



# A Practical Model for Estimating the Future Income of Under Planning Shopping Centres

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## Abstract

The paper presents a practical and universal two-way approach to estimate the future rental income of under planning shopping centres. Rental income estimation is a critical component in commercial real estate development. Especially contrary to cost items such as construction and financing, it is more challenging to acquire quotations for. Based on industry experience and literature review, the model proposes a standardised structure for a process that has been rather personal and fuzzy. One angle of the model is focusing on the analysis of a SC's overall sales performance, which relies on the number of annual visits, the shopping basket size per visit, and the rent-to-sales ratio, while the other angle is focusing on a shop-by-shop rent roll analysis, containing potential tenants, their estimated sales performances, and rent ranges. Each angle could be used for proof-checking the other. There are also factors that affect the sensitivity range of one or both angles, such as the future project's location, size, branch and tenant mix, concept, brand equity, catchment area demographics, and competition. These are separately highlighted in the paper. The slightest deviation between the estimated and actual rent incomes could create meaningful alterations in a SC's valuation and return on investment, a risk that the model is designed to mitigate. The model is also a useful tool both for real estate developers and the academicians that work in this field, even though further progress is needed to narrow the current information asymmetry for all stakeholders. Thus, the model is an initial step for the industry towards developing standardised and democratic tools to work, conduct research, and collaborate.

**Keywords:** shopping centres, income estimation, feasibility studies

## 1. Introduction

As one of the essential elements of urban economics (Kang, 2019), developing a shopping centre (SC) relies heavily on estimations, which have traditionally been educated guesses by industry experts, more so for the under-planning projects. It is relatively more straightforward to estimate the cost side items (e.g. construction, financing) in a feasibility study due to the availability of real-time quotations. Yet, estimating the income side could be more burdening. The industry has had its fair share of challenges in the 21<sup>st</sup> century, from the subprime mortgage crisis to the rise of e-commerce and the subsequent loss of interest in the industry during and immediately after the pandemic (Entwistle, 2024, February 5), elevating income estimations to new heights in the process of investment decision-making. Investors, retailers,

and consumers have become much more selective and open to change amid the social and economic shifts (White et. al., 2023, Savills Research, 2024, Zamfirache et. al., 2024), making the infamous quote “if you build it, they will come” truly redundant.

The current ever-changing, multifaceted, and high-competition industry landscape does not leave room for trusting income estimations that are solely based on past experiences and limited, imperfect information. Crosschecking mechanisms and up-to-date, extensive data are essential. Related to this need, the paper proposes a practical two-angle approach to estimate the future rental income of under planning SCs. The first one is the sales performance angle, which relies on estimating the number of annual visits, the average shopping basket size per visit, and the percentage of total sales that could be identified as rent (i.e. rent-to-sales ratio). The second one is the shop-by-shop rent roll analysis that outlines the prospective tenants for each available leasable space and the estimations for both their sales performances and potential rent payments. Naturally, there are also other critical variables that may impact both angles of this proposed model. These are provided in a separate segment below.

There are two upsides of this study, (1) bringing the academic and private sector practices closer and (2) providing an accessible, structured, and usable model for a larger audience. Additionally, the model is a pragmatic tool for reasonably estimating the rental income of an under-planning SC, which is critical both for making sound investment decisions and for subsequently securing the long-term commercial success of a project.

## **2. Critical Variables for the Estimations**

Based on the existing literature on the topic, there are seven relatively prominent variables that may affect both angles of the model. With shopping centres being a constant subject of discussion within social, environmental, and economic circles (e.g. Erkip, 2005, Vogel, 2015), with the relations between diverse industry stakeholders constantly changing (e.g. Avello et. al., 2011, Nebati and Ekmekçi, 2019, Ilhan, 2020), and after decades of progress following Huff’s (1964) seminal work on retail trading areas, these variables could be listed in the modern context as location, size, branch and tenant mix, concept, brand equity, catchment area demographics, and competition, based on the literature review.

For instance, a neighbourhood centre with limited leasable space and brand variety could potentially lead to a narrower catchment area and to a more modest daily visit performance. Such a modest figure may also limit the gross sales performance, regardless of how high the shopping basket size would be. Of course, neither of these interrelated factors could limit the per square meter (sqm) gross leasable area (GLA) performance of the said SC. The other side of the coin is a larger SC located in a so-called weak demographic area, where the shopping basket size could be lower. This may not prevent its gross earnings to be high (more sqm GLA and more visits may reverse the negative impact of a smaller shopping basket size). It all comes down to making informed estimations within a reasonable standard deviation.

Within the literature, it is observed that geographical differences are only becoming central topics in the socioeconomic readings of the SC phenomenon. Not being directly related to this paper’s core topic of rental income estimation, such literature does not tend to analyse SCs’ conceptual and commercial aspects. This is visible in Astarini and Utomo’s (2023) work where they focus on “spatial layout, accessibility of space, and visitor visibility”, with their focus area being the major cities of Indonesia not playing a differentiating role. A similar sentiment is also seen in Thanasi-Boçe et. al.’s (2021) work, with concept and location again reign as supreme differentiators in their field analysis in Kuwait. Academic studies that have a socioeconomic critique angle are in a cluster of their own, as they highlight separate topics

from all over the world that are fairly beyond the scope of this paper, from consumerism to urbanisation (e.g. Duman, 2016, Jewell, 2016, Escudero-Gómez, 2021).

*Table 1: Overview of the Literature Review for the Critical Variables for the Estimations*

| Author(s)                           | Article's Scope | Highlighted Variables |      |            |         |              |              |             |
|-------------------------------------|-----------------|-----------------------|------|------------|---------|--------------|--------------|-------------|
|                                     |                 | Location              | Size | Tenant Mix | Concept | Brand Equity | Demographics | Competition |
| Astarini and Utomo (2023)           | Asia            |                       |      | X          | X       | X            |              | X           |
| Beiró et. al. (2018)                | South America   |                       |      |            |         | X            | X            |             |
| Bello and Kado (2024)               | Africa          | X                     | X    |            |         |              |              |             |
| Brandão et al. (2014)               | Universal       | X                     |      | X          |         |              |              | X           |
| Chen et. al. (2023)                 | Asia            |                       |      |            | X       |              | X            |             |
| Escudero-Gómez (2024)               | Europe          |                       | X    | X          | X       | X            |              |             |
| Gudonavičienė and Alijosienė (2013) | Europe          | X                     |      | X          | X       | X            |              |             |
| Ilhan and Ferman (2019)             | Europe          |                       |      |            |         |              |              |             |
| Kunc and Krizan (2018)              | Europe          |                       |      | X          | X       | X            | X            |             |
| Mihaescu et. Al. (2020)             | Europe          |                       | X    |            |         |              |              | X           |
| Pettersen et. al. (2024)            | Europe          |                       | X    |            | X       |              | X            | X           |
| Rochmińska (2017)                   | Europe          | X                     |      |            | X       |              |              |             |
| Saxena and Hashemi (2012)           | MENA            | X                     | X    | X          | X       |              |              |             |
| Thanasi-Boçe et. al. (2021)         | MENA            | X                     |      |            | X       |              |              |             |
| Xu et. al. (2022)                   | Europe          |                       |      | X          |         |              |              |             |
| Yiu et. al. (2024)                  | Australia       |                       | X    |            |         |              | X            |             |
| Yoğurtçu and Köksal (2024)          | Europe          | X                     |      |            |         |              | X            |             |

### 3. The Model

While estimating the cost side (i.e. land, construction, financing, third-party services, tax and legal fees) is comparatively straightforward in a SC feasibility, as the investors could acquire up-to-date quotations for almost all cost items, it is not the case for estimating the future rental income. If the income side is to remain fuzzy, making the right investment decision or ensuring the long-term success of a project could become more challenging. For example, in a 20.000 sqm GLA SC, a difference of just \$1 in the per sqm monthly average rent would lead to a fluctuation of \$240.000 in the annual gross rental income (20.000 sqm GLA x \$1 x 12 months). Even if the multiplier effect of the subsequent annual rent increases is to be excluded, this would still translate into a loss of \$2.4 million in rental income in a ten-year cashflow, also diminishing the valuation of the project (i.e. less gross rental income leading to a smaller net operating income, which in return leading to a more modest project valuation when the industry yields are applied). This is also critical because the cost side would probably stay the same regardless of having \$1 less per sqm monthly average rent, prolonging the return on investment period of the SC.

In a quest for standardising and democratising the SC rental income estimation field, this proceedings paper proposes a model that has two angles acting as an interrelated checks and balances mechanism. The sales performance angle embraces a top-down approach (i.e. forecasting a SC's rental income by trickling down from first estimating its overall sales performance), while the shop-by-shop rent roll analysis angle utilises a bottom-up approach (i.e. building up from the estimations prepared for each individual prospective tenant). Still, it

is better to use this model to estimate income ranges, rather than trying to pinpoint exact figures, even in cases where key information is available.

### 3.1 Sales Performance Angle

The initial ranges to be determined for this angle are the number of average daily visits and the average shopping basket size. These shall provide a sensitivity analysis for gross annual sales performance. The next step would be to identify the rent-to-sales ratio (i.e. total annual rental income divided by the gross sales performance). Identifying this ratio is dependent on:

- Specific market conditions (e.g. retail spending capabilities of the catchment area inhabitants, impact of competitors, overall economic indicators),
- The room cost in the SC (i.e. what a tenant pays for having a space in the SC, including the shop's rent, its direct consumption items such as electricity, and its share in the common area cost charges related to the jointly used areas of the SC, while excluding other items such as inventory, labour, marketing, and insurance),
- The SC's concept, branch and tenant mix (whether it relies more on big box anchor retailers that may only allocate 2%-5% of their total sales to rent or on gastronomy concepts that could go as high as 15%).

Calculating the weighted average of all tenants' rent payment capabilities related to their gross sales performances leads to an average rent-to-sales ratio for the SC in question. By also providing the total sqm GLA, all key assumptions required for this angle would be completed. Then, one could calculate the potential rent both in annual gross and per sqm GLA per month terms, also an essential milestone for the model proposed.

In the example provided below ("Table 2"), different ranges are proposed (number of daily SC visits between 7.500 and 12.500 and the shopping basket sizes between \$10 and \$20), in addition to providing a hypothetical rent-to-sales ratio of 8% and a SC sqm GLA of 20.000.

*Table 2: Example Sales Performance Analysis*

| Dailys Visits | Shopping Basket per Visit (\$)                              |            |            | Shopping Basket per Visit (\$)                   |           |               | Shopping Basket per Visit (\$)                        |    |    |
|---------------|-------------------------------------------------------------|------------|------------|--------------------------------------------------|-----------|---------------|-------------------------------------------------------|----|----|
|               | 10                                                          | 15         | 20         | 10                                               | 15        | 20            | 10                                                    | 15 | 20 |
| 7.500         | 27.375.000                                                  | 41.062.500 | 54.750.000 | 2.190.000                                        | 3.285.000 | 4.380.000     | 9                                                     | 14 | 18 |
| 10.000        | 36.500.000                                                  | 54.750.000 | 73.000.000 | 2.920.000                                        | 4.380.000 | 5.840.000     | 12                                                    | 18 | 24 |
| 12.500        | 45.625.000                                                  | 68.437.500 | 91.250.000 | 3.650.000                                        | 5.475.000 | 7.300.000     | 15                                                    | 23 | 30 |
|               | <b>Annual Gross Sales Performance Estimation</b>            |            |            | <b>(B) Annual Gross Rental Income Estimation</b> |           |               | <b>(C) per sqm GLA Monthly Rent Income Estimation</b> |    |    |
|               | <i># of Annual Visits x Shopping Basket Size x 365 Days</i> |            |            | <i>(A) x rent-to-sales ratio</i>                 |           |               | <i>(B) / SC sqm GLA / 12 months</i>                   |    |    |
|               | <b>rent-to-sales ratio</b>                                  | <b>8%</b>  |            | <b>SC sqm GLA</b>                                |           | <b>20.000</b> |                                                       |    |    |

To further clarify the hypothetical example above, one could focus on the scenario where the number of daily visits stands at 10.000 and the shopping basket size is \$10. This means that \$36.500.000 worth of annual gross sales are being produced by the SC's tenants (10.000 daily visits x \$10 spent per visit on average x 365 days). With an 8% rent-to-sales ratio, the annual gross rental income would be \$2.920.000. When the proposed 20.000 sqm GLA size is considered, the per sqm GLA monthly rent income estimation roughly ends up at \$12.

### 3.2 Shop-by-shop Rent Roll Analysis

This angle relies more on having up-to-date and sizeable datasets that would include the performance figures of different tenants, SCs, and urban sub-markets. With such datasets, the branch and tenant mix of an under-planning SC, including the brands, shop sqm GLA figures, sales performance estimates, and rent payment capabilities could be put forward. An example is provided below (see “Table 3”).

While this example only contains two tenants, many assets would have at least 60 tenants, with some major SCs could even have 250 tenants or more. It is reasonable to have a range for monthly sales performances and the rent-to-sales percentages, with worst, medium, and best-case scenarios being put forward. These scenarios would then lead to a range of monthly rental income for each shop. The subsequent rent roll must be analysed together with the findings of the sales performance angle study for any potential corrections.

*Table 3: Example Shop-by-shop Rent Roll Analysis*

| # | Brand       | sqm<br>GLA | Monthly Sales (\$) |        |        | Rent-to-Sales (%) |        |       | Monthly Rent (\$) |        |       |
|---|-------------|------------|--------------------|--------|--------|-------------------|--------|-------|-------------------|--------|-------|
|   |             |            | Best               | Medium | Worst  | Best              | Medium | Worst | Best              | Medium | Worst |
| 1 | Food Co.    | 60         | 49.000             | 44.000 | 39.000 | 12 %              | 10 %   | 8 %   | 5.880             | 4.400  | 3.120 |
| 2 | Fashion Co. | 250        | 62.000             | 56.000 | 50.000 | 8 %               | 7 %    | 6 %   | 4.960             | 3.920  | 3.000 |

For instance, “Food Co.” has an estimated monthly rent range that starts from \$3.120 (worst-case monthly sales estimation \$39.000 x the worst-case rent-to-sales ratio of 8%), which gradually improves in the medium- and best-case scenarios. If the data is available, the practitioner must then compare this range with the market rates for similar tenants in similar circumstances. It must be noted that the prospective tenants shall also be preparing their own feasibilities for future shop openings, and they would also consider numerous variables, while relying on data that may vary in certainty and depth (Karadeniz, 2009).

### 4. Future Research and Limitations

While this paper proposes a universal model, there are two limitations to consider. First one is the vast discrepancies between different national and regional retail and SC markets. This is critical for the model’s confidence interval and its easy adaptability across different markets. In order to counter such discrepancies, one must have a large, up-to-date dataset of the market in question. By extension, this leads to the second limitation of the model. Such datasets are mostly treated as trade secrets. Anonymous use of these datasets could catalyse the formation of a platform for open discussion and efficiency in the SC industry.

Thus, further research could focus on the concept of anonymous data to make improved estimations that would be open to a larger portion of the real estate research and practice community. Working on data availability and transparency may also usher in more realistic project feasibilities, enabling the most fitting projects to go through. As a final note, it must be stated that non-hard-currency markets (i.e. due to sales performance fluctuations that affect the rent income forecasts) and regulations that limit the fair market principles (e.g. caps on rent increases, limitations on common area cost charges and lease contract terminations) make this a doubly challenging task. Yet, the model remains to be a valuable addition, as it shows the inner workings of estimating the income of an under-planning SC.

## 5. Conclusion

Amid the social and economic shifts that push the industry to repeatedly reinvent itself to stay relevant, estimating the rent income of under planning SCs has remained as a major challenge. It is even more of a black box for the researchers of the field, mostly because of the unavailability of reliable data. Even though this information asymmetry problem could not be thoroughly solved with the model proposed by this paper, the model nonetheless manages to practically identify the main components of the art and science of SC income estimation. It is also a tool that could be practically utilised by the stakeholders of the industry, researchers and practitioners alike. Relatedly, the model contributes to a critical step in the SC investment decision-making process that highly affects project feasibilities (e.g. return on investment performance, future project valuation) by standardising and democratising the field. The model's precision would only increase with sustained and reliable data inputs, help fostering a data-driven, collaborative industry.

The proposed model has two distinct but interrelated angles that are formulated as a checks and balances mechanism. One angle focuses on estimating the overall sales performance of an under planning SC, embracing a top-down approach, while the other angle is based on a shop-by-shop rent roll analysis that utilises a bottom-up approach. The model is able to produce sensitivity analyses that provide different rental income ranges for each specific scenario.

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