Overview on built environment planning: Residential overhang factors in Malaysia affordable housing

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Abstract. Affordable housing remains a prevalent issue in the country. The definition suggests affordable housing as adequate housing in quality, location, and size as not so costly that prevents its occupants from meeting other essential living needs. In the effort of providing sufficient affordable housing, various affordable housing programs, namely Residensi Wilayah and PR1MA, are currently in the market with the aims to develop and deliver new affordable housing, which targeted the middle- and low-income group. Although the lack of affordable housing persists, the severe glut in the property market has also records to reach an all-time high. The overhang crisis in the country became an infamous issue in the country with the slow market, which led to the increase in the overhang unit’s statistics year over a year which partially in affordable housing segmentation. It is highlighted that the overhang in affordable housing has shown significant rising despite of its strong demand. This paper attempts to examine the overhang issue in affordable housing in Malaysia and related factors. This research will add up some points of discussion as regards the impact of the Covid-19 Pandemic towards the issue of affordable housing and the strategies in reducing the overhang issue during the pandemic. A review of the past literature related to the topics was carried out and data derived from journals, reports, and websites were gathered and examined to establish the framework on this issue and to identify the overhang factors in affordable housing. The developers are urged to build houses that can cater to the demand of buyers in terms of the property type, location, and also price range. The overhang units did not attract the target market while the product mismatch is one of the contributing factors. Other related factors are affordability, high living costs, and stagnant income growth, cooling measures, financing, unsuitable location, accessibility, the lack of timely and accurate data of buyer's preference including the shift in demand towards the better-quality project. A study on the overhang factors of affordable housing is needed to resolve the issue, or else, the overhang issue will be worsened and will create a lot of negative impacts in the future. At the end of the research, the list of the property overhang factors and its framework able to be identified and to be used as guidelines and references to the public.

1. Introduction
The term of affordable housing is widely known as the households which should not pay more than 30% of their income for housing, including the utilities. This definition is referring to the capacity in meeting the housing cost and maintain the capability to encounter other living costs basic [1]. House is a fundamental necessity for all human beings. However, affordable housing is continuing to become a common issue in the housing industry. The definition of affordable housing is also referred to adequate housing in quality, location and it is not so costly that it prevents its occupants from meeting other essential
living needs [2]. In Malaysia, there are more than twenty agencies and numerous programs available to assist more people in owning houses with an affordable price range. The programs are including the PR1MA or Perumahan Rakyat 1 Malaysia, the Residensi Wilayah which is previously known as RUMAWIP, Rumah Selangorku by the state government, Program Perumahan Rakyat (PPR), Rumah Mesra Rakyat Plus and others. These mentioned initiatives are mainly from the Federal and the States government of helping middle-income and low-income earners to own their first house. The objectives for the programs are to develop and deliver a newer affordable home that is built to cater to the demand for affordable housing and targeted for middle- and low-income groups. The arising issue of overhang, especially in affordable housing has become everyday news, especially in the property portals. Despite the demand interest for affordable housing, the overhang statistic revealed by the National Property Centre (NAPIC) in 2020 shows the increase of the property overhang. The statistic of the overhang in affordable housing keeps increasing although the demand for affordable housing is in the market.

1.1. Research background
The glut in the property market has become a severe issue in the country. This issue occurred due to the oversupply in property and leads to the overhang. The overhang crisis in the country became a crucial issue with the high statistics were recorded yearly. This overhang scenario is partly factored by the property cost due to the increased number of developers that launched and built properties on every piece of land within their grasp with the high price. The price increase is affecting the property sectors. As a result, it causes property mismatch happened in the supply and demands and leads to the overhang in affordable housing. The house price in Malaysia is 4.8 times the average of Malaysian households’ annual income as of 2016. This is more than the house price to the income ratio of 3.0, which is set by the multiple median methodologies developed by Demographia International and was recommended by the World Bank. The affordability issues of affordable housing are one of the controversial issues in the most developed and developing countries [3]. One of the factors that lead to the property overhang is the increase in property price. The property price is affecting the property sectors. Due to that, it makes property mismatch happened in the supply and demands. The housing policy in Malaysia is to ensure that all Malaysian, regardless of income but especially those low-income groups, are afforded to own a house, an affordable and adequate. The policy of housing provides directions to the housing development in the country and emphasizes human settlement for better life quality and national integration and unity.

The research aims to explore factors affecting the affordable housing overhang issue in Malaysia and its overview on the current situation due to the Covid-19 Pandemic based on the review from the published literature on the current residential property market. The property overhang issue and its related factors which focus on affordable housing are to be identified and analyzed in all contexts that contributing to the problems. The review of past literature was carried out, and data from journals and books are extracted, including reports and journals. This research intends to carry out and focus on the main factors.

1.2. Literature review
1.2.1. Affordable housing. In general, affordable housing is defined as where the households should not pay more than 30% of their income for housing, including the utilities. As to encounter the basic living costs, this is referring to the capacity of the households in meeting the housing costs while keep maintaining the capability. The term of affordable housing is also known as a development of housing with the plan to help those households in getting and paying for appropriate housing without experiencing undue financial hardship [4]. These criteria may be met by a variety of government or privately funded housing options [4]. This concept has replaced words like "public," "social," and "low-cost" housing. [5]. The criteria for determining affordable housing in Malaysia must be priced below RM300,000. Housing that costs more than RM300,000 is not deemed reasonable. To be eligible for this, a typical household monthly income must be less than RM3,000. The total number of housing units that remained unsold after sales launched or after January 1st, 1997, was referred to as "overhang" in the year 1999. Between the years 2000 and 2002, the phrase "property overhang" was used to describe property that remained unsold for more than 9 months after it was first listed for sale on or after January 1, 1997, and have completed units, under
construction, and unbuilt units. The definition of property overhang also needs to include only the completed housing units that obtained the Certificate of Fitness for Occupation (CFO) by local authorities and remained unsold for more than nine months after it was launched on or after 1 January 1997. The definition of property overhang, which includes residential or housing, has been modified three times from 1999, 2000, and 2003, as indicated in the Malaysia Property Market Report.

1.2.2. The Statistic of residential overhang

1.2.2.1 The statistic of 5 years residential overhang in Malaysia from 2016-2020

The total overhang units were increased from the year 2016-2018. In 2019, total residential overhang units were 30,664, and the amount is slightly down in 2020, where the total units are 29,565 for the value of RM18.92 billion.

| Year   | Total units | Value (RM' Billion) |
|--------|-------------|---------------------|
| 2016   | 14,792      | 8.56                |
| 2017   | 24,738      | 15.64               |
| 2018   | 32,313      | 19.86               |
| 2019   | 30,664      | 18.82               |
| 2020   | 29,565      | 18.92               |

In 2020, the total of residential overhang units is 29,565 with a value of RM18.92 billion. From this figure, 15,718 units which represent 53.2%, are from the high-rise units. For terrace house is 28.1% which, are 8,306 units with a value of RM4.66 billion. Others are with 18.7% and the value is RM6.05 billion. This represents 5,541 units. In terms of the price range, 8,758 units are properties with a price range of RM300,000. For property with the price range of RM300,000- RM500,000, the total units are 7,185 with a value of RM2.94 billion. There are 10,199 units which are equal to RM6.93 billion for those properties with the range of RM500,000 to RM1,000,000. However, for the property above RM1,000,000, there are 3,423 units with a value of RM7.25 billion. The overhang statistic report obtained from NAPIC in 2019 shows that throughout the years, the overhang statistic continues to increase. In 2018, the Housing and Local Government Ministry recorded a property overhang of RM22.5 billion in unsold residential countrywide, with 73% of the figure being affordable housing priced at RM250,000 and less.

The number remains high in the year 2020. The NAPIC statistics in 2020 have indicated that the overall overhang increased by 10.7% and 13.2% in volume and value to 63,063 units worth RM47bil at the end of the second half of 2020, compared to 56,988 units worth RM41.5bil a year earlier. According to the report, condominium and apartment units account for 43% of total overhang in the nation, indicating that it is within the affordable range. It is also stated that the overhang value has grown by more than 100% over 10 years, from RM4.48bil in 2008 to RM10.08bil as of March 2017. The property market report updates in 2020, reveals that the condominium and apartment units have made up 43% of the total property overhang in the country, which denoting that most of them are within the range of ‘affordable’.

The Malaysian government has developed a housing strategy that intends to increase the private sector's engagement in housing production and delivery, particularly in housing developments [6]. Currently, there are more than twenty national and state-level organizations are active in the provision of affordable housing in Malaysia. PR1MA is one of the initiatives, intending to establish, plan, develop, constructing, and maintaining affordable lifestyle housing for middle-income households in urban areas. The goal is to create more affordable homes in the cities of Malaysia.

These initiatives are aimed to make homeownership more accessible. Due to the high cost of housing, solving the issue of affordable housing is extremely difficult. Furthermore, the availability of affordable housing, particularly in Klang Valley metropolitan regions, is still insufficient to satisfy current demand. The fact that the Malaysian housing industry is still unable to provide and offer cheap homes for the public is a noteworthy issue that has been widely addressed. PRIMA is one of Malaysia's affordable housing schemes. The PRIMA project was established on July 4, 2011, and it is administered by Perbadanan...
PR1MA Malaysia, a government-owned corporation under the Ministry of Housing and Local Government. Under the PR1MA Act 2012, Perbadanan PR1MA Malaysia was formed with the focus of planning, developing, constructing, and maintaining high-quality housing with lifestyle ideas for middle-income households in important metropolitan centers. Aside from that, the Residensi Wilayah, formerly known as RUMAWIP, is an affordable housing program that provides all Federal Territory citizens with comfortable, quality, and affordable housing.

1.2.3. Overhang issue in affordable housing. An affordable housing process considers the accessibility measures for intending occupants, adequacy and quality, availability measures, and the measures of affordability. When offering affordable housing, six areas must be met, namely appropriateness of the housing, housing, and social mix, tenure choice, and location, the quality of environmental planning, design, and cost. This includes the delivery speed, which is one of the most important factors in an affordable housing project. The value of social capital, often known as technology, is critical in affordable housing since it may provide economic benefits and, if disregarded, can produce economic disadvantages. The satisfaction of low-cost residents, from where it was found that it is critical to improving neighborhood facilities to increase residents’ satisfaction. In Malaysia, the property overhang issue is originated from the excessive supply in the year 2016 where the total overhang units are reported at 382,955. This figure is the highest since the year 2003. The increase of 24,738 units of the property overhang is because of the excessive supply in the year 2017. The residual impact is carried forward to the year 2018 which continues to intensify the housing market. The figure that is dominated by the property overhang in the country is those condominium types with the price of RM200,000 and RM300,000 in Penang and Kedah. A substantial portion of the statistic is from the affordable housing projects that we’re unable to gauge the interest from the targeted buyer and failed to gain buying traction. The developers are urged to build houses that can cater to the demand of buyers in terms of the property type, location, and also price range [7].

One of the fundamental economic principles of housing supply and demand is to avoid the outgrowth of housing supply to the overall housing needs. The implementation of new builds has to be monitored wisely, where the housing market is expected to remain challenging in the coming years since the property overhang will still need time to recover. The property overhang is related to the country's economic performance and is caused by the excessive supply of housing stocks that outpaced the market’s limits of absorptivity. The property overhang tends to occur when the rate of housing production exceeds the rate of housing absorption. The composition of the residential property overhang in Malaysia reveals that the houses priced below RM300,000 are the major contributor which represents 35% and the houses priced at RM300,000-RM500,000 represent 27%. This is followed by the price of RM500,000-RM1,000,000 with 25% and 13% for houses priced above RM1,000,000 [8]. The statistic is high for affordable housing, especially given the development’s strong demand. In the current residential property market, there is insufficient affordable housing due to several issues that affecting the ‘affordability’ namely the property price, income, the land cost including the demand and supply [3]. Even while the market was growing, the problem of property overhang persisted. This may be observed in the period between 2010 to 2015 when lending policies were more permissive in terms of easy credit, added with the Developer Interest Bearing Scheme (DIBS) still in the market. The statistic of property overhang is 11,316 units in 2015, although the market condition was good. The massive construction of the residential properties by public and private housing developers, which has partially become one of the contributing reasons, is the factor that contributes to the overhang issue [9].

Other factors that are affecting the house price insignificant are known as location, the distance to the workplace, schools, retaining outlets, and public transportation stations [10]. The substantial growth of the housing price is the primary key and factor that contributed to the overhang issue. This is the notable factor that leads to the overhang issue. The arising of the housing price is beyond the affordability level. This factor is caused by the rising compliance cost, the process of long approval, and including the cost of running the business. Furthermore, the escalating cost of doing business and construction cost increased the house price [10]. Most of the suppliers are having the issue of the down cycle of the economy, the affordability issue, and the property demand. The increase of goods and materials in terms of price and the
inflated cost of living and income is stagnant. The M40 and B40 groups are both affected and hit them badly. In addition, the depreciation of Ringgit Malaysia and the implementation of the GST for the last few years were told to be the reason behind it. The increase in property price is one of the main factors that contribute to the overhang factors. It can be seen during the country’s recovery from the subprime mortgage crisis in the year 2007 to 2010. As a result, housing values have risen by as much as 15%. The increase and high living costs with the stagnant income growth of individuals have given a destructive impact on the individual capability to save for more funds. Hence, the affordability to own a house especially to those middle-income earners or B40 and M40 categories. The largest segment of overhang involves mid-range houses [8].

1.2.4. The Covid-19 pandemic impact on the affordable housing and reducing the overhang issue during the pandemic. The current Covid-19 Pandemic and housing affordability remain a massive challenge for Malaysia. During this period, the government should focus on the local housing demand-supply mismatch and also the reordering of the state business relationships in property development [11]. Due to this Pandemic, it is recorded that many of the households are struggling to make ends meet even before the crisis. With this crisis, now they are facing the risks of material deprivation, including the inability to honor rent and also mortgage payments [12]. The Covid-19 Pandemic has had a devastating impact on renters and housing providers.

The Covid-19 Pandemic has given a harmful impact and undermines the property industry throughout the world. It has severely disrupted the construction sector and made it difficult for most households to pay for shelter [12]. In Malaysia, with the lockdown, travel restrictions, and physical distancing, the world is already facing a profound change in the economic situation with the disclosure of companies and thousands of new unemployed leads to a recession in 2020. Part of the containment measures taken are including the partial and full shutdowns of the construction sites in many countries. This will affect the income and leads to the revenue losses for the households and enterprise adversely and depending on the stringency of confinement and the timing. The housing sector is having its fair share and these impacts may last for a long period due to behavioral changes and technological advancement.

The impacts are including on adverse income shock, the rising uncertainties, and also halt in the construction industry [12]. The property industry faces several threats, including domino consequences in the case of financial collapse by important property businesses, impairment, declining property values, and rising construction material costs. Housing prices have risen throughout the world in the year 2020. Due to the delay in the economic recovery from the Covid-19, and a long-standing oversupply that began in 2015, the housing market is expected to continue to stay depressed even if recover from Covid-19 [13].

Due to this Pandemic, the government has launched a new more stimulus package, namely as the PRIHATIN or in full is ‘The Prihatin Rakyat Economic Stimulus Package’ and PENJANA which is a Short-term Economic Recovery Plan. The Pandemic has taken its toll on various sectors, including property market activities. The volume and value of transactions contracted sharply in Q2, 2020. The PRIHATIN is the financial initiative introduced by the government which helped to soften the impact on the property market, including an automatic six months loan moratorium to individual borrowers and SME and the cut of the Overnight Policy Rate (OPR) with a cumulative 125 basis points in 2020 would be able to assist on lower the borrowing costs, thus lower the monthly repayment amount.

However, for PENJANA, it is a recovery plan which is related to the property, such as the reintroduction of the Home Ownership Campaign (HOC), where there is the stamp duty exemption on the instruments of transfer and loan agreement for the purchase of residential homes priced between RM300,000 to RM2.5 million subject to at least 10% discounts provided by the developer. The RPGT exemption for disposal of residential homes from 1st June 2020 to 31st December 2021 and the uplifting of the current 70% margin of financing limit applicable for the third housing loan onwards for property valued at RM600,000and above, during the period of the HOC, subject to internal risk management practices of financial institutions [14].

The number of overhangs will only come down if there is a reduction of property supply in the consecutive years, which is well depicted throughout 2010 – 2013: both the stock growth and residential
property overhang declined from 107,476 and 23,133 in 2010 to 84,840 and 13,547 in 2013, respectively. More discounts are given from developers on top of the HOC which is extended until 31 December 2021. The overhang numbers are unlikely to drop or showing a significant drop in the year 2021 and could be stabilizing but it is expected to stay high not just due to the movement control order. The residential market likely is to recover slightly and possibly move upwards a little upon the successful vaccination programs and renewed sentiments.

1.2.5. The factors affecting the property overhang in affordable housing. The government has implemented cooling measures, which create an impact on the housing sector. The cooling measures that were implemented are the loan to value ratio for the third property. These affecting property sales in the market. The end financiers are playing roles in the property sector. The stringent criteria adopted by the banks in approving loan applications and offering the low margin compared to the amount apply making the buyers' interest are deterred. This affected the buyers from buying the property. The discontinuation of the Developer Interest Bearing Scheme or DIBS has dampened the buying sentiments among the buyers. The property developed at unfavoured places, or far from the amenities makes the property less favourable and not attracted to the buyers. Meanwhile, some units even developed at the place where there is an oversupply on the areas or with similar property. Projects developed by developers are located which are not ideal by the targeted buyers with lack of amenities and public transport. This factor affecting buyers since it is far from the buyers' workplace.

The supply and demand mismatch in some of the locations is one if of the crucial factors that lead to the property overhang. Location is a crucial factor that buyers are considering when buying homes [15]. The excessive supply in the property market is increasing the overhang statistics in the country. On the other hand, accurate data is important to the developers for a better understanding of the new launching performance. The accessible data which should be accurate and updated data is crucial for the development planning purpose so that the other developers decide to make decisions on the future product's type, the pricing, and location, and also the timing of data is accessible [12]. This is to avoid the overbuilt units that are being built in not preferable areas and caused the overhang problem. The lack of precise data for developers has resulted in property mismatches [16].

The Ministry of Housing has continued to push for an integrated database that is coordinated by them to consolidate data from multiple agencies from the locals, state, and also federal. This database will provide information in the planning and the residential unit's allocation in the country. The insufficient information has caused the developers to have the false optimism to develop more high-rise residences during the better market condition in the year 2013 and 2014 in terms of the price, sizes, and locations which then was failed to suit the market demand and became overhang units when the projects are completed after three to four years later [12].

The lack and inadequate data hinder developers in providing suitable properties at the right location and the right price. One of the issues that a homeowner should consider is the time it takes to get to work. House purchasers choose residential apartments equal in price and size but have greater access to the city center. Property overhang is exacerbated by the connection and distance factor of affordable housing units. The developer's decision to build the wrong product for a larger profit margin is also adding to the overhang problem. Location is regarded as the most important factor for buyers to consider when purchasing a property. One of the most important aspects of developing effective affordable housing is by choosing the right location. Residents must be able to reach employment in acceptable commute times, have access to education and essential facilities, and be able to engage with local society to build successful affordable housing.

To address the overhang issue, it is profound to have a thorough awareness of a variety of internal and external elements, as well as their interrelationships. This including the role of the planning system which is involved in the planning system which is in forecasting, assessing, and controlling the housing supply. One of the issues which are discussed widely in the property industry in the country is the unsold, overhang, and oversupply of the housing development. Further to the overhang issue highlighted the information of the higher figure. One of the actions is to identify the process of private developers' speculative demand
and supply, as well as loopholes in the planning and land approval systems, which are major contributors to the overhang and oversupply issue [17].

The overhang issue is originated from the weakness in the planning approval system by the local authorities where housing applications were being permitted without taking into consideration the actual demand [18]. The mismatch between demand and supply has been caused by the continuous uncontrolled activities in producing new housing supply. The situation is further aggravated by the developers’ and approving authorities’ lack of knowledge about the property market. The mismatch between demand and supply has been caused by the continuous uncontrolled activities in producing new housing supply. Not only is there a higher rate of unsold property, but there is also a higher rate of unoccupied property in today's housing stock [18].

The social stigma attached to purchasing a designated affordable housing unit among young Malaysians such as Residensi Wilayah and also PR1MA also making the affordable housing projects are less attractive for them. The overhang issue, according to some industry players like REHDA, is also due to the unreleased Bumiputera quota. This was caused by the Bumiputera quota, which differs not only from state to state but also from zone to zone within a state. A social stigma exists among young Malaysians who purchase designated affordable housing projects such as PR1MA and Residensi Wilayah, which deters a portion of the target demographic.

Meanwhile, the Association of Valuers, Property Managers, Estate Agents, and Property Consultants in the Private Sector Malaysia (PEPS) believes that the high number of unsold properties is due to factors such as developers' indiscriminate construction, a lack of market studies, and financial feasibility studies, a lack of coordination on planning among local authorities, and indiscriminate approvals by various local authorities. Another factor exacerbating the problem is the inability to secure end financing that worsens the issue [19]. End financing [6] and unreleased Bumputera units were identified as the two main issues that led to the unsold of affordable housing units [20]. In terms of the financing issue, it is also including the lower margin of financing offered, the ineligibility of the buyer's income, and the adverse credit history. According to industry experts, the high number of unsold units is due to high housing prices and poor housing location, and its unattractiveness to aspire buyers [5]. The factors were also summarised and listed as follows.

Table 2. The overhang in affordable housing.

| The Factors                                                                 |
|---------------------------------------------------------------------------|
| 1. The affordability factors [18]                                        |
| 2. The increase and the substantial growth of the house price [21]         |
| 3. Lack of interest from the targeted buyer [16]                          |
| 4. Massive over the construction of houses and uncontrolled activities [21]|
| 5. The wrong product developed by the developer/Product mismatch [18]     |
| 6. Inefficiency in the planning approval system [9]                       |
| 7. The lacking accurate developer data and inadequate data [16]           |
| 8. The unsuitable location and accessibility [10]                         |
| 9. Social stigma among youth on the affordable housing [22]               |
| 10. The imperfection of the housing market distorted by the external influences [9] |
| 11. Mismatch on the supply and demand, the product, location, and price [4]|
| 12. Property market imbalance [4]                                         |
| 13. The stringent on the end-financing [10]                               |
| 14. Unreleased Bumiputera units [20]                                      |
| 15. Time, cost, quality, satisfaction, health, and environmental [23]     |

2. Methodology
The researcher uses the method of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) for the literature review. The data were obtained and collected from secondary sources. This includes the published and unpublished literature which is related and relevant to the topic. Once it was identified, the inclusion and exclusion criteria were set by using the keywords. The keywords are housing, affordable housing, affordability, overhang, and Covid-19. The topics that meet the inclusion criteria were included, and not related were excluded. All the information was searched, reviewed, and acknowledged. The source of the collected data is from the google website and using the source engines of google scholar. A total of 142 documents were retrieved, with 70 does not within the keywords, not categorized in the theme, and also are not eligible. The authors only left with 61 relevant documents which include the theses in Ph.D., MSc, journals, articles, books, reports and statistics, and also proceedings.

![PRISMA flow diagram for the scope of the review process.](image)

An extensive literature review was conducted to achieve the aim of the research by involving discussions and a thorough study from the published journals. Moreover, a lot of articles and journals, other research papers, and materials also were referred to. This research will be using content analysis and thematic analysis as the preliminary method. Content analysis is a research method for making replicable and valid inferences from data to their context, with the purpose to provide knowledge, new insights, a representation of facts, and a practical action guide. To achieve the objectives to establish structural modelling in affordable housing, the research interview will be conducted to explore the views, beliefs, and experiences of individuals on specific matters. More information will be gathered through planned interviews with relevant authorities and industry players, including representatives from PR1MA, Residensi Wilayah programs, and the Real Estate and Housing Developers' Association (REHDA) as respondents. The qualitative method has been chosen and is to be used for this research. This is to provide an in-depth understanding of the social issue.
3. Results and discussion
According to the findings of the literature review, articles, journals, and the data obtained from the website, the 15 main factors that lead to the overhang in affordable housings are listed. The framework is to be established from the listed factors. The data was then are collected and analyzed. The outcome is shown in Table 2. This journal's main keywords are including the property market, the residential, affordable housing, and the overhang.

4. Conclusions
This research is focusing on developing the framework. From the listed overhang factors, the establishment of the framework, which is the primary key will be able to provide benefits to the general public and the industry players and as a public reference. It would then able to figure out what is the determining factors, and weightage that needs to be considered by the housing developers and the industry players in specific. The public also benefited by referring to the information and the figure on the property overhang numbers can be reduced in the country.

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