoretical alignment (Table 1).

Key Findings

Age

One of the key findings pertained to age, specifically the quadratic term for age, which was statistically significant with a coefficient of 0.633 ($\rho < 0.1$). This result indicated a non-linear relationship between age and preferences for mixed-use properties. The data suggested that the likelihood of preferring mixed-use properties increases with age up to a certain point, typically

middle age (up to 44 years), and subsequently declines for older individuals. This relationship highlighted that middle-aged individuals are more likely to favor mixed-use developments, possibly due to their need to balance work-life. Younger individuals may place less emphasis on mixed-use features, prioritizing affordability and lifestyle flexibility instead, while older individuals lean toward quieter, more traditional residential settings.

Household Size

Similarly, household size showed a notable quadratic effect with a coefficient of 0.559 ($\rho < 0.1$). This non-linear relationship suggested that medium-sized households, particularly those with two to three members, were more likely to prefer mixed-use properties compared to smaller or larger households. Single-person households might also enjoy having their own space, while larger households may prioritize ample living areas. In contrast, medium-sized households gained the most from the proximity and shared amenities that mixed-use developments provide.

Sustainability at Work

Another significant predictor in the model was the importance of sustainability at work, with a coefficient of 0.201 ($\rho < 0.1$). This positive relationship demonstrated that individuals who prioritize sustainability in their workplace were more likely to prefer mixed-use properties.

Non-Significant Predictors

The model also included variables that were not found to be statistically significant and, therefore, did not contribute to explaining the likelihood of living or working in a mixed-use building based on the collected survey data.

Table 1: Ordinal Regression Table

	Dependent variable:
	Likelihood of Living/Working in Mixed-Use Properties
Age (Linear)	-0.292
	(0.385)
Age (Quadratic)	0.633*
	(0.374)
Gender (Male)	0.463
	(0.335)
Household Size	0.158
	(0.344)
Sustainability at Work	-0.250
	(0.237)
Flexible Concepts	-0.453
	(1.508)
Household_Size.L	0.298
	(0.337)
Household_Size.Q	0.559*
	(0.317)
Household_Size.C	0.419
	(0.281)
Household_Size4	0.053
	(0.278)
Sustainability_Work	0.201*
	(0.111)
Flexible_Concepts	-0.039
	(0.136)
Observations	253
Note:	*p<0.1; **p<0.05; ***p<0.01

4.1.8 Additional Feedback

Open-ended comments reinforced the desire for affordability, better utilization of vacant office spaces, clear work-life boundaries, and enhanced sustainability measures. Some respondents mentioned the importance of placemaking and green spaces, suggesting that quality of life factors were integral to the appeal of mixed-use developments.

4.2 Expert Interview Findings

The expert opinions presented are further analyzed in Chapter 5 and brought together in a conceptual framework.

4.2.1 Overview of Expert Participants

Table 2: Expert Overview

Expert ID	Position	Key Topics	Experience (years)	Duration
E1	Transaction Manager	Risk Diversification	15	60 min
E2	Project Developer	Green Premium	10	40 min
E3	Head of Sales	Office Flexibility	25+	70 min
E4	Director Office Agency	Repositioning Trends	15	35 min
E5	Real Estate Agent	Community Focus	20	50 min
E6	Director Letting & Asset Management	Space Reduction	20	40 min
E7	Architect	Technological Advancements	10	60 min
E8	Managing Partner-Architecture	Architectural Flexibility	25+	35 min
E9	Managing Partner-Office Planning	Workplace Trends	25+	50 min
E10	Sustainability Specialist	Sustainability Requirements	10	40 min
E11	Real Estate Analyst	Investment Adaptability	10	70 min
E12	Managing Partner – Private Equity in Real Estate	Urban Walkability	20	40 min
E13	Head of Specialty Asset Management	Class A Preference	25+	30 min
E14	Chief Economist Commercial Real Estate	Generational Impact	25+	65 min
E15	Director Rental Management	Mixed-Use Resilience	25+	35 min
E16	Structural Engineer	Sustainability Trends	10	50 min
E17	Managing Partner – Workplace and Corporate Real Estate Consulting	Future of Mixed-Use	25+	40 min
E18	Managing Director – Architectural and Sustainable Design	Smart Design	20	45 min

4.2.2 Impact of COVID-19 and Remote Work

Impact of COVID-19 and Remote Work

The COVID-19 pandemic significantly impacted commercial office demand, with financing hurdles, higher interest rates, and changing tenant needs reshaping the market. Businesses are

consolidating or reducing footprints, responding to flexible work arrangements and pandemic-driven changes, especially in poorer office locations. Large corporate tenants reportedly reduced space usage by up to half, emphasizing the sustained impact of these shifts. Experts in the United States mentioned a trend to return to more office time, which experts did not share in Europe (E1, E7, E10, E13, E14, E17).

Decreased Demand for Office Spaces

The downturn in office demand is attributed to higher financing costs and evolving workplace expectations. Experts highlighted that businesses focus on smaller, more flexible offices in response to these challenges (E1, E7, E9, E10, E17).

Sector-Specific Impacts

While logistics and e-commerce experienced robust growth over the past 5 years, retail properties adapted to include mixed uses, repurposing underutilized spaces to meet changing demands (E1, E11).

Market Uncertainty & Regulation

Uncertainty and regulatory pressures shape the market, especially the growing interest rates paired with uncertain supply chains and regulatory changes in the field of climate protection had a negative impact on the performance of CRE projects (E3, E8, E17).

Flight to Quality and Prime Locations

Investors increasingly prioritize prime locations and high-quality assets, focusing on stable and well-performing markets in central locations. Budget freed up by the reduction in floor space was often invested in higher-quality spaces, resulting in a “flight to quality” (E1, E5, E9, E12, E14).

4.2.3 Flexibility

Shift to Flexible Work Arrangements

Flexible work arrangements drive significant changes, with many sectors embracing hybrid models. This results in a complete change of workspace design. Tenants require flexible desk-sharing concepts and more conference rooms, making adapting old building layouts difficult. Flexibility in design and operations is important to ensure resilience and maintain investor interest in a rapidly changing market (E7, E13, E18).

Difficulties in Marketing Single-Use Office Buildings

Single-use office buildings, especially single-tenant office buildings, are increasingly complex to market due to their lack of adaptability, lack of sustainability, and economic feasibility. A lot of base vacancy occurs, which means a vacancy that cannot be remedied without significant structural changes (E1, E3, E14).

4.2.4 Sustainability and Environmental Considerations

Sustainability as a Standard

Sustainability has become a baseline expectation, with building certifications like LEED and DGNB deemed essential for market relevance, especially for European institutional investors. These certifications enhance property values and play a crucial role in influencing tenant decisions, as they signal a commitment to environmental standards and long-term operational efficiency. Large corporates were observed in the market for the first time having sustainability as a key decision criterion, as they have to act according to their own ESG guidelines to demonstrate how sustainable their offices are (E1, E7, E8, E18).

Cost Limitations and Long-Term Use

High construction costs and tenant reluctance to pay for green features present significant barriers to sustainable development. Many experts reported that companies only want to pay extra for sustainability, which comes with challenges. Designing buildings with retrofitting potential and focusing on lifecycle carbon outputs are critical for achieving sustainability goals (E2, E3, E6, E11, E16).

4.2.5 Digitalization and Innovation

Outlook: BIM, IoT, and Big Data

Technologies like BIM, IoT, and predictive analytics offer untapped potential for improving building operations and planning. However, their adoption remains constrained by high implementation costs and limited expertise (E2, E7, E8, E16, E17). While some technologies like desk-booking platforms and energy-monitoring tools are becoming standard, advanced systems like IoT and BIM are not yet widely demanded (E1, E5, E11, E13, E18).

4.2.6 Mix-Use Developments

Shift to Mixed-Use

Multiple experts highlighted a strong pivot toward mixed-use assets and risk diversification in investment strategies. Mixed-use projects are increasingly prescribed by building regulations; the quality of stay is often higher due to different types of use, and there are no parts of cities where it is deserted at certain times. Mixed-use projects are positioned as essential for compact, resource-efficient cities, ensuring alignment with ESG priorities and tenant diversification. Examples include Hudson Yards in New York, where retail, residential, and office spaces are integrated, or Frankfurt's Project Omnitower (Figure 8), a prime example of combining office, residential, and leisure spaces within a single urban area (E1, E4, E6, E7, E8 E14, E16, E17, E18).

Figure 8: Mixed-Use Project Example: Omnitower (ALLPLAN, 2017)

Advantages for Risk Minimization and Flexibility

Mixed-use developments were recognized for spreading risk across various usage types and tenants, enhancing investor appeal, and aligning with environmental goals. Efficiency can be achieved by having a diverse mix of tenants, and their flexibility allows for adaptation to changing tenant demands (E1, E3, E12, E13, E17).

Challenges and Hurdles

Large-scale mixed-use projects face challenges such as real-property divisions and technical complexities, which require sophisticated management. Regulatory frameworks significantly influence the feasibility of mixed-use developments, intensifying the need for adaptability in planning. In many locations, zoning laws and permissions are challenging to change to implement mixed-use projects, and it takes a lot of time. There was also skepticism about locations such as the financial district in New York, as these places have been characterized by their type of use for years, and a change of use would face challenges (E7, E8, E10, E11, E13, E18).

4.2.7 Additional Feedback

Fund Strategy Adjustments

Adjustments in fund strategies reflect a preference for diversified investments and smaller, more manageable assets to ensure adaptability and mitigate risk (E1, E4, E6, E12).

Market Cleansing and Opportunities

The ongoing market restructuring, driven by insolvencies, is perceived as a chance for strategic acquisitions by better-capitalized investors (E1, E2, E4, E6).

Impact on Investor Strategies

Remote work practices have led to growing office vacancies, presenting challenges and opportunities for asset repositioning and lease renegotiations. Successful repositioning strategies have included flexible lease agreements to attract tenants, investing in modernizing spaces or using time to eliminate unprofitable projects (E1, E3, E15).

Changes Since Recent Crises

Experts compared the current economic disruptions to the 2009 financial crisis, highlighting interconnected challenges stemming from interest rate shifts and pandemic impacts (E1, E4, E9, E14, E17, E18).

Strategic Realignment and Active Management

Proactive asset management and strategic realignment are imperative to navigate market uncertainties and sustain long-term value (E3, E6, E17).

5 Discussion

5.1 Restating the Research Aim and Context

This chapter triangulates and integrates insights from the literature review, expert interviews, and survey into a conceptual framework, moving beyond a mere summary to reveal how these factors interact and shape strategic decision-making in CRE.

This study fills the research gaps of insufficient empirical evidence comparing the adaptability and investment resilience of mixed-use developments with single-use office properties. While mixed-use developments were increasingly viewed as a solution to these challenges and problems, their risk profiles, economic advantages, and long-term viability remained underexplored in existing literature and practice before this study.

5.2 From Empirical Findings to a Conceptual Matrix

The findings revealed a range of drivers influencing CRE trends and, therefore, investment decisions. Immediate shifts like remote work decrease office demand and the need for flexible configurations, along with broader structural elements such as changing regulatory frameworks, rising interest rates, and sustainability standards driven by ESG. A conceptual framework organized by these trends and drivers and how they interoperate is presented to further understand CRE's future and derive real-life implications (Figure 9).

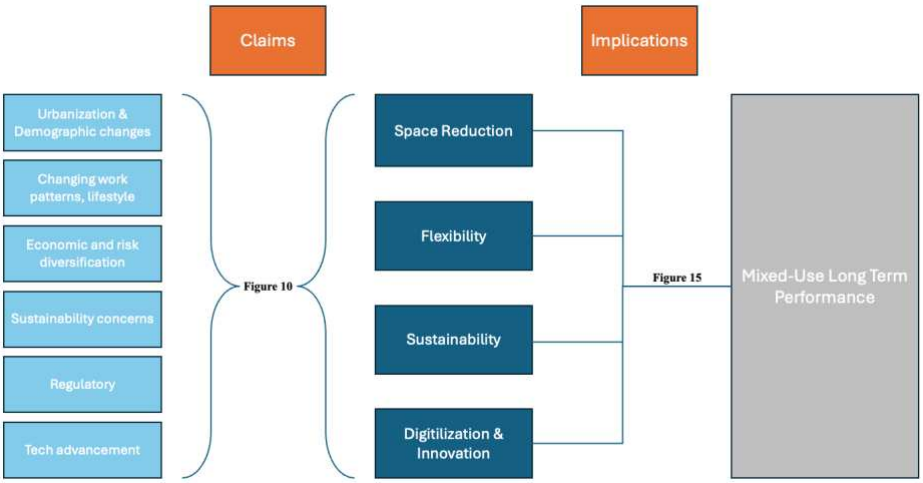

Figure 9: Conceptual Framework

Figure 10 presents a conceptual matrix that maps the Expert opinions concerning the relevance and impact of key drivers across four thematic categories to visualize relationships. The horizontal left-to-right plane shows the future trends in CRE, as introduced in 2.3. Along the vertical axis, drivers are labeled (2.5). The matrix highlights positive (green) and negative (red) Expert perspectives, showing which factors seem to support and which do not support the four trends in CRE. For example, sustainability concerns are predominantly viewed as a positive driver for the trends such as Space Reduction and Digitization & Innovation, while being perceived as a negative factor for Flexibility, reflecting the nuanced interplay between environmental demands and adaptability in commercial real estate strategies. This approach provides a structured overview of how diverse drivers influence future trends in CRE. This analysis focused on the areas marked in red, where conflicts or negative perceptions arise, to explore the underlying reasons for these disagreements and tensions rather than simply aligning the green areas of consensus with existing literature and expert opinions.

Figure 10: Conceptual Matrix: Trends and Drivers

5.3 Triangulation and Deriving Key Claims

While mixed-use developments were widely recognized for their superior benefits, such as promoting space reduction and flexibility and enabling economic and risk diversification, a closer analysis revealed specific conflicts that need to be addressed to unlock their full potential. These challenges were particularly evident in the red conflict areas, where differing perspectives and practical constraints arise.

5.3.1 Space Reduction

Mixed-use developments are increasingly favored by urban planners, project developers, and tenants because they integrate residential, retail, and leisure spaces within a single project, aligning with expert views (E1, E6, E10, E17, E16). Survey data indicated that 65% of respondents preferred working in these multifunctional environments, reflecting their resilience during sector-specific downturns and adaptability in densely populated, interconnected cities (Figure 11). This adaptability has proven especially relevant as the COVID-19 pandemic accelerated remote and hybrid work. Companies have reduced their office footprints by up to 50% (Pfnür & Wagner, 2020; E5), leading tenants to hesitate in signing long-term leases. Experts highlighted how mixed-use developments accommodate the new normal, with 78% of survey respondents confirming their suitability for flexible working models (E6, E9, E17).

Many firms channel savings from reduced office space toward prime locations. The so-called "flight to quality" (Glickman, 2013) underlines how location remains paramount (E1, E5, E6). At the same time, the sustained growth of e-commerce, driving demand for logistics spaces (JLL, 2024), reinforces the importance of incorporating last-mile delivery solutions (E1, E6, E17, E18) and offering diverse retail options to meet changing consumer preferences. Sustainability further shapes these projects: retrofitting buildings lowers lifecycle emissions, boosts longevity (Langston et al., 2008), and aligns with emerging regulations, as stressed by experts (E2, E10). Regulatory challenges persist, yet balanced zoning laws promote urban densification and streamline financing (E2, E8, E15, E18). IoT and data analytics advances also

support flexibility and efficiency (E2, E7, E9), encouraging developers to invest in smart infrastructure.

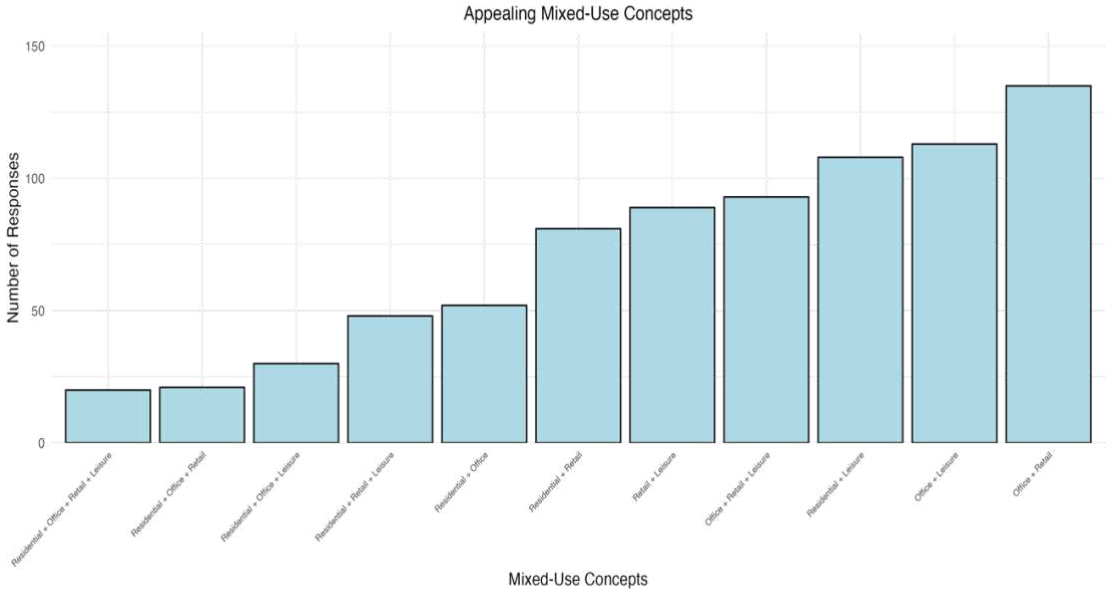

Figure 11: Appealing of Mix-Use Concepts

Overall, the trend of space reduction signaled the transformative potential of mixed-use concepts, which mitigate sector-specific risks through diverse income streams. These projects can adapt to changing demographics, sustainability standards, and regulatory environments, and they are supported by expert insights, survey data, and academic research. Thus, they stand as robust solutions in an increasingly dynamic CRE landscape, offering stakeholders a future-ready investment strategy.

5.3.2 Flexibility

Flexibility has become a defining element of CRE, reflecting rapid urbanization, demographic shifts, and changing work patterns. Experts noted that such projects enhance community engagement and urban vitality, reducing car dependency and lowering carbon emissions (E16, E18). These developments align with sustainability goals by integrating residential, commercial, and recreational functions and responding to emerging demands for walkable neighborhoods.

The rise of remote work and changing lifestyles further highlighted the need for adaptable real estate. Drawing on Dynamic Capabilities (Teece, 2007; Barreto), Experts (E8, E9, E14, E16) stressed proactive asset management, regularly assessing tenant needs and repositioning spaces as critical factors in maintaining competitive advantages. Survey data supported this view, showing that diverse user groups appreciate the flexibility offered by these integrated developments.

Economic feasibility and risk diversification are equally important. Mixed-use formats reduce sector-specific fluctuations and provide stability during financing uncertainties. However, Experts (E1, E3) noted that traditional lending often undervalues flexible designs. Literature (Geraedts, 2016) discussed profitability constraints, highlighting a need for valuation models and financing mechanisms to ensure long-term resilience. Collaborative financing methods among developers, investors, and lenders can address these gaps, ensuring that flexible, community-oriented projects thrive.

Technological innovation plays a growing role in enhancing flexibility. Digital twins, automation, and IoT-based systems streamline building operations and allow agile space reconfiguration (E2, E9, E17). Experts (E7, E8) explained that technology improves operational efficiency and supports dynamic realignment to changing tenant needs. As CRE continues to adapt to faster-paced changes, a collaborative effort among all stakeholders is essential to harness the full potential of flexible design and maintain competitiveness in an increasingly dynamic market.

Despite the advantages of flexibility, mixed-use developments face significant challenges, including operational complexity and residential design issues. Managing multiple property types within a single project requires specialized expertise and coordination, which can deter developers and investors (Grant, 2002). Survey data showed that only 26% of respondents preferred living in mixed-use residences, citing concerns about noise, privacy, and overcrowded shared facilities (Figure 12). Thoughtful design solutions, such as soundproofing and efficient allocation of shared spaces, can address these issues (E5, E17).

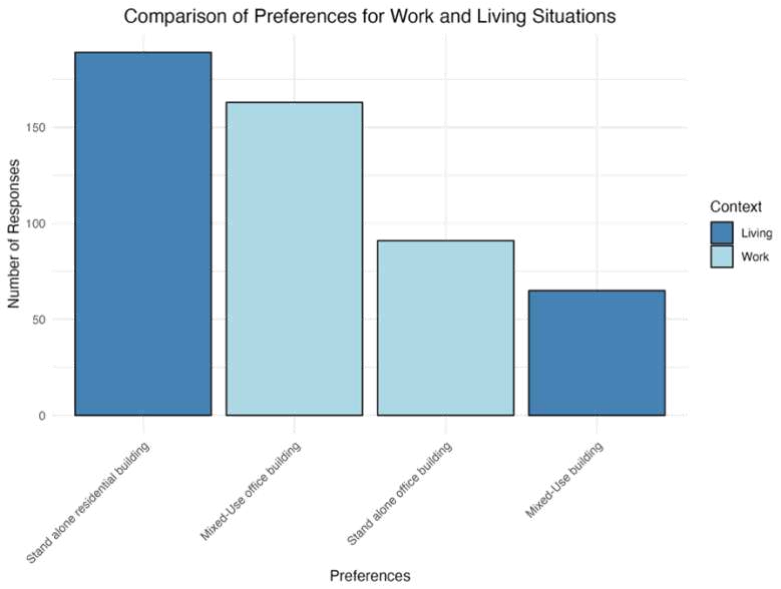

Figure 12: Survey Preference for Work & Living

Claim 1: Sustainability and Flexibility are opposed.

Sustainability and flexibility are frequently perceived as conflicting within the CRE sector, given that sustainable practices often involve prescriptive building standards, higher upfront costs, and more stringent design requirements. These demands appear to constrain the capacity of real estate developers. Nevertheless, the evidence suggested a more nuanced relationship in which sustainability can enhance long-term flexibility rather than diminish it. It was shown that sustainability certifications, including LEED and DGNB, have become essential market benchmarks for environmental responsibility to increasingly environmentally conscious tenants and investors (E1, E9, E10). Projects without certifications will cause problems in the long term and thus limit flexibility (E2, E6, E10, E11, E13, E16).

Survey data indicated that approximately 63% of respondents were willing to pay a premium for green features, underscoring the competitive advantage sustainable projects can command (Figure 13).

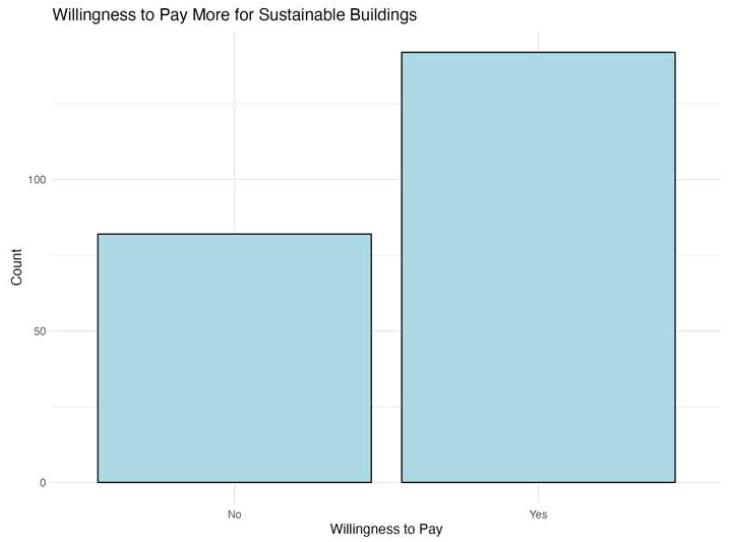

Figure 13: Willingness to Pay for Sustainability

Although not all tenants can absorb these additional costs, and rising construction expenses can deter some stakeholders, overlooking sustainability altogether risks rendering assets uncompetitive, eventually necessitating costlier retrofits and upgrades (E1, E9).

Similarly, sustainability's growing prominence is driven by regulatory imperatives, tenant preferences, and global calls for climate action. Compliance with higher environmental standards is becoming increasingly central to property marketability, and inaction threatens to render specific properties obsolete. While Experts such as E6 observed that many market participants aimed solely to meet minimum regulatory thresholds, others (E10, E13, E18) pointed out that high-end clients will exceed legal obligations to cultivate an image of superior environmental stewardship. In these cases, sustainability functions not as a mere legal requirement but as an avenue for reputation-building, reinforcing the property's long-term adaptability and resilience. Additionally, evidence from the literature (Eichholtz et al., 2010; Miller et al., 2008) suggested that sustainability's profitability constraints can be mitigated through innovative financing solutions, including green leases, cost-sharing mechanisms, and public incentives that support greener development. These strategies allow market participants to distribute the initial burden of sustainable design more equitably and help reconcile financial goals with environmental considerations.

By concentrating residential, commercial, and leisure functions in one development, mixed-use projects can reduce carbon emissions through more efficient land use and decreased transportation needs while also enabling multiple streams of revenue and diversified tenant mixes. Over time, these designs can be repurposed or adapted more fluidly as demand for certain types of space waxes and wanes. Hence, while the upfront implementation of sustainability might constrain immediate design options or require careful allocation of resources, long-term outcomes reveal sustainability to be an effective driver of adaptability. Buildings with sustainable credentials are better positioned to comply with future regulatory shifts and continue to attract environmentally conscious tenants. They also have lower operational costs over their lifecycle, particularly through decreased energy consumption and associated savings, which can bolster a property's net operating income and overall market resilience. Although sustainability standards often support broader regulatory aims, most tenants and investors appeared primarily motivated to fulfill only the minimum sustainability requirements prescribed by law (E6). By aiming for baseline legal compliance, they potentially limit the incorporation of advanced eco-friendly features that might reduce environmental impact and position buildings more favorably in future regulatory contexts.

In conclusion, sustainability and flexibility do not have to be fundamentally opposed. Rather, sustainability can nurture flexibility with well-thought-out solutions. Although economic barriers persist, especially in financing and premium cost recovery, sustainable projects can meet present expectations and protect future interests.

Claim 2: Regulatory requirements hinder flexibility.

Regulatory requirements often pose flexibility challenges, particularly when zoning laws, building regulations, and other legal mandates impose strict limits on property development, use, or repurposing. According to Experts (E4, E9, E13), these inflexible frameworks can stifle innovation and hinder efforts to adapt the function or design of a building. For example, buildings originally designed for office use may encounter bureaucratic hurdles when owners attempt to convert them into residential spaces, limiting property owners' ability to respond promptly to shifting demand for residential or office spaces.

Mixed-use projects, which integrate residential, commercial, and recreational functions at a single site, are subject to many regulations that can lead to project failures. For instance,

ensuring soundproofing in communal areas and providing separate entrances for different tenant groups allows developers to comply with noise and safety regulations while meeting the diverse needs of residents within a single space. However, this requires careful architectural and design planning to minimize friction (E10, E17). Proactive design decisions thus become critical tools for overcoming regulatory obstacles and maintaining a degree of flexibility within the framework of legal obligations (E2).

While regulatory measures often challenge flexibility in terms of cost and design constraints, these requirements can be navigated. Ultimately, the tension between regulatory demands and flexibility highlights the need for creative, forward-thinking approaches to design, planning, and development. This involves mitigating negative impacts of restrictive rules and allowing new opportunities for adaptive, community-oriented building strategies to thrive.

5.3.3 Sustainability and Environmental Considerations

As demographics change and people increasingly move towards urban areas, driven by the desire for proximity to employment, social opportunities, and cultural amenities, developers and municipal planners face a decrease in the overall number of urban residents and a shift in preferences (E2, E8, E10, E18). This trend is further reinforced by evolving work habits and lifestyle choices, reflected in the rising demand for electric vehicle (EV) charging stations and the growing acceptance of remote or hybrid work arrangements (E1, E2, E10). Office buildings must now incorporate features facilitating sustainable transport and flexible workspace allocations, contributing to broader carbon-reduction and social objectives.

Sustainability has assumed a central role shaping urban developments. Companies are increasingly required to measure and disclose carbon emissions and must lease office spaces that advance or align with their environmental performance goals (E2, E3, E10). Survey data further indicated a growing segment of consumers and tenants with more eco-conscious behaviors and expectations for living and working environments to reflect their values (Figure 14).

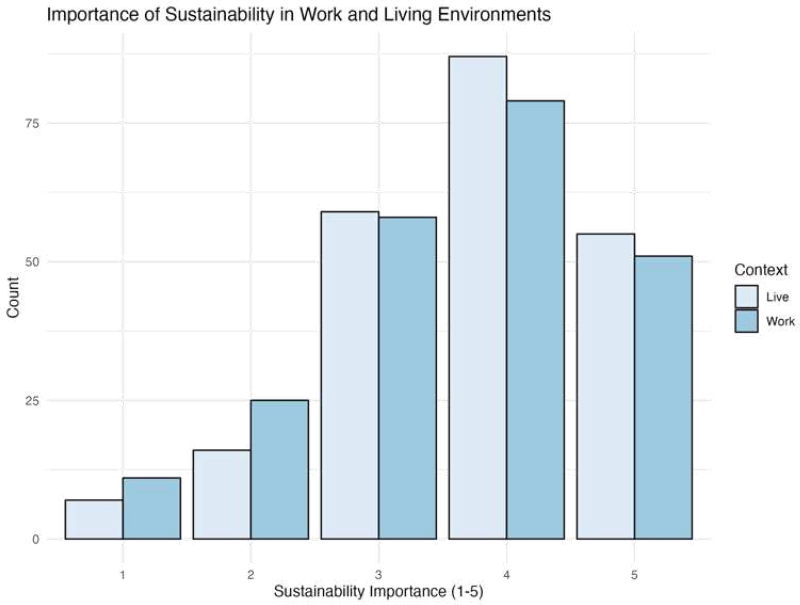

Figure 14: Sustainability Importance Office & Residential

Green certifications, energy-efficient systems, and locally sourced materials can enhance building performance and stakeholder perception. Meanwhile, technological innovations have emerged as powerful enablers of sustainable practices. Smart-building systems, for example, allow for comprehensive monitoring and adjustment of heating, cooling, and energy consumption patterns, revealing inefficiencies that can be addressed (E2, E10, E17). Concurrently, advancements in building materials, supported by methods like digital twin technology, simplify tracking of embedded carbon and long-term resource consumption. Collectively, these factors underscore how demographics, shifting lifestyles, and technological progress intersect with sustainability, driving ongoing transformation in the design, use, and management of built environments.

Claim 3: Sustainability is not economically sufficient.

Economic and regulatory challenges continue to hinder the broader implementation of sustainable practices in commercial real estate (CRE). Regulatory hurdles frequently delay project timelines and complicate execution (E7, E8, E13, E14, E18). Targeted strategies must align stakeholder interests and streamline approval processes. Additionally, financial barriers persist as traditional lenders remain skeptical of unconventional structures and diversified asset classes typical of mixed-use developments (E3, E4, E6, E8, E13). Currently, truly sustainable

buildings are not common as conventional options are still cheaper (E4, E12, E13). Addressing these challenges requires innovative financing solutions and collaborative efforts among stakeholders to ensure sustainable designs are economically feasible while meeting regulatory requirements.

Claim 4: Regulatory requirements are the main drivers of sustainability.
Mixed-use projects are well-positioned to meet the growing demands for sustainability and environmentally conscious urban planning. However, they are not yet an everyday reality. Many regulations restrict action, resulting in planning uncertainty. Increasing sustainability requirements can help to bridge the gap between regulatory expectations and building sustainably so sustainability targets are met without overburdening developers and investors (E7, E8, E13, E14, E18).

5.3.4 Digitalization & Innovation

Digitalization and innovation are increasingly reshaping the built environment as urbanization and demographic changes converge to generate new demands on CRE. Younger generations, often "digital natives," expect integrated technology in buildings, ranging from remote facility management to app-based room bookings, driving greater efficiency and user satisfaction. Tech-savvy tenants prioritize smart monitoring systems, online tenant services, and sustainable energy use, compelling real estate stakeholders to adopt more adaptive and advanced digital solutions (Tao et al., 2019, E1, E2, E6, E9, E14, E16).

Claim 5: Digitalization seems promising, but the economic advantage is difficult to realize.
Digitalization holds considerable promise for enhancing efficiency, sustainability, and tenant satisfaction in CRE, yet realizing its potential economic benefits remains elusive. Survey data underscored strong demand among tenants for digital solutions; 88% of respondents identified smart heating and cooling systems as highly important (Oesterreich & Teuteberg, 2016). This suggests that market pressures increasingly favor technological innovation, positioning early adopters as differentiators who gain competitive advantages (E2, E7, E17). However, industry-wide adoption is notably slow, reflecting persistent structural barriers that prevent digital solutions from being smoothly and profitably integrated into everyday operations.

One impediment is substantial upfront costs and expertise required to deploy advanced systems. Implementing Building Information Modeling (BIM), the Internet of Things, or digital twins involves investment in hardware, software, and staff training. Even among companies able to absorb these expenses, the complexity of interconnecting new technologies with existing building systems introduces additional hurdles. Experts (E3, E7, E18) noted that many existing buildings lack the wiring, sensors, or data analytics platforms necessary for seamless IoT functionality, making retrofitting time-intensive and costly.

Despite constraints, the transformative impact of digitalization is evident in pilot initiatives. Digital twins, for instance, allow real-time monitoring of energy usage and material performance, providing actionable insights that reduce costs and improve environmental performance (Boje et al., 2020). While not yet standard practice, these pilot projects exemplify how forward-thinking CRE stakeholders can leverage technology to enhance sustainability goals, energy efficiency, and tenant satisfaction (E3, E8, E18). Nonetheless, not every aspect of building operations benefits equally from full-scale digitization. Some Experts argued for a more targeted, "low-tech" approach, focusing resources on crucial functionalities such as energy usage monitoring and predictive maintenance, rather than exhaustive system overhauls (E3, E6, E9, E18).

In sum, there was broad agreement on the transformative potential of digital technologies to modernize the industry, yet actualizing these advantages involves reconciling high upfront costs, addressing integration complexities, and maintaining consistent stakeholder buy-in. As costs gradually decline and technologies become more accessible, firms willing to invest in early adoption may reap considerable returns despite challenges in quantifying and securing immediate economic gains from digitalization.

5.4 Practical Implications for Stakeholders

By understanding the opportunities and conflict areas, the foregoing discussion unpacks underlying opportunities and impediments and assesses their implications for successful deployment in mixed-use developments (Figure 15).

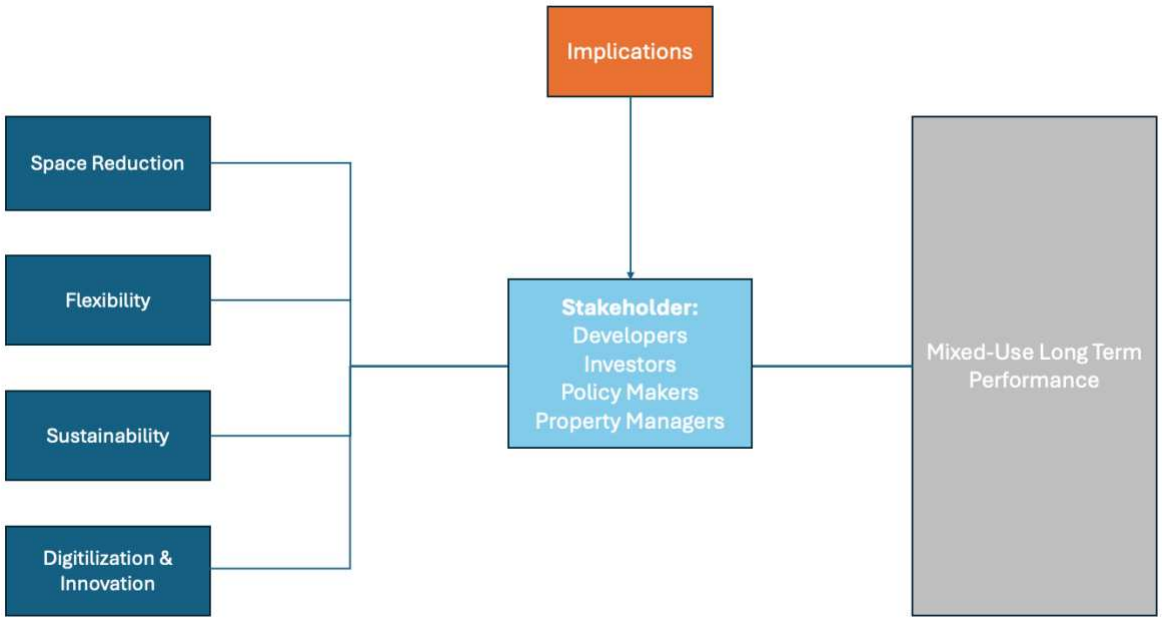

Figure 15: Key Implications

Theoretical Perspective

The need for adaptability aligns with Dynamic Capabilities, which stressed the need for firms to reconfigure resources and competencies in response to environmental volatility. During the COVID-19 pandemic, mixed-use developments demonstrated resilience against sector-specific risks, as evidenced by relatively stable performance compared to declines in occupancy experienced by single-use office properties. Survey findings and expert feedback reinforced the notion that mixed-use developments mitigate exposure to industry-specific disruptions by offering diversified tenant bases and multifunctional spaces.

Our findings also highlight the relationship between sustainability aspirations and economic viability. ESG considerations are being increasingly prioritized in CRE, yet cost challenges often hinder implementation. Developers must integrate sustainability principles into property designs while ensuring financial feasibility. This dual focus on environmental and economic objectives supports the arguments of van der Voordt (2004), who advocated flexible and sustainable design practices in commercial real estate. Mixed-use developments emerge as a viable solution, balancing competing demands and offering a pathway to long-term value creation.

Practical Perspective

For Developers

Developers face growing pressure to design properties that are both adaptable and sustainable. Modular layouts and retrofit-friendly designs are essential for addressing changing tenant needs and minimizing the risks of prolonged vacancies. Shared resources, such as garages and elevators, provide cost-effective solutions for enhancing sustainability while optimizing operational efficiency. However, adopting these practices must be supported by ROIs that demonstrate financial viability. As sustainability requirements, especially in Europe, continue to rise, developers must focus on high-impact areas such as energy optimization, heating systems, and reducing building emissions. Flexibility in design and operations, supported by advanced technologies, is critical for maintaining competitiveness in a dynamic market. The "flight to quality" trend underscores the importance of investing in high-quality, adaptable properties in prime locations. “Doing more, considering more parameters to be competitive is how to position yourself" (E3).

For Investors

Investors are encouraged to diversify portfolios by prioritizing mixed-use developments in their real estate risk budgets. These assets have shown resilience against market volatility and economic downturns. ESG considerations are no longer optional but a strategic imperative, aligning regulatory compliance with long-term value creation. Survey findings and literature emphasized that proactive investment strategies focusing on flexibility and sustainability can provide a competitive edge in the changing CRE landscape. Thinking about long-term value over short-term profits could be the right mindset for long-term success (E2).

For Policymakers

Zoning laws and regulations often pose significant barriers for developing mixed-use properties. Streamlining regulation is essential to enable innovation in urban planning and encourage adoption of sustainable practices. It is important to simplify regulations and reduce bureaucracy to achieve long-term planning security, which is particularly important for CRE. Policymakers can offer targeted incentives, such as tax benefits and financial support for

energy-efficient retrofitting. Such measures not only facilitate environmentally responsible projects but also enhance their economic viability (E8).

For Property Managers

Integrating digital infrastructure is crucial for optimizing operational efficiency and tenant satisfaction. Technologies such as IoT systems and digital twins enable property managers to enhance resource utilization, reduce operational costs, and improve tenant experiences. Bridging the gap between upfront cost and ROI requires strategic investments, stakeholder education, and evidence-based demonstrations of cost-effectiveness (E7). Property managers must focus on high-impact areas such as energy optimization and resource management to position themselves for long-term success. There is considerable potential in using smart solutions, especially for management-intense mixed-use projects (E17).

6 Conclusion

6.1 Summary of Key Insights

Our findings demonstrated that mixed-use developments, supported by flexible and sustainable design strategies, offer higher adaptability and resilience than single-use office properties. Six key drivers–urbanization and demographic shifts, changing work patterns, and economic and risk diversification—support a multifaceted model to bring about CRE resilience.

Mixed-use developments mitigate the vulnerabilities inherent in single-use office buildings by diversifying income streams, aligning with dynamic tenant demands, and leveraging a higher adaptive capacity. If done correctly, they can address market shifts through a combination of flexibility, strategic risk distribution, and technological innovation to meet future needs resulting in implications for its stakeholders.

6.2 Limitations

With 263 survey participants primarily from urban areas and younger demographics, the findings may not generalize well to other populations. The expert interviews, while offering depth, may have reflected biases from sector specificity like project developers and asset managers. Data collection occurred during a particular point of the CRE market cycle, affecting perceptions of office demand and mixed-use preferences.

The reliance on closed-ended survey questions may have overstated themes like sustainability while underrepresenting factors such as financial metrics. The focus on urban markets in Europe, especially Germany, narrows applicability to regions with different regulatory frameworks. Additionally, the research primarily addresses office-centric properties transitioning to mixed-use, limiting relevance to other asset classes like retail or industrial. Finally, given secular and cyclical changes in supply and demand within CRE, the findings' long-term relevance may not be conclusive.

6.3 Outlook on the Future of Mixed-Use Developments in CRE

Looking ahead, mixed-use developments do address the changing demands of urban environments by accommodating hybrid work patterns, sustainability goals, and diverse tenant needs. As urban environments evolve, future research should explore successful case studies to identify success pathways and best practices. Longitudinal studies tracking tenant satisfaction, energy performance, and financial returns would also validate and amplify our findings.

As digital transformation continues to reshape workplace dynamics, exploring its impact on planning and profitability in mixed-use settings is crucial. By encouraging collaboration among developers, policymakers, and investors, stakeholders can drive innovation and shape cities of the future.

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Appendices

Use of AI

This thesis has been prepared using artificial intelligence tools, such as ChatGPT, Perplexity, and Teams, to support research, content structuring, and editing. These tools were utilized in a manner consistent with academic integrity, serving as aids for improving clarity, refining ideas, and ensuring linguistic accuracy. AI was used to accelerate this process, especially for recording and transcribing the expert interviews.

All intellectual and analytical contributions, as well as the critical evaluation of sources, remain the sole responsibility of the author. The use of AI does not replace the author's judgment or scholarly effort. All referenced materials and arguments are cited correctly, following academic standards.

Interview Guides

These questions created an individualized interview guide focused on each expert's niche, leaving room for different topics and timeslots.

General Questions:

1. How do you assess the current trend toward mixed-use developments in the commercial real estate market?

2. What are the main factors that, in your opinion, drive the attractiveness of mixed-use projects compared to pure office properties?

3. To what extent has the COVID-19 pandemic changed the demand for traditional office spaces, and how does this influence investment strategies in the real estate sector?

Economic and Social Advantages:

4. What economic benefits do mixed-use developments offer investors and the community compared to pure office properties?

5. How do mixed-use projects contribute to the revitalization of urban areas, and what social advantages result from this?

6. How have mixed-use developments helped create more vibrant and sustainable neighborhoods?

Diversified Tenant Base and Risk Diversification:

7. How does a diversified tenant structure influence real estate investment risk and return profile of real estate investments?

8. In what ways do mixed-use developments contribute to risk minimization during market fluctuations in specific sectors like retail or office?

9. What role does the diversification of income sources in mixed-use projects play in the long-term stability of investments?

Impact of Remote Work and Office Vacancies:

10. What impact has the rise of remote work had on the demand for traditional office spaces?

11. How are financial institutions invested in pure office properties responding to increasing vacancy rates?

12. Do you see mixed-use developments as an effective solution for repurposing vacant office buildings?

Sustainability and Environmental Considerations:

13. How important are sustainability and environmental considerations in the development and investment of commercial real estate today?

14. In what ways do mixed-use developments support sustainable urban planning compared to pure office properties?

15. Can mixed-use projects contribute to reducing the carbon footprint in urban areas? If so, how?

Flexibility and Adaptability:

16. How important is the flexibility of real estate in terms of design and usage in the current market environment?

17. To what extent do mixed-use developments allow greater adaptability to changing market conditions and tenant needs?

18. What role does flexibility play in the long-term value appreciation of properties?

Technological Advances and Digitalization:

19. How do technological developments like BIM, IoT, and digital twins influence the attractiveness of mixed-use projects?

20. What advantages does digitalization offer in managing complex mixed-use properties?

21. Are mixed-use developments better positioned to benefit from new technologies than pure office properties? Why or why not?

Regulatory and Policy Factors:

22. What regulatory challenges or incentives exist in the development of mixed-use properties compared to pure office buildings?

23. How do urban planning policies and zoning laws affect the feasibility of mixed-use projects?
24. What role does the government play in promoting or hindering mixed-use developments?

Future Perspectives and Investment Strategies:

25. How do you see the trend towards mixed-use projects evolving in the next ten years?

26. What strategies should investors adopt to capitalize on the shift towards mixed-use developments?

27. Are there specific market indicators that point to a preference for investing in mixed-use projects over pure office properties?

Dynamic Capabilities and Organizational Adaptation:

28. How important are organizational agility and dynamic capabilities for companies to respond to current changes in the real estate market?

29. Can you provide examples of how real estate firms adjust their strategies and portfolios to consider trends like remote work and sustainability?

Case Studies and Examples:

30. Can you name successful examples of mixed-use developments that have outperformed pure office properties in their performance? What factors contributed to their success?

31. What lessons can be learned from less successful mixed-use projects?

Challenges and Risks:

32. What are the main challenges or risks in developing or investing in mixed-use properties?

33. How can these challenges be mitigated through planning, design, or management strategies?

Concluding Questions:

34. What is the most compelling reason for investors to prefer mixed-use developments over pure office properties?

35. How do you see the role of mixed-use projects in solving current problems in the commercial real estate sector?

Overview Expert Interviews

E1(Transaction Manager)
The interview clearly shows the current trends and developments in the commercial real estate sector. It becomes clear that mixed-use developments are gaining importance as they offer investors better risk diversification and flexibility. Sustainability is essential and has become standard, but measures beyond the basic requirements are only implemented if they are economically viable. Digitalization and smart building technologies are not yet mandatory, but they are gaining importance. The logistics real estate market is proving to be crisis-resistant and continues to grow. Retail trends are also changing, focusing more on gastronomy and experience. The current crisis is having a more significant impact on the real estate market than that of 2009, leading to substantial adjustments in the strategies of market participants.

E2 (Project Developer)
The interview highlights the current challenges and trends in the commercial real estate sector. The sharp rise in interest rates and construction costs puts project developers and investors under pressure. Sustainability requirements, driven by EU regulations, have become indispensable, but investors are not prepared to pay a premium for this. Green properties are still tradable, while non-sustainable properties must expect discounts (brown discount). Technological trends such as IoT and smart metering are becoming increasingly important, especially for monitoring and optimizing energy consumption. BIM and digital twins are rarely used, as the benefits do not justify the high costs and effort involved. The adaptability of properties and their ability to be used by third parties are decisive factors for their attractiveness to investors. Overall, the market is changing and offers both challenges and opportunities.

E3 (Head of Sales)
The interview illustrates the current challenges and trends in the commercial real estate sector, particularly in the office market. Demand for office space is declining, and companies are reluctant to sign long-term leases. Working from home and flexible working models are reducing the need for space, while at the same time, the demands on the flexibility and sustainability of buildings are increasing. Sustainability is a key issue, but investors and tenants are unwilling to pay a premium for sustainable features. Project developers are nevertheless investing in sustainable certifications and planning to remain competitive in the long term. Mixed-use projects offer opportunities but are associated with technical and planning challenges, particularly in flexibility and the different requirements of the various types of use. Technological trends such as e-mobility are being considered, but the willingness to pay is limited. Overall, we are seeing a market in transition in which companies need to realign themselves to meet future requirements strategically. Demographic changes and the changing world of work will have a lasting impact on the real estate sector.

E4 (Director Office Agency)
The interview explores trends and dynamics in the real estate sector, focusing on mixed-use versus single-use commercial properties and their response to sustainability, digitalization, flexibility, and remote work. It highlights the stability of the Frankfurt office market, shaped by institutional investors, despite fluctuations during the pandemic. Key trends include the rising importance of ESG criteria, albeit more for owners than tenants, with challenges in implementing them for existing buildings. Repositioning and refurbishments emerge as pivotal

strategies due to constraints on new developments, while the preference for central locations and long-term leases persists. Mixed-use projects and adaptive reuse of vacant properties gain traction, alongside a growing emphasis on technological innovations like energy-efficient building systems. Ultimately, the market remains driven by core factors like price-performance and location, with short-lived trends, such as ESG, offering financial opportunities but limited long-term impact.

E5 (Real Estate Agent)
The interview illustrates the significant commercial real estate sector changes over the last five years. There is a clear trend towards more sustainability, flexibility, and quality. Companies are reducing office space but investing in higher quality, sustainable real estate to attract and retain employees. Mixed-use developments are gaining in importance as they meet the needs of the younger generation for workplaces in vibrant environments with good infrastructure. Technological innovations such as booking systems, shared desks and digital twins are increasingly becoming standard. Sustainability certifications are essential for investors and are also increasingly valued by tenants, especially when they lead to cost savings. Project developers like Matthias' company are positioning themselves strategically by exemplifying these trends and implementing innovative concepts. The challenges of the current market require adaptability and long-term thinking. Demographic changes and generational change have a significant influence on the design of workspaces and the strategic orientation of companies.

E6 (Director Letting & Asset Management)
The interview illustrates the current challenges in the commercial real estate sector, particularly in Frankfurt. While the central city center locations remain stable and can achieve high rents, the situation of the B and C locations is much more tense. Companies drastically reduce their office space due to working from home and economic uncertainty. Asset managers and owners face the challenge of adapting their strategies to avoid vacancies. ESG requirements are increasingly important, but tenants and investors are unwilling to bear the additional costs. Mixed-use developments are seen as opportunities to diversify risk but face financial and construction barriers. There is an urgent need for creative and flexible solutions, including alternative use concepts such as co-working models. The market correction is underway, but many sellers are not yet prepared to accept the necessary price reductions. Demographic changes and generational shifts are leading to changes in work preferences and influencing companies' choice of location. Overall, the interview shows that the market is facing considerable upheaval and that adaptability and innovation are required to master future challenges.

E7 (Architect)
The interview provides a comprehensive insight into current trends, strategies, and challenges in the commercial real estate sector from an architectural perspective. Key topics include the increased importance of flexibility, mixed-use, and sustainability in building design, particularly in light of the changes brought about by the COVID-19 pandemic. It is important to plan buildings so they can react flexibly to future changes in use. The mixed-use buildings contribute to the revitalization of urban districts and offer investors risk minimization through diversification of uses. Challenges include increased management costs for mixed-use properties and regulatory hurdles that make flexible use more difficult. Jonathan also criticizes

the phenomenon of greenwashing and advocates genuine sustainability through the longevity and quality of buildings.
Technological advances such as BIM offer great potential for more efficient planning processes and more sustainable buildings. However, there is a discrepancy between those who bear the initial costs and those who benefit long-term. There is a future in increased mixed-use and flexibility in building planning, supported by technological innovations and an adaptation of the regulatory framework.

E8 (Managing Partner-Architecture)
The interview provides an in-depth insight into current trends and challenges in the commercial real estate sector from the perspective of an experienced architect. Key topics include the integration of sustainability and technologization in all phases of planning and construction, the importance of mixed-use projects for the future of urban development, and the need to adapt regulations and legal requirements to enable flexibility and sustainable subsequent use. Increasing technologization, mainly through BIM and AI, is an opportunity to make planning processes more efficient and precise. At the same time, Christopher emphasizes that the focus should always be on the end product, the building, and its functionality. Regulatory obstacles are a significant challenge that makes developing vibrant and sustainable neighborhoods more difficult. There is an urgent need to adjust the legal requirements to promote flexibility, mixed-use, and sustainable reuse of existing buildings.

E9 (Managing Partner-Office Planning)
The interview offers deep insights into current trends and challenges in office planning and the design of working environments. The pandemic has catalyzed change, particularly regarding flexibility, mobile working, and the importance of collaborative spaces. Corporate culture and informal interaction are essential to a company's success, and office design is crucial in revitalizing these aspects. However, accepting new working models depends heavily on employees and requires intensive persuasion, especially among different generations. Attractive and well-designed workspaces are becoming increasingly important for employee retention and attracting new talent. Mixed-use concepts and integrating different uses in buildings contribute to revitalizing urban districts and increasing the attractiveness of locations. Sustainability and technological innovations are important topics but are still implemented to varying degrees. Bold decisions and holistic thinking are needed to master future challenges.

E10 (Sustainability Specialist)
The interview provides insights into current commercial real estate trends and strategies from a sustainability professional working in a global real estate services company. Key themes include the integration of sustainability and decarbonization efforts internally and in services provided to clients, the regional differences in the adoption of sustainability practices, and the challenges associated with implementing sustainable solutions. Flexibility and space reduction have become significant trends post-COVID, with companies consolidating office spaces and redesigning work environments to be more dynamic and suitable for hybrid work models. Technological advancements are crucial in streamlining energy retrofits and offering innovative renewable energy solutions to clients. The company positions itself as a strategic advisor, aiming to stay ahead of trends and help clients navigate the complexities of sustainability and technological advancements in the real estate sector. Biodiversity is identified as an emerging focus area, highlighting the evolving nature of sustainability considerations in commercial real estate.

E11 (Real Estate Analyst)
The interview provides a comprehensive view of current trends, strategies, and challenges in the commercial real estate sector from the perspective of a U.S.-based opportunistic investment firm. Key focus areas include strategic partnerships with developers, sector-specific investments, and adaptation of market dynamics. The industrial real estate sector experienced significant growth during the COVID-19 pandemic due to shifts in consumer behavior and supply chain reconfigurations. While the market is normalizing, targeted investments in infill locations with strong fundamentals remain attractive. The firm emphasizes project design and operations flexibility to meet specific market demands, enhance lease-up rates, and future-proof assets. Sustainability and ESG considerations are becoming increasingly important due to investor pressures, though implementation faces challenges due to misaligned incentives and short-term investment horizons. Technological advancements are being leveraged to improve operational efficiency, energy management, and tenant services across various asset classes. Differences between U.S. and European markets highlight varying levels of ESG adoption and work culture, affecting investment strategies and asset management. The interview underscores the importance of adaptability, strategic focus, and the gradual integration of sustainability and technology in navigating the evolving commercial real estate landscape.

E12 (Managing Partner – Private Equity in Real Estate)
The interview provides a comprehensive overview of current trends and strategies in commercial real estate investment, particularly in New York City. The firm E12 works at focuses on smaller residential and mixed-use properties in well-located urban areas, leveraging data analytics to identify investment opportunities. Key themes include overbuilding malls and office spaces in the U.S., leading to a surplus that necessitates repurposing and redevelopment. The impact of COVID-19 has accelerated the shift towards mixed-use developments that combine residential, retail, office, and experiential spaces, catering to changing consumer demands. The importance of embracing new urbanism principles, promoting walkable communities, and reducing reliance on automobiles. Integrating different uses within a single development can diversify risk and create more vibrant, sustainable urban environments. Challenges such as zoning restrictions, long commute times, and the need for policy changes are also highlighted. The future outlook suggests a continued focus on housing, technological integration in investment strategies, and the reimagining of urban spaces to meet the needs of modern society.

E13 (Head of Specialty Asset Management)
The interview provides valuable insights into commercial real estate's current state and future trends, particularly in the U.S. market. Key themes include the impact of the pandemic on remote work and office space demand, the anticipated return to in-person work, and the resulting implications for office occupancy and rents. It highlights the persistent preference for high-quality, Class A buildings, especially during market downturns, and notes the challenges older, lower-class office buildings face. Converting these buildings into residential spaces is often economically unfeasible due to zoning regulations and structural modifications required. From an investment perspective, mixed-use developments that combine office and residential spaces may not be attractive due to perceived risks and management complexities. Ground floor retail remains a preferred mixed-use component due to its high rental potential. Sustainability considerations vary among investors, with some prioritizing environmental factors and certifications like LEED. However, unlike in Europe, such certifications are not mandatory in the U.S. market. The future of commercial real estate is closely tied to economic growth and

the demand for office space. He anticipates a gradual return to in-office work, driven by the need for collaboration and mentorship, which could revitalize the office market.

E14 (Chief Economist Commercial Real Estate)
The interview provides valuable insights into the current trends and challenges in the commercial real estate sector, particularly in the context of the COVID-19 pandemic. It highlights the widespread impact across all major sectors, including office, retail, industrial, and multi-family properties. Companies are adapting to changing work patterns by subleasing unused spaces and prioritizing prime locations to attract top talent. Mixed-use developments are met with skepticism, as some people prefer to separate work and life. However, urban development continues in key areas, with significant investments in renovation and new construction projects. Demographic shifts, such as an aging population and a younger workforce desiring urban living, influence market demand and real estate trends. Sustainability is seen as driven by convenience for younger generations, but environmental requirements have not drastically changed the industry. Workplace design is evolving under the influence of Gen Z and Millennials, pushing companies to adapt to new work preferences to remain attractive employers. Light sheds on the dynamics among major real estate firms, emphasizing their different strategies and market positions. The role of architects is underscored as crucial in shaping the future of building designs and adhering to evolving requirements.

E15 (Director Rental Management)
The interview explores mixed-use developments' current and future role in the real estate sector and compares them to single-use buildings. Key topics include flexibility, space reduction, sustainability, and technological advancements, which influence the demand and use of properties. With their ability to integrate various functions like residential, office, and biotech spaces, mixed-use concepts offer potential solutions to reduce vacancies and adapt to changing market trends. The risks associated with single-use office buildings, such as rising vacancy rates, could be mitigated through mixed-use strategies that provide greater adaptability. Challenges such as higher investment costs and compliance with ESG criteria are central, especially for refurbishing existing properties. Mixed-use developments are seen as a sustainable approach to meet increasing demands for quality, resilience to economic fluctuations, and market flexibility. However, they require strategic planning and long-term leases to ensure financial viability.

E16 (Structural Engineer)
The interview explores the current real estate market, highlighting an uncertain yet opportunity-rich environment, particularly for developers seeking to invest in undervalued projects during the downturn. Mixed-use developments are emphasized as a key strategy, integrating office, retail, residential, and leisure spaces to reduce vacancies and activate areas beyond traditional business hours. These developments demonstrate the potential to adapt to office space oversupply, though regulatory and technical challenges in some regions complicate their implementation. Sustainability is a central theme, with businesses prioritizing ESG compliance due to regulatory requirements and branding benefits, while private users show varied interest depending on personal circumstances. Technology, including Building Information Modeling (BIM) and digital twins, is identified as transformative for planning, operations, and enhancing building adaptability. Mixed-use developments are considered more resilient to crises due to their diversified use, balancing the volatility of office demand with the stability of residential needs. The real estate sector, however, often reacts to trends rather than proactively adapting,

with long planning cycles limiting flexibility. In the coming years, a rise in mixed-use projects is anticipated as urban centers transform to optimize space usage and avoid monofunctional layouts. Examples from existing developments showcase the potential to enhance urban quality of life and prevent "ghost town" effects after business hours. However, cultural and regulatory challenges may slow adoption in some markets compared to others.

E17 (Managing Partner –Workplace and Corporate Real Estate Consulting)
The interview examines the evolving commercial real estate market trends, focusing on sustainability, flexibility, space reduction, and technological advancements. These changes, accelerated by the rise of remote work, have permanently reduced office space demand. Challenges such as geopolitical crises, material shortages, and misaligned adaptation speeds among stakeholders further pressure the market. Companies prioritize core business investments, making it harder to justify spending on non-essential real estate projects. Tools and process analysis and optimization methods are increasingly used to refine space utilization and foster innovation. The shift toward quality over quantity in office spaces is evident, focusing on creating engaging environments to draw employees back to the office. Sustainability and ESG compliance are now standard requirements, while health and wellness in the workplace, such as movement-promoting designs, are becoming central themes. Technological solutions like BIM are helping streamline planning, though excessive reliance on high-tech systems can inflate operational costs. Simpler, low-tech approaches may offer a practical alternative. Mixed-use developments are highlighted as a key strategy for future-proofing the real estate market, balancing risks, and enabling flexibility. However, financing models must evolve to accommodate the complexities and dangers of such projects, ensuring they remain viable for investors and developers alike.

E18 (Managing Director – Architectural and Sustainable Design)
The interview explores key trends in the commercial real estate sector, focusing on the growing significance of sustainability, flexibility, and mixed-use developments. Sustainability, once viewed as a marketing tool, has become a regulatory and market-driven priority. However, strict regulations and outdated standards, such as those related to noise and fire safety, often obstruct innovation and resource efficiency. Developers remain cautious about deviating from traditional norms due to market acceptance uncertainties, which slows the adoption of innovative solutions. Examples of sustainable construction showcase the potential of hybrid building techniques, modular construction, and integrated energy solutions like photovoltaics. These methods combine material efficiency with energy optimization, prioritizing long-term usability and user satisfaction. Practical case studies illustrate how thoughtful planning and layout adjustments can significantly improve building functionality and market appeal without requiring excessive material use. Mixed-use developments are identified as a crucial strategy for creating dynamic, compact urban areas that reduce traffic and encourage social cohesion. These projects, however, demand regulatory flexibility to enable more adaptable planning and implementation. A holistic approach to sustainability—one that includes smart design, user-centered planning, teamwork, and market readiness—is essential. The future of real estate is expected to focus on mixed-use and compact city models, requiring collaboration across stakeholders to maximize their impact and potential.

Survey Questions

Number	Question	Question Type	Answer Option
1	Age?	Single Choice	<18
			18-24
			25-34
			35-44
			45-54
			55+
2	Gender	Single Choice	Male
			Female
			Prefer not to say
3	Residence	Single Choice	Urban
			Suburban
			Rural
4	Country	Open Question	
5	Household Size	Single Choice	1
			2
			3
			4
			>4
6	Highest Level of Education	Single Choice	No formal education
			High school diploma
			Associate degree
			Bachelor’s degree
			Master’s degree
			Doctorate
7	Professional Background	Single Choice	Student
			Employed
			Self-employed
			Unemployed
			Retired
			Other:
8	How many days a week <u>are you</u> in the home office?	Single Choice	0
			1
			2
			3
			4
			5
			Can't answer

Number	Question	Question Type	Answer Option
9	How many days a week would you like to be in the home office?	Single Choice	0
			1
			2
			3
			4
			5
			Can't answer
10	How would you like your office to be situated?	Single Choice	Stand alone Office Building
			Mixed-Use Office Building
11	How would you like your place of residence to be situated?	Single Choice	Stand alone Residential Building
			Mixed-Use Building
12	What do you think are the driving forces behind mixed use?	Open Question	
13	How likely are you to live or work in a mixed-use property in the future? *	Likert Scale	unlikely1 2 3 4 5 likely
14	If you are paying attention, please select 3	Single Choice	1,2,3
15	Would you prefer to live in a mixed-use building or a traditional residential building?	Single Choice	Mixed-use
			Traditional
			Not important for me
16	Which Mixed-Use concepts do you find appealing?	Multiple Choice	Residential + Office
			Residential + Retail
			Residential + Leisure
			Office + Retail
			Office + Leisure
			Retail + Leisure
			Residential + Office + Retail
			Residential + Office + Leisure
			Residential + Retail + Leisure
			Office + Retail + Leisure
			Residential + Office + Retail + Leisure

Number	Question	Question Type	Answer Option
17	What advantages do you see in mixed-use properties?	Multiple Choice	Convenience of having amenities nearby
			Reduced commuting time
			Enhanced community and social interaction
			Diverse environment with various services
			Increased property value
18	What concerns do you have regarding mixed-use properties?	Multiple Choice	Noise and crowding
			Privacy issues
			Higher cost of living or renting
			Security concerns
			Overcrowding of shared facilities
19	What amenities would you, as a resident, be willing to share with office tenants?	Multiple Choice	Entrance
			Rooftop Garden or Outdoor Terrace
			Elevators
			Shared Storage or Lockers
			Parcel Lockers or Delivery Hubs for Packages
			Bicycle Storage
			Parking Garage
			Gym/Fitness Center/ Pool
			Pet-Friendly Facilities (e.g., dog washing station)
			Restaurant or Café
			Childcare Center or Kids' Play Area
			Convenience Store or Supermarket
			Basketball & Tennis Court
20	How important is sustainability to you in the buildings where you work?	Likert Scale	1 2 3 4 5
21	How important is sustainability to you in the buildings where you live?	Likert Scale	1 2 3 4 5
22	Would you be willing to pay more rent or purchase price for a sustainable building?	Single Choice	Yes
			No
23	How important do you find flexible work and living concepts that can adapt to changing life circumstances?	Likert Scale	1 2 3 4 5

Number	Question	Question Type	Answer Option
24	Which sustainable features in a building are particularly important to you?	Multiple Choice	Energy efficiency
			Use of renewable energy sources
			Sustainable building materials
			Green roofs and green spaces
			Water and waste management
25	Which smart technologies would you welcome in your living or working environment?	Multiple Choice	Intelligent heating and cooling systems
			Automated lighting
			Security and surveillance systems
			Smart appliances (e.g., connected household devices)
			Other:
26	What is most important to you in the design of a workspace (max 3)?	Multiple Choice	Good access to natural light
			Sustainable materials
			Flexible usage options
			Community areas
			Technological equipment
			Ergonomic furniture
			Quiet zones
			Health and wellness facilities (e.g., gym)
27	Do you have additional thoughts, suggestions, or feedback about Mixed-Use real	Open Question	