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Impacts and Risk Management of COVID-19 Pandemic on Real Estate Supply Chain

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Abstract

Industry experts internationally have raised concerns regarding the significant risk posed to the real estate sector by the unprecedented global pandemic of Covid-19. The influence of Covid-19 has been swift, and with emerging wide-ranging consequences. The stay-at-home-policy has stagnated real estate and other economic activities. Many lenders, buyers and estate agents are evaluating the threats and opportunities in their operations. Developers face stoppages resulting from the impact and inherent risks of the stay-at-home policies on the built environment, and real estate chain. Return on investments initiated, but not completed due to the pandemic negative effect has resulted in a financial crisis. Similarly, there are fears that income streams, such as rental incomes, and mortgage payments, which are already being affected negatively in the short-term may worsen in the long-term due to economic recession. The purpose of the study, therefore, is to identify any COVID-19 pandemic impact, its mitigation for the tenant, and across the supply chain within the real estate sector in the United Kingdom. The study is based on a qualitative descriptive research design. The required data has been collected mainly through an extensive review of the available secondary sources**.** Occupiers' Sentiment Index and past recessionary financial performance were used to provide a wide-ranging insight into crisis effects on the macroeconomy of the property market. Consequently, two procedural approaches are utilised; firstly, the economic recovery scenario V, U, W and L shapes, are analysed to determine the potential recovery pattern of supply chains across the real estate sector. Secondly, the use of a legal context to mitigate the pandemic risk across the sector. The findings reveal an emerging dynamic trend, rooted in contract clause revamping, as suggestive of a mitigation approach by the industry. The significance of the study provides a robust platform on which a long-term response to any future unprecedented pandemic within the real estate-built environment can be delivered.

Keywords: Built environment, COVID-19, real estate, pandemic, risk management

1.0 INTRODUCTION

Recently, there has been a renewed interest to examine the risks associated with the real estate industry due to the COVID-19 pandemic. The outbreak of COVID-19 has impacted lives and businesses across the globe, with many billions of the world's population and much of industry having been under strict lockdown for some time (JLL, 2020). One of the most significant challenges across the industry is completing the re-evaluation required to ascertain the level of uncertainties associated with COVID-19's impact on economic recovery. The gross domestic product (GDP) of most countries across the globe is in decline due to stay-at-home policies in combination with social distancing, and closure of all businesses, schools, and public places. The COVID-19 pandemic demands mitigation for the business sectors; some government authorities across the globe have applied monetary, social and relief packages to decrease suffering through the issuance of palliatives. In the real estate sector, the support available varies from country to country. For instance, within the United Kingdom, the government gave a 3-month waiver to mortgage payers, among other financial and social aids. UK GDP declined by 2% in the first quarter of 2020, which was considered the largest since the 2008/9 economic recession. The declining GDP created a negative economic impact across socio-economic measures, such as the standard of living, despite the efforts put in place by the UK government.

Consequently, the impact of COVID-19 has resulted in significant vulnerability for the real estate sector. Moreover, there is a need for preserving the value and liquidity of the tenant. Lately, commentators, scholars and industry practitioners have published considerable succinct literature, emphasising the likelihood of unpredictable outcome across the real estate sector.

Industry commentators and scholars have debated the pandemic's influence on the economy and industries. Savills (2020) suggested that the pandemic is affecting the UK economy, and in response, both real estate business performance and style are likely to undergo potential changes and reformations. Some of the projected changes were suggested by the Head of Savills KKS Workplace Strategy as comprising an emerging hybrid model, involving the combination of home working, local office hubs, and head office integration, all of which should enhance employees' well-being, organisational resilience and health sustainability. Furthermore, Savills (2020) questioned the rapid changes anticipated across real estate in terms of economic recovery rates, and the associated unplanned risk, both of which need considerable contingencies. Earlier, Yao and Zhang (2011. p. 764) pointed out that the global economic recession of 2008/9 as a lesson to be learnt, considering how most of the economic indicators suggested positive asset price increase, rising leverage, and a reducing economic growth, which are unfortunately signs of financial crisis. A similar occurrence must be avoided by the response to the pandemic, as there is no known theory to predict the pandemic solution other than to use the four stages of the corporate model; prepare, respond, re-entry and reimagine (JLL, 2020). For real estate, the pandemic has been, and continues to be, a challenge, considering that liquidity has to be preserved (Barua, 2020). The current study is focused on the United Kingdom, specifically the assessment of vulnerability faced by tenants, and the real estate supply chain in terms of value and liquidity. The emphasis is on general risk, and responsive mitigation, due to COVID-19. Although the debate continues about appropriate strategies in managing the current pandemic's effect on real estate, it should be noted that some of the recent publications that propose a hypothetical solution, do so while neglecting the macroeconomic statistics and indicators required to understand the economic resilience of the real estate chain.

This paper, therefore, examines the impact of the COVID-19 on the real estate supply-chain. The emphasis is a review of socio-economic and macroeconomic effects of COVID-19, combined with a review of the 2008/9 recessions' statistics, and the anticipated outcome in the economic recovery shapes of V, U, W and L models.

The specific objective is to use empirical research to identify post-recession responses in the real estate chain, the 'shapes' of an economic recovery scenario, and suggestion for contractual clauses appropriate to sustaining the tenant, and relevant others in the real estate supply chain. This work is based on reviewing the available secondary sources. The study contributes to identifying of risks and suggestive mitigation across the real estate sector. However, this study did not compare the real estate challenges across the globe when assessing data and, statistics to understand lesson learnt and concerns. This paper is structured into four segments; foremost is the summary of literature, methods, results, discussion, and conclusion.

■2.0 LITERATURE REVIEW

2.1 The Socio-Economic Effect of Covid-19 Pandemic on the Real Estate Sector

In recent times, attention has focused on the outbreak of the disease "severe acute respiratory syndrome coronavirus", otherwise known by its acronym of COVID-19. According to the World Health Organisation (WHO), statistics in July 2020, revealed a global death toll of 585,727, confirmed cases of infection at 13.6 million and soaring. Moreover, WHO statistics revealed a 2% daily increase in new cases of COVID-19 infection. It has been suggested that in the desire to 'flatten the curve', as related to the pandemic, various governments across the globe have taken measures to enforce border closure, travel restrictions, quarantine and a stay-at-home policy (Nicola et al., 2020). Presently, there is considerable economic speculation concerning the industries performance, and fear of imminent instability due to long- and short-term effects from the pandemic. During this period, debates are ongoing, and focus is on how to preserve, and to improve, values across the supply chain of the real estate sector. It is believed that the owners, tenants, financial institutions, construction sector, brokers and the supply chain are all struggling with liquidity pressure. Likewise, as countless issues emerge, solutions and mitigation factors will be generated as regards the after-effect of the pandemic. Speculations and suggestions are offered on how existing contractual leases can either be revoked or renegotiated, as that has continued to exert pressure across the real estate sector's liquidity. The big question asked is, what are the economic recovery rates of the supply chains across the real estate sector.

Commentators have questioned the ability of the pandemic to affect the economy on a long-term basis. Savills (2020) raised concern regarding potential changes to real estate business performance, along with the daily lives of end-users. Real estate seeks to understand how the commercial office will either become redundant or be redesigned to fit today's (pandemic-related) requirements and achieve future sustainability. It is significant to note that real estate is not only faced with problems of liquidity or economic recovery, but also the need for technological advancement in the built environment to ensure acceptable performance, in ensuring the safe interaction of the end-users. It is remarkable how COVID-19 has driven society and businesses to find quicker ways to adjust and adapt to a new lifestyle, although some aspects of the 'old' lifestyle may be regarded as important to retain, whereas Savills (2020), suggested that office space will continue to provide the community with cultural connection despite the pandemic challenges. The said study was a result of a survey carried out in 31 countries, which identified 84% of the respondents as expecting to continue home working. The Head of Savills KKS Workplace Strategy suggests an emerging hybrid model in which home working model will enhance employee well-being, organisational resilience, and sustainability. Surprisingly, the residential asset is perceived to grow in demand, 55% of countries responding foresaw a need for the multifamily property.

Savills (2020) examined the changes that are projected to occur across commercial real estate rentals and raised of what will be the economic recovery rates if changes continue to evolve across real estate, given that these are unplanned risks, which need a significant contingency plan and have a cost impact. The speculation suggested that the operation and redesigning of properties which will see long-lasting changes, particularly in major cities, where there is a continuous rental 'culture' with high concentrations of young professional working-class migrants, who typically co-habit in small denser units combining to form a larger communal habitation. This will see the hybrid model evolve in balancing both the communal, office and private space. In another development, housing demand for international students in the United Kingdom continues to increase. According to the statistics of the UK Council for International Student Affairs (2019), almost 458,490 international students generate approximately £20 billion per year, and it is suggested that a staggering £2.5 billion is contributed to an annual rental payment from "the purpose-built student accommodation" (Cushman & Wakefield, n.d.).

However, the pandemic has, at least temporarily, halted on-campus higher education learning due to safety concerns**.** Consequently, real estate is facing both an income cut and liquidity long term challenges. Another sector that is fast emerging with demand is the health care environment, considering the emerging expansion for more spacious and sustainable health care, both for the elderly, the long-term sick, and the infected. The emerging picture of some patients continuing for the long-term with unexpected negatives outcomes as a result of COVID-19, which is a further example of changing demand within the healthcare estate.

2.2 Economic Recovery Opportunities and Challenges of the Real Estate Supply Chains

2.2.1 Overview

The past economic recession of 2008/9 is, to some level, something to comprehend and learn from in analysing the current pandemic's effect across the real estate sector. The United States subprime mortgage crises and trade imbalance which occurred between 2008 and 2010, resulted in massive financial losses across Europe, the United States, and Dubai. Commentaries and reviews suggested that the standard economic indicators for the United States showed positive asset price increase, rising leverage, sustained account deficits, and a slowing trajectory of economic growth (Yao & Zhang, 2011, p. 764). Unfortunately, these indicators were signs of a country racing towards a financial crisis. The main issue identified is that house prices continued to decline, which resulted in the housing bubble. They further suggested that when the 2008 economic crisis struck, no single theory could predict why it took place, and how to resolve it. The solutions offered by the respective Central Banks across the US, UK and EU were to adjust the interest rates to meet inflation targets. Unfortunately, the authors stated that was not the solution.

Different commentators and scholars argue that the leading causes of the 2008 economic recession were never housing policies, nor regulators, or credit agencies, but were subprime lending practices and over-speculation of housing prices (Geltner, 2013). In other words, real estate commentators should be cautious in forecasting growth in anticipations of a solution or speculation across the real estate supply chain. Barthélémy et al. (2020) strongly suggest that to understand economic recoveries from a financial crisis; there is a need to measure the macroeconomic data spanning over a period in order to determine any trend and the potential of its impacts. The buzzword is, therefore, 'economic resilience', or 'the recovery', and unforeseen alterations of a system (Martin & Sunley, 2015). Although this concept has been prevalent in financial analysis for some time. COVID-19 has greatly affected the real estate industry; with recovery being dependent on regional economic resilience, business types and asset class. Preserving liquidity across the supply chain is a challenge (Barua, 2020). However, it requires a diverse context to measure macroeconomic resilience of the United Kingdom and to understand the pandemic's impact on the real estate supply chain, in order to suggest a meaningful mitigation approach.

2.2.2 Macroeconomic Resilience Analysis of the United Kingdom

Data from the United Kingdom's Office for National Statistics (2020) of the first quarterly estimate of gross domestic product (GDP) during the pandemic, revealed a fall of 2% from January - March 2020, in comparison with data from fourth quarter of 2008, which showed a similar decline during the recession that started in 2008 – findings indicated that, United Kingdom GDP decreased by 1.6%. For context, the UK represents 2.33% of the world economy, and in 2019, UK GDP was $2827.11 billion. The purpose of the macroeconomic appraisal is to measure economic indicators and performance that are likely to affect the real estate sector, which is dependent on robust economic resilience and progress. The argument is to review statistical records and to gain insights on the likelihood of impacts, and the economic recovery rate across the real estate industry. Economic standard practice approaches are explored, and three strategies are considered as possible means to reconcile economic recovery. Firstly, to review the gross output approach, secondly the expenditure approach, and thirdly the income approach. The gross output approach is the reliability of how the economy performs, which is applied to regulate the expenditure and income component, thereby balancing to stabilise the gross output. The basis of the review is established on available economic data from the United Kingdom's Office for National Statistics (2020).

According to the review outcome, the first quarter of 2020 (January-March) saw a decline of GDP - a 5% fall to the gross output in March 2020 (ONS, 2020). Gross output is a measure of total economic activities related to the manufacturing of brand-new goods and services across an accounting period (Gandhi et al., 2020), and is, therefore, a much broader economic context, which takes into consideration the total measure of the economy, than GDP, which is a measure of the final output of finished goods, and services. The United Kingdom's response to the COVID-19 pandemic-initiated restrictions (social distancing measures and stay-at-home policies), lead to widespread disruption to economic activity (Hale et al., 2020). Through these changes made by the UK government, the spending behaviours of consumers, and business operations are disrupted. Gross services output decreased by 1.9% in Quarter-1 of 2020, with a 6.2% monthly decline in March 2020 alone. According to the Office for National Statistics (2020), the reduction in service gross output reflected downturns across the education sector, wholesale, retail trade, automobile, accommodation, and travel agencies. The only sector that continued to show growth was information technology (IT). In the first quarter, wholesale and retail activities slumped by 3%, transportation by 4.9%, accommodation and food service declined by 9.5%, and construction fell by 2.6% (Office for National Statistics, 2020, p. 8).

The second macroeconomics review is the GDP expenditure of the United Kingdom; the market value of all the final services and goods produced in the economy within a given accounting period (Fizaine & Court, 2016). Expenditures include private consumptions such as perishable items, clothing, recreation, etc. The decline of 1.7% in the first quarter as related to household expenditure is due to the pandemic, the only substantial increases in spending occurred in the areas of recreation, culture category, and IT, such as computers, television and audio-visual types of equipment. Another GDP expenditure is Government expenses such as defence, the judicial system, and education (which decreased by 2.6% in the first quarter of 2020). This reduction is a result of sectors like healthcare (2.5%), education (6.5%) from the 23 March 2020, which represents the first quarter. The Gross Fixed Capital Formation of the United Kingdom decreases in the first quarter of 2020 from £86,868m to £85,928m which dropped by 1%, and the UK trade deficit is 0.9% of the nominal GDP during the first quarter 2020, while the income nominal gross domestic product fell by 1.4%, all during the first quarter. Having reviewed the macroeconomic standpoint for the first quarter of 2020, there is a need to identify the concepts and theory of the risk posed and how it affects the real estate supply chain. Table 1 comprised of real estate business indicators suggesting an overall impact of COVID-19 on the lending prospect for the UK, the liquidity, the leasing volume, investment strategies, and operations. Some of these indicators were influenced by pandemic risks which should be measured objectively in assessing the macroeconomic picture to understand any trend and level of resilience across real estate.

Table 1 Impact of COVID-19 on real estate sector business indicators in the United Kingdom

*CRE essentials and indicators	Impact due to COVID-19 pandemic	Pathway
Lending	• Markets remained accessible, but given the existing risk, most lenders are treading with caution. • In the United Kingdom, the government impose mortgage payment holidays scheme to alleviate the impact of COVID-19.	Stable but increasing concerns
Liquidity	• Some property owners face short-term liquidity management due to delay in rent collection. • Many affected sectors, such as hotels applied for debt relief due to short-term liquidity.	Declining and negatively affecting the real estate sector
Leasing volume	• There is a decline in leasing volume.	Declining and negatively affecting the real estate sector
Investments	• New investments are slowing down due to uncertainties.	Declining and negatively affecting the real estate sector
Operations	• Social distancing and government directives have resulted in somewhat higher operational cost of cleaning, security, redesigning operational workplace, and thermal checkpoints and associated public health.	Declining and negatively affecting the real estate sector

(*CRE = Commercial Real Estate)

The macroeconomic algorithms used in conjunction with indicators are arguably overly complex, and require a high degree of interpretational skills, which may work against the need to make quick decisions. KPMG (2020), for example, acknowledges the need for a risk assessment across the real estate industry, but stressed the need for real estate sectors to mobilise and make quick decisions for short term purposes, with an attendant implication of a need for long term adjustments as waiting for a broader picture would jeopardise the business strategy. Thus, the informed decisions made today can be modified as the contours of future landscapes are identified. The overall suggestions are that investigating processes, control and associated vulnerabilities are the first critical steps to assess risks and develop remediation/mitigation plans. Figure 1 depicts the overall risk development strategy needed to evaluate the types of risks associated with real estate. In addition, a risk management protocol is suggested as a systematic process to cover risks analysis associated across the real estate chain. The empirical findings of Grum and Govekar (2016) indicate that microeconomic factors, such as GDP, industry production analysis and the stock index are closely related with property prices in Solvenia, Greece, France, Poland, and Norway. They revealed a negative impact of the macroeconomic indices on the tenants and homeowners. Bouchouicha and Ftiti (2012) observed that the variables of the macroeconomic environment greatly influence the real estate sector, and that income is a significant driver on the development of the real estate.

2.2.2.1 COVID-19 Pandemic and Management Concept across the Globe

A broader understanding of the effects of a pandemic can be deduced by looking at past practice in the global community; For instance, Australia utilised the historical instrumentalism, quarantine policy, and administrative studies to control Australian's greatest pandemic era, which spanned across 120 years (Moloney & Moloney, 2020). Empirical research in Germany by (Schomaker, 2020) measures employed administrative performance, with a focus on networking and knowledge management concerning the level of preparedness during a crisis. The research results indicated a high-level of readiness, quality networks, and the ability to draw on lessons learned among the study groups during the proceeding crisis. Fay and Ghadimi (2020) suggested the use of collective bargaining principles to avoid conflicts and reformation during the COVID-19 period, with recommendations for early engagement with the leadership in control of the challenges and management of the COVID-19 crisis and related solutions. Huang (2020) revealed that Taiwan (although situated less than 200 km from China, the epicentre of the COVID-19 outbreak), was able to control the spread of COVID-19. Furthermore, critical to the success of Taiwan's efforts was good judgement based on knowledge, transparency, good governance, communication, and cooperation between the central and local government in border control. Christensen and Lægreid (2020) in a wide-ranging study, disclosed that the Norwegian government achieved positive results when compared with other countries in the control of COVID-19. The researchers attributed their success to the following factors: competence of the politicians, a high-trust society, reliable professional bureaucracy, a good economic situation, and low population density. United States' response to the challenges of COVID-19, which created a fractured inter-governmental line, with the Federal arm leaving most of the decision-making to the States, which then went in varying directions, which suggests that while the pandemic is global, the response is local (Shaw et al., 2020).

Moloney and Moloney (2020) pointed out how the Australian government utilised quarantine measures, as used in the past 120 years to control pandemic diseases, which resulted in a GDP of 0.3% in the first three months of 2020, the first GDP decline since Quarter 1 of 2011. In comparison, the Germany's GDP declined by 9.7% in Quarter 2 of 2020 (April to June) as a result of COVID-19's impact household consumptions, the construction sector, and exports. Taiwan's GDP shrank by 0.58 per cent in Quarter 2 of 2020, which was the first decline since 2009. The inference drawn from these secondary data assessments depicts differing experience and impact across some developed nations due to the COVID-19 pandemic, which in turn, influences real estate and tenant liquidity performance.

2.2.3 Risk Analysis Model in Real Estate Chains

Figure 1 illustrates, the technological risk associated with how staff work across the real estate supply chain, as they shift work from office and, site, to home. There is no doubt that the pandemic impairs the functionality of the real estate supply chain. Office spaces have been vacated, occupancy levels at resorts and hotels have hit a record low, and health care facilities are gaining momentum in addressing the challenges of reforming. While there is a long-term opportunity associated with these changes, producing relevant information, achieving security and access, and data protection across real estate is essential and necessary. The new practice, for many of the workforce, of working from home has been widely adopted, but this must be carried out as per the applicable law, such as data protection. There are possibilities of employees losing laptops, devices and printers associated with their corporate office; it is essential to avoid a situation where sensitive organisation data ends up in the hands of malignant third parties. Unfortunately, this has been identified as a common form of a personal data breach.

In the United Kingdom, the Data Protection Act 2018 must be adhered to, in case a personal data breach would occur accidentally, or there is unlawful destruction, loss, alteration, or unauthorised disclosure of data. The individual is obliged to consider the likelihood and severity of the risk, and such a breach needs to be reported to the Information Commissioner's Office (ICO). The COVID-19 pandemic raises challenges to the real estate sector, considering that changing the work environment could increase in the likelihood of breaches happening, and the assessment team that should manage the breach are not readily accessible. There is a suggested concept of using encrypted devices that could easily wipe away all the memories in the event an official device is lost or stolen. The real estate business landscape is being transformed due to the pandemic. It is crucial to determine the risks associated with these forms of challenges across the real estate sector for the confidentiality of customers' details.

It is time for the property owners and landlords to commence strategies to address regulations and public health, considering the evolving governmental responses of which the real estate sector should endeavour to inform the leaseholders regarding any risks, and to adopt the proposed mitigation measures. Across the operation stage in Figure 1, it is vital to ensure a consistent treasury management system as teams are fragmented due to 'working from home' (WFH). The fund authorisation processes must be designed with a high-security system to detect fraudulent payments. Tenant monitoring should be conducted through a virtual system and ensuring relevant COVID-19 informative websites are sent to the leaseholders, and to share knowledge about any COVID-19 mitigation plan across the supply chain and tenants. At this stage, landlords and owners should engage in dialogue with those tenants that are highly affected due to the pandemic. This dialogue should include any possibilities of rental concessions /discount free rent period or rent deferment for a specific period agreed upon. This stage also involves the suppliers, vendors, and third-party providers' risk analysis; this helps to develop contingency plans along the supply chain in case there is a system breakdown or fragmentation. Social responsibilities have to be made clear and monitored. The changes made due to COVID-19 have to be evaluated from time to time to measure progress and monitor development costs, identifying new upcoming risks associated with the new system, all of which should be documented and reviewed. Likewise, business impact and financial reporting should be integrated to facilitate; the tracking of investors expressions of interest during the pandemic, and the ability to research potential investors.

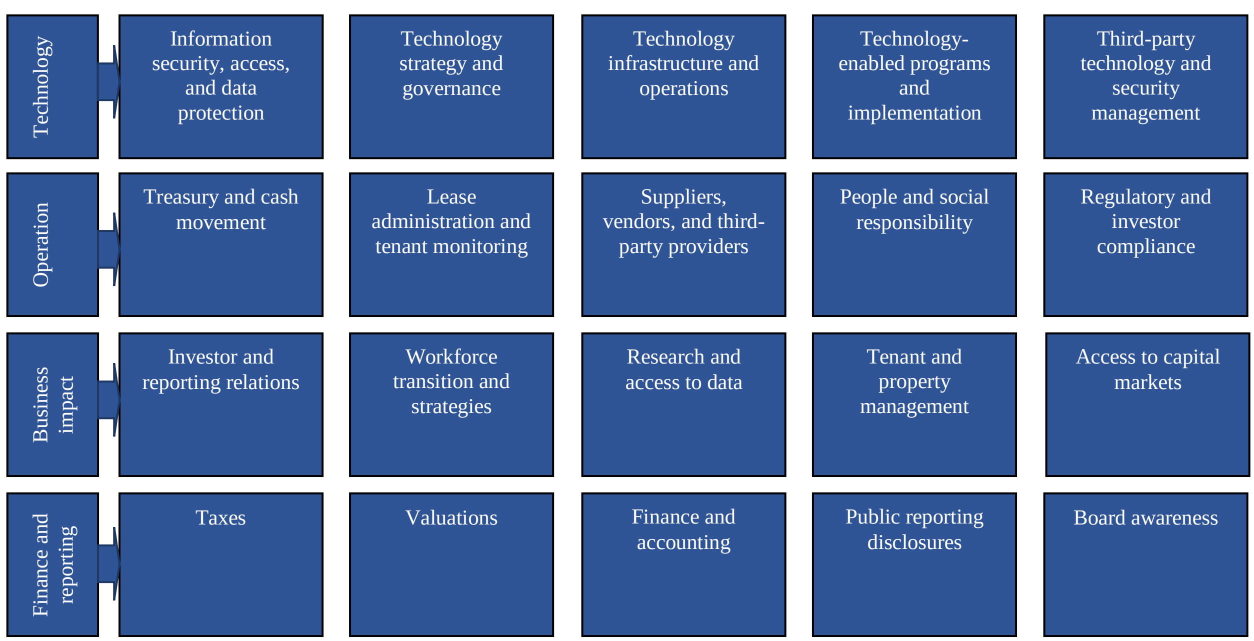

Figure 1 The risks assessment framework for real estate supply chain
(Source: KPMG, 2020)

2.3 Legal Consequences of COVID-19 on Lease Contracts and Built Environment

COVID-19 causes hindrance to the parties to a contract, in fulfilling their legal obligations. Parties to lease agreements, purchase agreements, and loans documentation should henceforth consider how COVID-19 affects their business operations. Many lease contracts contain provisions to address unexpected events or disaster, however, many did not foresee a scenario similar to the COVID-19 outbreak.

Force majeure is a common contract clause which exempts parties to a contract from liabilities or obligations when extraordinary events or circumstances beyond the control of the parties occur. These events can typically be war, strike, riot, epidemic or *act of God.* Although, the *force majeure* varies in scope and detail; rarely do these lease contract agreements enshrine "epidemic or pandemic" as a *force majeure* event. Borrowers, developers and landlords, for example, will have to assess whether anticipated COVID-19 impacts will trigger the *force majeure* provisions in their existing contract agreements, with impacts, such as financial uncertainty affecting lenders, the effect of domestic and international travel restrictions on building material availability, the adverse effect of mandated quarantines on the availability of workers, and delays in obtaining necessary construction approvals caused by the closure of governmental agencies, all being possibilities. On a prospective basis, parties that are required to perform should seek to negotiate broad *force majeure* clauses that are inclusive of delays due to a pandemic, and perhaps reference COVID-19 specifically, as that provides flexibility for expected delays, and compensation or ability to renegotiate.

3.0 METHODOLOGY

3.1 Overview of Empirical Research Method

The methods for measuring post economic recession have varied somewhat across the research area. Sharma et al. (2020, p. 2) used a simulation model to assess the impact of monetary policies and inflation targeting on the severity of the economic recovery crisis. Bec et al. (2014) used the Markov-Switching model developed by Hamilton 1989 to measure the flexible bounce back functionality of the post-economic recession. There are, however, considerable challenges in using mathematical simulation to determine the post-economic recession recovery. While the simulation method offers more insights concerning validity, reliability, and assumptions. Great care must be taken to ensure a level of confidence is raised in determining any trend and outcome during the COVID-19 pandemic. In this study, a key reason for using empirical research method is that human decisions and knowledge enrichment are measured through proven evidence, and the empirical research adopts a similar approach.

Previous studies attempted to arrive at a conclusion through the assessment of empirical evidence using a qualitative research approach. The concept of using an observation and data collection method makes the empirical method a probable technique with which to study and analyse a problem area. One of the main principles of the empirical research method is that it begins with a set of questions that drive the investigation theories, which are examined using a qualitative approach. Real estate in a COVID-19 world is concerned with preserving value and liquidity, keeping tenants and visitors safe, increasing the cleaning measures, and complying with governmental agency requirements. The questions asked are, with the current situation, what are the longer-term structural changes that may come out of the pandemic and, as well as the economic updates, will a new paradigm emerge? What the empirical research study does is to develop questions to 'wrap-around' the core of the research, so that core becomes the central matter which the research seeks to resolve. The empirical research presented here set out to examine any extraordinary effect(s) of COVID-19 on the real estate supply chains' liquidity in the United Kingdom, and evaluate the socio-economic impact of COVID-19 on real estate, whilst also considering past recessions statistic, and the anticipated outcome in terms of the economic recovery shapes of V, U, W and L models. The research questions are framed in the context of what the empirical investigation will achieve (see item 1-3 below), and the outlined empirical research strategy for the study (Figure 2):

1. How does COVID-19 economic recession impact on real estate chains?
2. To what extent do the economic recovery scenario V, U, W and L shapes help to determine the impact of COVID-19?
3. What are the legal instruments and contractual clauses needed to sustain the real estate sector due to COVID-19?

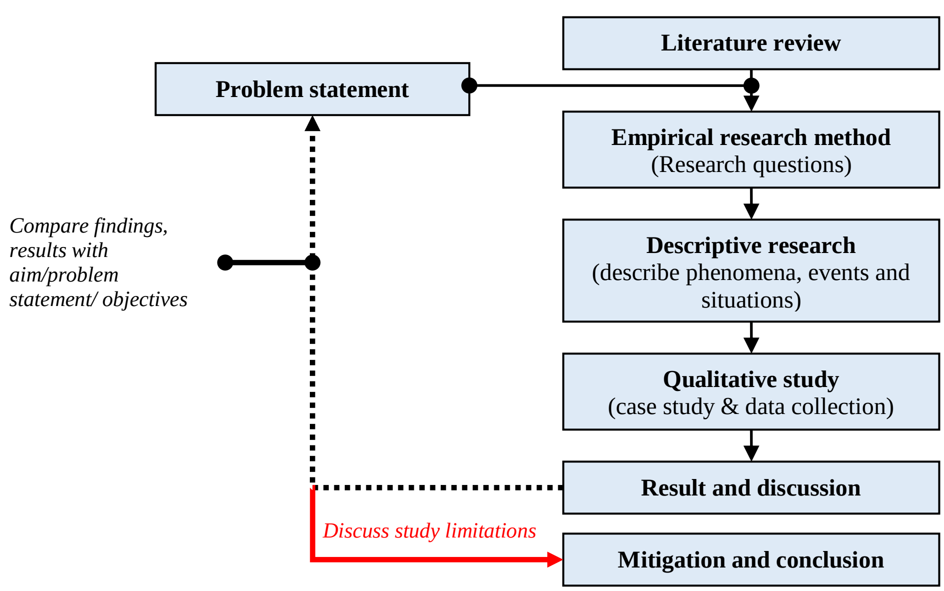

Figure 2 Study the empirical research method
(Source: Authors' generated)

3.2 Impact of Post-Recession Across the Real Estate Chain

The 2008/9 recession had a noticeable impact on financial performance, stability, and the overall output of UK housebuilders, resulting in a decline in the supply of new housing (Payne, 2015). The author examined recessionary across the UK's most prominent householder builders (developers). Consequently, they outlined several key challenges that may confront policymakers and the housebuilders in an attempt to meet the housing needs of a post-COVID-19 recession in Britain. The learning from the study of Payne (2015) is that each recession and cycle recovery are dissimilar, and there is no known existing research to compare and contrast the likelihood of solutions. The most apt solution is to develop a deeper understanding of recessionary behaviour and its impact across all housebuilders.

At this point, it is relevant to review the economic recovery scenario by evaluating it, with a focus on macroeconomics resilience, so as to suggest mitigation. Payne (2015; see Table 2) presents the recessionary financial performance of Britain's five biggest housebuilders in 2008, 2009 and 2010, which data is then used to compare and contrast within the current British macroeconomic resilience strategies to determine COVID-19's impact and then suggest a risk mitigation approach.

Table 2 The recessionary financial performance of Britain's five biggest housebuilders (2008, 2009 and 2010)
(Source: Payne, 2015)

Company	Pre-Tax Profit (£millions)			Revenue (£millions)			Operating Margin (%)			Completions (Units)		
	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010
Barratt	137.3	-678.9	-162.9	3,554.70	2,285.20	2,035.20	15.5	1.9	5.9	18,588	13,277	11,377
Persimmon	124.8	7	95.5	1,755.10	1,420.60	1,589.50	11.3	4	8.2	10,202	8,976	9,384
Taylor Wimpey	-74.4	-96.1	75.1	3,467.70	2,595.60	2,603	2.2	0.8	7.1	13,394	10,186	9,962
Bellway	165.7	29.8	44.4	1,149.50	683.8	768.3	16.1	6.7	6.7	6,556	4,380	4,595
Redrow	65.5	-44.2	0.7	650.1	301.8	396.4	13	7.4	3.2	3,925	2,113	2,587

The Royal Institute of Chartered Surveyor's (RICS, 2020b) examined the United Kingdom economy and resultant data, which shows that construction projects were affected with 69% project delays, 47% of construction sites were closed, and 29% of projects cancelled. With UK market confidence falling due to strict lockdown, etc. Real estate is experiencing a similar decline, the commercial market is closed, and an increasing number of occupiers are requesting rents and business rate suspension (reported at 33%). RICS reported that 25% of clients took their properties off the market in April 2020, and 2% commenced litigation to resolve breach of services due to the COVID-19 pandemic.

RICS has also taken into account a significant programme of proactive Government engagement and advocacy; first, they provided a guidance note to address key concerns and identified risks due to COVID-19. Strategies for COVID-19 recovery, such as working from home, and caring for vulnerable people. In another first quarter of survey conducted by RICS to measure COVID-19 effect on the commercial property globally, evidence revealed that confidence among the occupiers deteriorated in 33 out of the 34 countries surveyed (RICS, 2020a). Figure 3 represents RICS' Occupier Sentiment Index (OSI), which is a gauge of sentiment among occupiers and this has fallen by an average of -28 points across countries, this has not occurred since the final quarter of 2019.

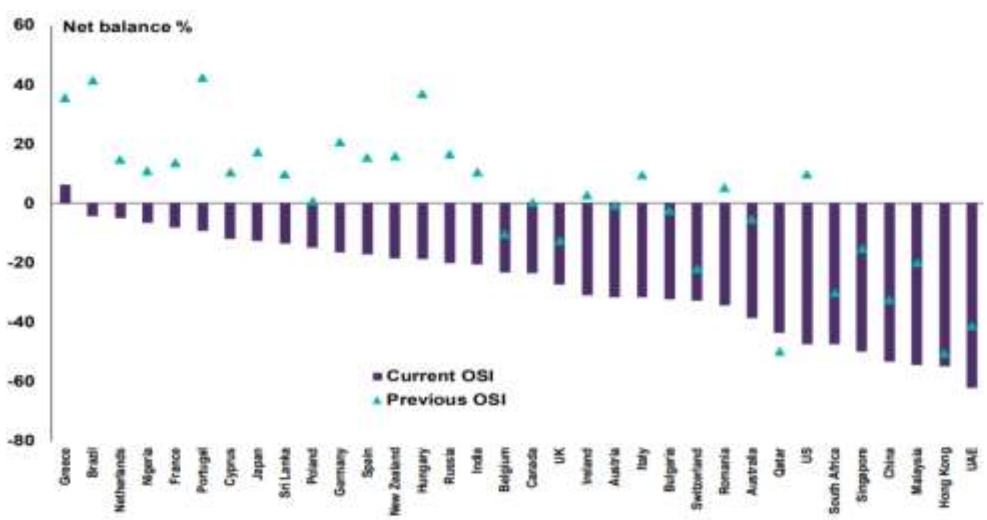

Figure 3 RICS' Occupier Sentiment Index Q1 2020 (Net balance %)
Source: (RICS, 2020b)

According to evidence from the United Kingdom Construction Industry Council, the recession hit professional services hard. The survey of Industry Facts and Forecasting (IFF) identified that 54% of firms had seen a decrease in their fee income in the 12 months to

October 2009. The same survey indicated that 46% of Construction Professional Services organisations had made redundancies over the same period, and there is a clear indication that construction will be in recession before a modest growth (see Table 3). Evidence from the UK Employment of Construction Professionals suggests that sometime in 2008 there was a labour force of 603,000, but by the end of 2010, the labour force dropped to 528,000. The decline translates to 12.4%, and the recovery went on to 2012. The Industry Facts and Forecasting survey suggested that 27% of the firm had resorted to shorter work hours, which was not a good prospect for the future recruitments. After the 2008/2009 recession, there was a widespread shock in the deteriorating demand for a residential rental tenant. The First National Bank anticipated that rental through 2020 and 2021 suggest a decline in income, and in some instances, no income at all. Scholars have suggested that even the aftermath of the lockdown, there will be financially weakened household purchasing and business sectors (Liedtke, 2020).

Table 3 Construction professional across the whole economy in the UK
(Source: Labour Force Survey, Experian, Construction Skills Network - as cited by Construction Industry Council (n.d.))

Occupation	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Architect 2431	54,426	49,846	44,076	41,948	41,418	41.834
Annual % change		-8.4%	-11.6%	-4.8%	-1.3%	1.0%
Civil engineers 2121	79,030	90,904	82,006	79,094	79,261	81,016
Annual % change		15%	-9.8%	-3.6%	0.2%	2.2%
Mechanical engineers 2122	82,349	81,472	73,793	71,911	72,452	73,801
Annual % change		-1.1%	-9.4%	-2.6%	0.8%	1.9%
Electrical engineers 2123	53,522	53,541	48,495	47,258	47,613	48,500
Annual % change	-	0.0%	-9.4%	-2.6%	0.8%	1.9%
Town planner 2432	22,650	23,814	21,569	21,019	21,177	21,572
Annual % change	-	5.1%	-9.4%	-2.6%	0.8%	1.9%
Managers in construction 1122	251,301	258,970	223,398	223,826	223,355	226,314
Annual % change	-	3.1%	-10.3%	-3.7%	-0.2%	1.3%
Quantity surveyor	35,904	44,884	43,112	43,353	44,227	45,036
Annual % change	-	25%	-3.9%	0.6%	2.0%	1.8%

3.3 Economic Recovery Scenario V, U, W and L Shapes on Real Estate Chains due to COVID-19

The threats and opportunities towards the real estate sector need to be assessed alongside the economy recovery shapes. Although there is no consensus among scholars on the exact economic recovery shapes, an economic recovery will take effect, but the lack of consensus makes forecasting the extent of post-pandemic recovery very difficult. Companies and real estate sector as a whole should be prepared to understand the different recovery shapes and how these can affect their businesses. The V-shape recovery is the best-case scenario following the economic downturn; a sharp decline due to the pandemic's effect, and the recovery is sharp as well at the end of the pandemic. At the time of writing, some organisations and companies will be optimistic about having the V-shape recovery as that will mean, a relaunch of operations. In comparison, a steep decline characterises the initial stage of a U-shape recovery, there is then a longer prolongation at the bottom before gradual improvement, with the gradual recovery possibly taking years, as happened in the 2008 credit crisis. The W-shape recovery shows a decline and 'bounce' recovery, which is followed by a second downturn of decline, followed by a more sustained recovery. It is probably that second wave of a pandemic could probably happen across the globe (China, UK and America are suggested as currently witnessing a second wave) and that would affect real estate across the globe through factors such as a lack of foreign investors having confidence towards investing in real estate. The L-shaped recovery is deemed the worst-case scenario considering the extended nature of the downturn, although, there may be some consolation in that, this recovery shape rarely occurs. This type of scenario requires a risk-averse stance and robust monitoring of economic development. Each of the economic recovery shapes requires different strategy regarding discussion with tenants and real estate chain on a risk management strategy and mitigation plan.

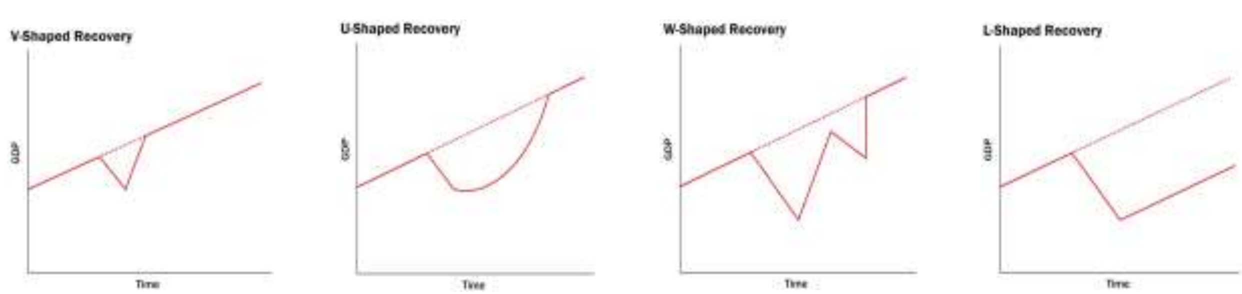

Figure 4 Economic recovery shape V, U, W, and L
(Source: Hansen, 2020b)

In the UK, COVID-19 affected the economy by a GDP decline of 2% in the Quarter 1 of 2020 (January-March), and a widespread contraction across all main sectors followed by a GDP decline of 20.4% in the Quarter 2 (April-June) (ONS, 2020). In the second quarter of 2020, the growth in the construction and real estate sectors was -35% and -3.2%, respectively, along with a continuous decline across all sectors of the UK economy. It is not yet time to estimate the trend for Quarters 3 and 4 of this 2020 fiscal year, as the COVID-19 pandemic impact continues to evolve across the economy. Hansen (2020b) and Sharma et al. (2020) provide a chart and concepts for illustrating economic recovery in the form of V, U, W, and L shapes (see Figure 4). The V-shaped recovery is when the crisis is sharp and short, as a result of COVID-19 (Baldwin & di Mauro, 2020; Sharma et al., 2020). An example of a V-shape recovery occurred in the economy of the United States after the recession of 1953, which had a 2.2% decline in the GDP, and by the Quarter 4 of 1954, the economy had recovered. In correlation with the UK's Quarter 2 (April-June 2020) GDP, which declined to 20.4%, see Figure 5 (ONS, 2020), a practical suggestion is that the real estate sector's most likely recovery shape may cut across U and, W shapes, but the likelihood of an L-shape recovery is less, which is the worst-case scenario. A challenging V-shape quick recovery proposal will require an extra positive signpost, that should be characterised by a swift and sustained macroeconomic performance in 2020 Quarter 3 and 4, and across all sectors including services, production, manufacturing, and construction. Though discovery from 2008/9 global recession suggests a slow recovery of the world economy, some country did better than others in terms of recuperation (Salvatore, 2020).

The likelihood of the real estate supply chains undergoing a U-shaped economic recovery in the UK relates to the continuous overall undulation of GDP, unemployment fluctuations, and industrial outputs. In the U-shaped economic recovery, the sharp decline, which remains depressed, typically occurs over a range of 12 to 24 months, with a gradual prolongation at the bottom before gradual improvements due to economic recovery (see Figure 4). UK real estate is mostly affected by unemployment rates. However, currently at the time of writing, it stands at 3.9% which is low. The low indicators from the UK Office of National Statistics suggest that furloughed workers are effectively considered as being under government payroll employment, and that has resulted in a picture of an increase in economic activities and a decrease in unemployment rate. In addition, the second wave of COVID-19 has been noted in some parts of the UK. For instance, the city of Aberdeen Scotland experienced a temporary closure and re-opening of some leisure areas in mid-August 2020, and that continues to affect the rental and real estate sectors. UK real estate may see different economic recovery shapes in response to the isolated decisions to temporarily close some businesses as a result of COVID-19 spread. Even as the GDP is likely to fluctuate across the coming months, some rental businesses and tenant reactions will continue to affect the Occupiers' Sentiment Index, which may provide new facts and data for analysis and conclusion. Until then, the progress of Figure 5 will continue to be monitored very closely to track if the GDP of the UK will adhere to V, U, W or L economic recovery shapes, as that influences the decision-making strategies for landlords and tenants during the COVID-19 pandemic.

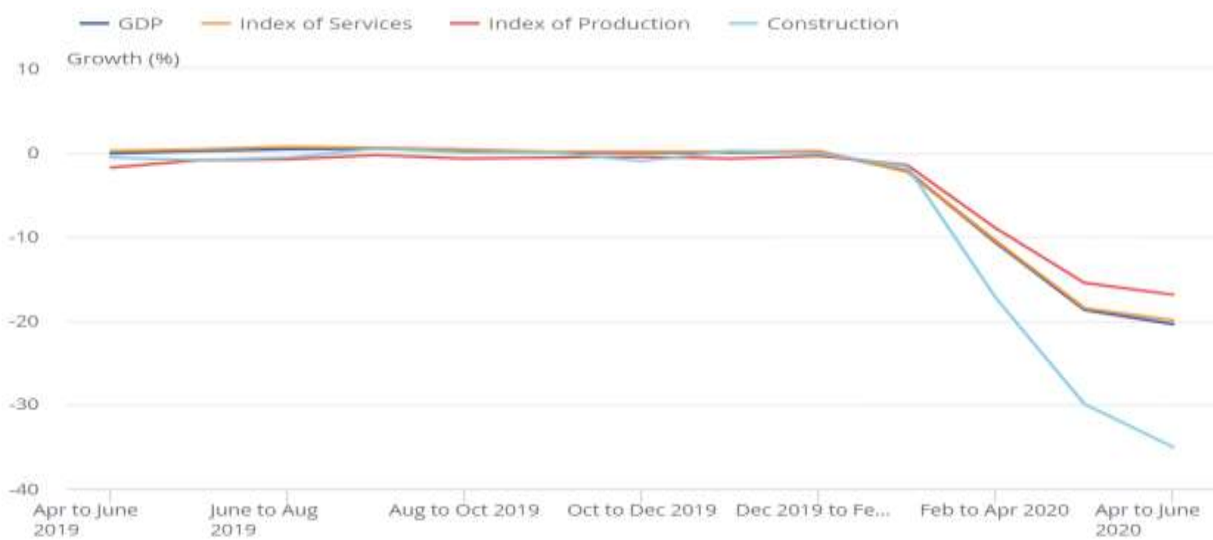

Figure 5 Growth, three months on the previous three months, UK, April to June 2019 until April to June 2020
(Source: Office for National Statistics, 2020)

4.0 RESULTS

The result revealed that the tenant and real estate supply chains are impacted on by both socio-economic and macroeconomic severity due to COVID-19. The essential thing is that the value and liquidity of tenants in the real estate sector are altered. The reviewed secondary data identified the gross domestic product (GDP) of the United Kingdom for the Quarter 1, (January to March 2020), which declined to 2%, and April to June declined to 20.4% (Office for National Statistics, 2020). GDP is the sum of the valuable goods and services produced in the economy. All of which affect wealth, jobs, and spending across the population. Three strategies were used to measure the UK GDP; firstly, is the "gross output measure", or the total value of goods and services produced across all sectors, which declined to 5% in the Quarter 1 of 2020 (Office for National Statistics, 2020). The second is the "expenditure measure", which is the value of goods and services bought within a given accounting period, both by households and government, which declined by 1.7% and 2.6% respectively in the first quarter. The third is the "income measure", which is the generated income from wages and profits, which fell by 1.4% in the first quarter. It is significant that these statistics and data provide a trend to measure economic recovery risks, associated with a sector and, in this case, tenants and other chains across the real estate sector. The declines in the gross output measure, expenditure measure and income measure are all contributed by COVID-19, which reflects on the real estate business indicators such as; lending, liquidity, leasing volume, investment and operations, (see Table 1).

In looking at the outcome of the recession between 2008 – 2010 to understand the recovery rates, which is needed to analyse to compare COVID-19 impact and the recovery sequence alongside some real estate chain. Table 2 shows the recessionary financial performance (pre-tax profit) of Britain's five most prominent builders for 2008, 2009, 2010. Barratt, Taylor-Wimpey, and Redrow had a negative income, while Bellway had a positive pre-tax profit during the recession. While Table 2 shows, revenue as promising, the impact of the organisations' expenses affected the pre-tax profit. Further analysis revealed positive results for the two biggest housebuilders in the UK (Bellway and Persimmon), but of more importance is that although their profits were not large, they maintained good business across the real estate chain, its chain, meaning that tenants and leaseholders were sufficiently cash buoyant enough keep their business and operations running. The negative result was noted for Barratt between 2009/10, which is post-recession, therefore their recovery must have followed a U-shape recovery curve considering their negative pre-tax profit, which lasted for a year.

Across the United Kingdom's economy and commercial activities, construction projects were affected with 67% of projects delayed, 47% temporarily closed, and 29% cancelled. Commercial retails outlets closed from March until June 2020, resulting in 33% of tenants and leaseholders asking for rent suspension, 25% of client taking their property off the market, and across the globe, confidence among occupiers deteriorated in 33 out of 34 of countries (Figure 3). A look at the evidence presented by the United Kingdom's Construction Industry Council in Table 3 revealed deficits, and redundancies of construction professionals in 2007–2012, all due to the economic recession of 2008-2009. The threats and opportunities toward the real estate sector need to be assessed alongside the economic recovery shapes - V, U, W and L models (as in Figure 4).

5.0 DISCUSSION AND MITIGATION

This paper aims to identify and suggest modest mitigation of the COVID-19 pandemic's impact across the real estate supply chain. The objective examines the economic and macroeconomic resilience of tenants and some real estate supply chains. The problem question raises the need to understand the significance of risk associated with the pandemic towards real estate. The most obvious finding to emerge from the analysis is that, in the past, the economic recession has had an overall negative impact on real estate chains; an effect captured in measures such as the tenants "Occupiers Sentiment Index", (down in Quarter 1 of 2020). The index showed an overall agreement of sentiment falling from 33 out of 34 countries.

Similarly, the same finding occurred in the UK when, considering the impact on short-term liquidity, which declined negatively, and leasing volume dropped, all due to the COVID-19 effect. The surprising issue is the outcome of the macroeconomic analysis; it indicates a slight decline between January and March and a further decline between April to June 2020, which affected the overall liquidity challenges across the real estate sector. There is a need, therefore, to put certain measures in place to mitigate the risks in order to withstand the economic downturn. The concept is to develop a strategic plan: hope for the best and plan for the worst.

Comparison of this study with the literature review confirms the recent debate on the potential changes that could transform the real estate sector, in attempts to enhance business performance (Savills, 2020). While there is positive sentiment that commercial real estate will peak upward to some extent. There is also a high demand on the real estate to adjust to a new 'contrary' lifestyle involving a large percentage of the workforce, that seems to be in favour of continuing the working from home preference. Another prediction that contrasts with the RICS findings, while the RICS survey revealed a decline in the Occupier's Sentiment Index of -28 point across the 33 out of 34 countries, Savills's survey strongly suggests 55% of countries responding foresee a need for a multifamily property. However, this is a gauge of sentiments among the occupiers, where the difference in opinion could be a result of available information which might have influenced the respondents' statement of opinion during the survey. Nonetheless, the outcomes of the two surveys are unique in understanding the tenants' behaviours as both statistics and COVID-19's impact evolve. Yao and Zhang (2011, p. 764) stated that lessons must be learned from the 2008/9 economic recession, where predictions did not offer solutions, rather the recession resulted in the plunging of the global economy. Now is the time to look at the past statistics in making predictions of COVID-19's impacts. Barthélémy et al. (2020) strongly suggest that in order to understand economic recoveries from financial crisis, there is a need to measure the macroeconomic data spanning over a long period to understand the trend and potentials of impact. Due to three months of COVID-19 restriction (March-June 2020 in the United Kingdom), there has been widespread disruption to the economy (Hale et al., 2020), which means that risk assessment across the real estate chain is essential in helping to mobilise quick decisions for short term purposes having an implication for long term adjustments; waiting for a broader, more certain picture to emerge will jeopardise the business strategy (KPMG, 2020). The literature reviewed is consistent with the data obtained and analysed. In comparing with the current study, findings reveal a similar trend through the impact of macroeconomics on business sectors, which in turn affect consumers and producers.

These findings suggest the real estate operating chains must endeavour to forecast cash flow based on income and the liquidity of tenants and leaseholders. This will enable a re-negotiation if possible, where the landlord and owners should dialogue with tenants that are profoundly affected by COVID-19. There could be the possibility of rental concessions to offer rent discount, offer a free rent period, and rent deferment for a specific period as agreed on. It can thus be suggested that the real estate chain should focus on monitoring indicators such as (forecast sales, marketing expenses, rent and utilities, mortgage and loans, overhead cost, tax and revenue, and account payable and receivable). Another area of interest worth looking at is to reduce cost through budget cutting, and sourcing for reliable suppliers with good credit standing to negotiate new terms of business. Other measures could include cutting temporary employee perks, bonuses, and renegotiate new terms of payment to maximise cash reserves. Pieces of underutilised equipment, under a lease, should be terminated at this stage. Partnering is equally suggested as it increases chances of opportunities.

It is herewith suggested, that more research studies on this topic need to be undertaken to allow consideration in a broader context, updated statistics, monitoring of events, and carrying out both qualitative and quantitative research across the real estate chains, (developer, finance institution, construction, brokers, tenants and leaseholders). Further work is also required to establish the validity of suggestions; this is to avert past miscalculations in restoring confidence of an economic recovery without undue assessments of macroeconomic resilience of a given geographical area. Figure 6 presents a *force majeure* model and practical legal suggestions for assessing implementation for the tenant and the real estate chain, (dependent on the applicable law of a region).

5.1 Contractual Legal Instruments as Risk Mitigation Model

The outstanding tenancy contract drafting agreements aim to honour the rights and responsibilities of the tenants, should there be future events that could constitute challenges and uncertainties. The term '*force majeure'* can be translated as '*superior forces*', which deals with the impact of unexpected and disruptive events on the performance of a contract. Parties to a contract usually insert a *force majeure* clause to control what happens when certain circumstances arise, rather than relying on the doctrine of frustration. Reference to Figure 6 provides, a signpost of the procedures to determine risks associated with COVID-19 and the tenant gateway to a remedy in the future. In step 1 (Figure 6), the tenant's ability to perform its obligations may have been adversely affected due to COVID-19, which may lead to two outcomes. Firstly, is the breach of a contract, and therefore subject to claim for damages or termination as stated in the contract tenancy agreement. In step 2 (Figure 6), the other second approach under English law is to ascertain if '*force majeure'* wording is mentioned in the contract. If not, then there is no general implied concept of *force majeure.* In step 3 (Figure 6), when the '*force majeure'* wording is in a contract, does it refer to wordings such as pandemic, epidemic, diseases, or reference to government regulation. If no, then the approach to mitigate tenant risks is terminated at step 4 (Figure 6). However, if yes, then the next stage is to determine the reasonably foreseeable of the events at the time of entering the contract, at step 5 (Figure 6). Until then, future case law that will emerge over period of post COVID-19 will help to reshape overall mandatory acceptance of '*force majeure'* as "*Implied or expressed terms*" across the tenancy agreement (it all depends on regional applicable law and legislative instruments). There are certain factors the tenant needs to consider, to present a credible claim and prepare for mitigation on how COVID-19 has affected his rights to perform obligations in a contract.

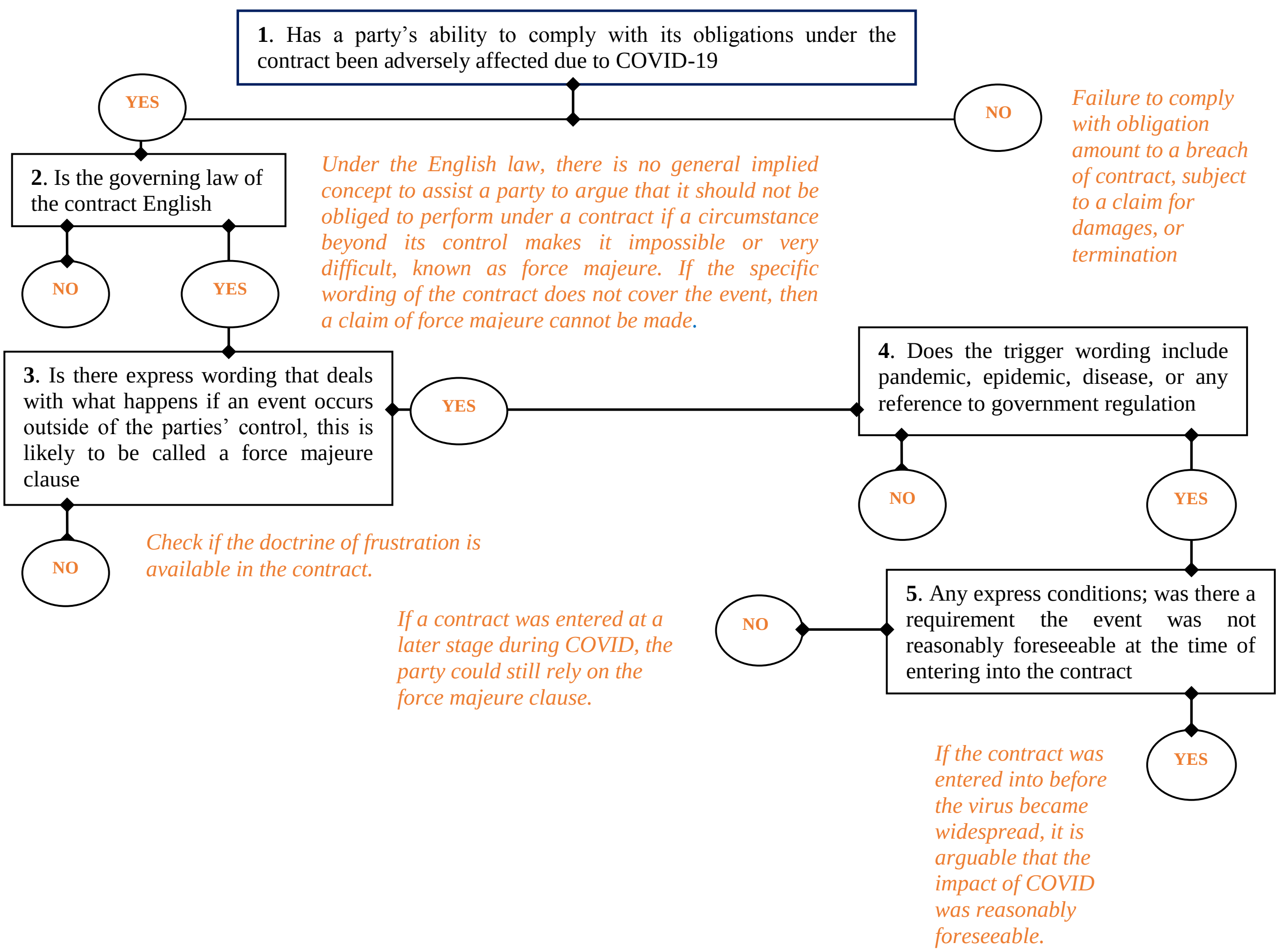

Figure 6 *Force majeure* model to manage COVID-19 pandemic for the real estate chain
(Source: Adapted from Hansen, 2020a)

Although Figure 6 is entirely a risk mitigation model using a legal context without empirical data, the emphasis is to draw insight to the possible solution to benefit tenants in future risk mitigation as a result of COVID-19. In addition to this, the suggestion is on the use of rental *interruption insurance,* for both the landlords and tenants, to mitigate risk in case there is no agreements, and consensus toward rent reduction for the tenant who may be on furlough. In the United Kingdom, the Ministry of Housing, Communities and Local Government issued the Coronavirus Act 2020, which outlined non-statutory guidance for landlords and tenants, in the private and social rented sectors on the necessary measures to be taken during the pandemic crisis. The government suggests that tenants should continue to abide by the tenancy agreement to the best ability, but if the tenant is affected due to the COVID-19 pandemic, then early communication and negotiation are advised. In such a scenario, a temporary agreement could be reached to seek possession action for a while, and to lower the level of rent, or have a plan to pay off the arrears.

■6.0 CONCLUSION

This study set out to assess the impact of COVID-19, in preserving the value of liquidity in the real estate industry, where the emphasis is on the tenant. The result of this investigation demonstrates that the real estate chain is vulnerable due to COVID-19's influence, and the unpredictable nature of economic recovery, which has been a challenge across the industry. Overall, this study provides insight on a risk mitigation approach using contractual clauses as a suggested pathway to mitigate the unforeseen future events caused by the pandemic. Tenants ought to take care, and leaseholders are to suggest the addition of the *force majeure* clause to the contract, as that will enable either re-negotiation or provisionally suspend the rent and commercial payment over a given period. This will, therefore, serve as a base for future studies, as more data are evolving, and up-to-date information is provided during this pandemic period. This research contributes to knowledge through gaining an understanding of the macroeconomic resilience of a past recession, the real estate business indicators, and associated risks, which helps to understand sector vulnerability, and economic recovery shapes in this sector. On the other hand, this study has limitations; it involves the use of secondary data to evaluate the real estate COVID-19 impacts and the economic recovery in terms of V, U, W and L shapes. future research should focus separately on either the commercial or residential property market, though, both were used interchangeable across this article.

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