

The Accuracy of Prediction in Commercial Property Development Appraisal in Lagos, Nigeria

M.O. Bello and Ojo Babajide

Department of Estate Management, Federal University of Technology Akure

Abstract: This study is structured to evaluate the accuracy of commercial property development appraisal prediction in Lagos metropolis. The study area was first classified into strata. Each stratum consists of economic nuclei where surveying activities aggregate. Within each of the economic nuclei, questionnaires were randomly administered. For the data analysis, Chi-square and test on differences between two means were employed. The study revealed that there exists a statistically significant difference between the actual and the predicted values of variable inputs such as Rental Income, Capital Cost, Development Period, Lending Rates and Investment Payback Periods. The implication is that the quality of appraisal services rendered by the Estate Surveyors and Valuers in this aspect is inadequate. To abate this, the Nigerian Institution of Estate Surveyors and Valuers and the Estate Surveyors And Valuers Registration Board of Nigeria are urged to evolve a policy that would lead to the enhancement of both the theoretical and practical knowledge in commercial property development appraisal.

Key words: Commercial property, lagos

INTRODUCTION

Property development is essentially vulnerable to broad based social, economic and financial changes. Changes in consumer preferences; inevitable time-lags between the conception of the project and its completion, changes in interests rates etc. are difficult to predict over long periods of time and once a development has been started it is difficult to change. In addition, the main variables (such as land price, building and ancillary costs and professional fees.) that influence development are all sensitive to change. No developer of a project can be sure of market conditions that will prevail as at the time when the development would be completed. This complexity and dynamism in the socio-economic environment of property development affects the decision taking mechanism. Consequent upon this, the typical commercial property developer commissions calculations which can inform him on the cost to pay for land in its existing state or what profit he is to make from the proposed development. Qualified Estate Surveyors and Valuers carry out this type of calculations and it is termed development appraisal^[23]. The reliability of development appraisals is very much dependent on the ability of the appraiser to accurately estimate variables used as inputs in his calculations.

In the past when the economy was buoyant and stable, real estate development appraisal offered little challenges. Building cost was relatively low and little

variations were observed in the variables during the gestation period of the project. Then property development was associated with little or no risk and development surveyors could in most cases predict the outcome of a development with certainty.

Today, there has been a remarkable change in the economy. The erstwhile optimism of the 1970's and 1980's has changed drastically^[1]. The development appraisal upon which decision-making in property development is based is fast becoming more difficult to make in our dynamic and unstable economic system. In recent times, a significant number of development projects that were judged viable by development surveyors in their development appraisals have turned out to be unviable. This problem is not peculiar to Nigeria as observed by Thai^[2], Born^[3] and Pagliari^[4]. Development appraisal techniques generally employed in practice had been criticized on the basis of their simplifying assumptions^[5]. It was assumed that costs and values will not change through time and instead, approximate guesses were made about the future. The traditional assumption of using current estimates of rental value, investment yield, building cost and finance charges is susceptible to error taking into consideration the dynamic nature of these variables. The rate of abandoned and converted commercial property development that adorn the cities call to question the reliability of the development appraisal

that supports the commencement of such developments. Presently, it is not unusual for a church to be the anchor tenant in a purpose built shopping complex.

The widespread use of deterministic models for appraising dynamic and volatile economic variables introduces error of judgment to development appraisal^[1]. As a result of this, the quality of advice provided to clients by development surveyors is fast becoming inadequate. The ultimate effect of this is that the clients may be disillusioned when appraisals prepared by Estate Surveyors do not match what operates in the market place. When the degree of inaccuracy of development appraisal prediction is found to be substantial, the appraiser may be regarded as incompetent and client may jettison his professional advice. Professionally prepared development appraisals should therefore adequately and explicitly reflect to the developer and his financier the expected risk inherent in the proposed projects. The property development industry as a whole should be working towards developing better analytical techniques and information database so that decisions concerning property investments and development could be made quickly; and a better result achieved.

In this regard, this study is conceived to determine how commercial property development appraisal practice could be made to be more effective especially in the aspect of protecting and shielding client from effects of volatility. The remainder of the paper is structured as follows. The next section (section 2) reviews the Nigerian experience in the development of models on property development. This is followed by a brief introduction of the hypothesis to be tested. Section 4 focuses on the methodology adopted for the study, while Section 5 takes care of results and their discussion. The last section provides the concluding remarks and discusses the policy implications.

MODELS ON PROPERTY DEVELOPMENT: THE NIGERIAN EXPERIENCE

Researchers' interests in the development of models in this area were diverse and varied. These include the behaviour of development actors, the sequence of the development process or the market forces that initiate and guide the process of development. Form^[6], Litchfield^[7] Pilcher^[8] Cadman and Crow^[9] Miles *et al.*^[10], Healey^[11], Craven^[12], Kaiser and Weiss^[13], Drewett^[14], McNamara^[15], Harvey^[16] and Frazer^[17], Boddy^[18], Ball^[19] and Ambrose^[20] Goodchild and Munton^[21].

In Nigeria, the development processes initially tend to follow mostly an event-sequence approach. Udo-Akagha^[22] proposed a four-stage development

event-sequence that is, initiation of the development scheme, advising the client on feasibility and viability, raising development finance and the project management of the scheme. As a practicing surveyor, his interest is in the management of the development process and hence his pre-occupation with event-sequence approach is understandable.

The introduction of the structural adjustment program in Nigeria in 1986 switched the direction of literature on development process towards structural approach. Idudu^[23] examined the development process from a macro economic (structure) point of view. He reflected on what he called development factors-such as land, building materials and finance that assist or decelerate development activity. On the land factor, he assessed the Land Use Decree of 1978 and concluded that it is far from achieving its objective of making land readily available, but rather it complicated land procurement procedures. He reiterated the inadequacy of institutions for financing development and inability of the Nigerian Building and Road Research Institute (NBRRI) to come up with substitutes for expensive imported building materials.

According to Omuojine^[24], the development process had been driven by government housing and economic policies such as the National Development Plans, the Structural Adjustment Policy, the Mortgage Institutions Decree (No. 53) of 1989 and the National Housing Fund Decree No. 3 of 1992. He perceived such government intervention as positive, but berated the government's ineffective policy implementation.

THE HYPOTHESIS

The aim of this study is to assess the reliability of the methods used in the assessment of commercial property development appraisal in Lagos metropolis. Since the reliability of these methods is a function of the ability of the appraiser to accurately estimate the variables used as inputs, it therefore means, that the closer the predicted values are to the actual, the higher the level of accuracy to be attained. In this regard therefore, the following hypothesis was set;

H_0 = There is no significant difference between the actual and the predicted values of the variable inputs in the selected project appraisals

H_1 = There is a significant difference between the actual and the predicted values of the variable inputs in the selected project appraisals

The variable inputs in this regard include:-

- Rental income
- Development cost
- Yield/return on investment
- Rate of interest
- Payback period
- Development period

The methodological approach: This assessment of appraisal practice focuses on how the appraised project is progressing in reality and how this reality differs from the forecast on which its acceptance was based. Apparently, variance analysis will be of immense value in this regard. In the review of literature however, we found a number of these methods appealing. First is the Harger and Lord^[25] statistical range approach to the evaluation of valuation consistency. Range is not a satisfactory measure of variance because it is highly susceptible to the extreme values; consequently, we found it unacceptable for this study.

The semi-inter-quartile range as adopted by Ogunba^[26] offers little help in this regard, since it says little about the intermediate values. Ogunba^[26] found that the IBRow and IPD/Driver Jones regression analysis is more rigorous than Harger and Lord^[25] approach and may not be easily understandable by average Nigerian Practitioners. This aside, regression analysis statistically is not a measure of variance; its usefulness lies in the explanation of the relationship between cause and effect.

To assess the degree of variation of the actual from the expected and to test the research hypothesis, Chi-square and the test of difference between two population means were employed.

The chi-square statistics is calculated using the equation

$$\chi^2 = \frac{\sum_{i=1}^n (o_i - e_i)^2}{e_i} \quad (1)$$

Where o = Observed frequencies
 e = Expected frequencies
 n = No. of classifications.

Two populations of actual and predicted values are involved in the study. In order to test the difference between the means μ_1 and μ_2 of these two populations, it is necessary to consider the following conditions.

- Whether the population variance σ_1^2 and σ_2^2 are both known.
- Whether the population variance σ_1^2 and σ_2^2 are both unknown

In addition, it is pertinent to consider whether;

- The two samples are independent.
- The two samples are matched or paired.

Specifically, the test in this case is that of a matched or paired (Actual and Predicted) sample. The procedure for the test is to calculate the difference (d_i) between each pairs of these samples.

$$d_i = X_{2i} - X_{1i} \quad (3)$$

The d_i are then treated as a single sample $d_1, d_2, d_3, \dots, d_n$.

The test statistic is based on t-distribution, viz;

$$t = \frac{\bar{d} - D_0}{\frac{S_d}{\sqrt{n}}} \quad (4)$$

where

\bar{d} = mean of $d_1, d_2, d_3, \dots, d_n$.

S_d = standard deviation of $d_1, d_2, d_3, \dots, d_n$.

n = number of samples

$v = n-1$ = degree of freedom.

This test in addition with the Chi-Square above was used to test the validity of the hypothesis.

The unit of analysis: These are the people or things social research studies. Researchers observe, describe and explain the characteristics of these in their studies^[22]. The choice of the unit of analysis therefore depends on the underlying problems that a study aims at resolving. In this regard, the main problem areas this study is set to investigate are restated here as follows:

- The identification of the methods of commercial property development appraisal presently in use by practicing Estate Surveyors and Valuers in Lagos metropolis.
- An assessment of the reliability of the identified methods (presently) used by these practitioners.

In brief, the study investigated the activities of practicing estate surveyors and valuers within the Lagos metropolis. Therefore, the units of our analysis were:

- The development appraisal reports in respect of some selected commercial properties.
- The actual and predicted values of development appraisal inputs of some commercial properties in respect of which the above reports were prepared.

DATA ANALYSIS

Real property developments are often carried out based on the expectation of future benefits. As stated earlier, the reliability of any decision aid used in this regard will therefore depend on how the actual differs from the expected. In this wise, the aforementioned hypothesis was tested using Chi Square and Differences between Two Population Means.

Chi-square test: Table 1 shows the summary of the chi-square distribution for the variables. From this table, at 0.05 level of significance, the critical value of $\chi^2_{0.05}$ for $V = K-1 = 5$ degrees of freedom is 11.07. Where the $\chi^2_{\text{calculated}} > 11.07$ ($\chi^2_{0.05}$ -tabulated value), we conclude that the difference between the observed (estimated) and the actual values is statistically significant. From table I, with the exception of investment yield, the analysis has revealed that there exists a significant difference between the actual and the predicted values of variable inputs such as rental income, capital cost, development period, lending rates and investment payback period.

The implication here is that, these values as predicted by the method of appraisal adopted by the practitioners cannot be reliably depended upon. And in a situation where the values of five out of the six variables predicted cannot be relied upon, one can conclude that the method adopted is not a reliable one.

Testing the difference between the means of two populations: Statistically stated, the hypothesis to be tested becomes;

$$H_0: \mu_1 = \mu_2 \text{ or } \mu_D = \mu_1 - \mu_2 = 0$$

$$H_1: \mu_1 < \mu_2 \text{ or } \mu_D = \mu_1 - \mu_2 < 0$$

Where μ_1 = population mean of predicted variable
 μ_2 = population mean of actual variable
 At $\alpha = 0.05$, the critical region is $t < 2.015$, where

$$t = \frac{\bar{d} - D_0}{\frac{S_d}{\sqrt{n}}} \quad (4)$$

with $v = 5$ degrees of freedom.

Table 2 shows the summary of this test for all the variables inputs. In similarity to the chi-square test, this test has revealed that there is a significant difference between the predicted and the actual values of the variable inputs such as capital cost, development period, lending rate and investment payback period. While the

Table 1: Summary of the results of the chi-square test

S/N	Variables	Calculated χ^2 Value	Tabulated χ^2 Value
1	Rental Income	2,257,942.8*	11.07
2	Capital Cost	1,531,067.8*	11.07
3	Investment Yield	2.45	11.07
4	Lending Rates	21.76*	11.07
5	Investment Payback Period	12.350*	11.07
6	Development Period	17.73*	11.07

Source: Survey (2003)

Table 2: The summary of the test of difference between two means

S/N	Variable	Calculated t.value	Tabulated t.value
1	Rental Income	0.63	2.015
2	Capital Cost	3.13**	2.015
3	Investment Yield	-3.43	2.015
4	Lending Rates	22.78**	2.015
5	Investment Payback Period	3.74**	2.015
6	Development Period	2.12**	2.015

Source: Survey (2003)

only exception in the chi-square test is the investment yield, in the test of difference between two population means, the predicted values of rental income and investment yield are found not to be significantly different from their actual values. This notwithstanding, we can conclude that the appraisal method in which four out of the six variables predicted cannot be relied upon is not a reliable one. It could be argued that since the practitioners can predict the rental level and yield (which are critical variables) with a reasonable level of accuracy, the appraisal techniques should not be condemned. This is not the case, in Nigeria; the most critical element of commercial property investment is the cost of funds which unfortunately most analysts used to ignore in the calculation of the investment yield^[28].

CONCLUSIONS

The study has revealed that the methods of development appraisal in practice cannot be depended upon. The rate of abandoned or under utilized commercial property that adorn our cities attests to the unreliability of the development appraisal that supports the execution of such projects. The fact is that clients may be disillusioned when appraisal prepared by estate surveyors do not match what operates in reality. The failure of these appraisal techniques emanate from the use of deterministic models at appraising dynamic and volatile economic variables. In this regard, the Nigerian Institution of Estate Surveyors and Valuers is urged to evolve policies that will encourage the development and discussion of ideas, opinions and issues related to the process of enhancing both the theoretical and practical knowledge in commercial property development appraisal. Department of estate management in Universities and Polytechnics are urged to review their curricular to

incorporate the development of appropriate techniques which will eradicate the inadequacies of practitioners' approaches. If investment funds are to be judiciously used, there is the need to adopt a more rigorous and analytical approach to development appraisal. This obviously is expensive. Nigeria clients should brace up to face the reality that good products will cost money. A situation where clients value professional service by the cost of paper and ink used in preparing the report does not encourage rigorous analysis as anticipated above.

REFERENCES

1. Ajayi, C.A., 1996. Theories, Techniques and Practice of Development Appraisal A Paper Presented at a National Training Workshop of the Nigerian Institution of Estate Surveyors and Valuers Lagos, 1-53.
2. Thai, S., 1982. Sensitivity Analysis: A way to make Feasibility Analysis Work Appraisal J., 19.
3. Born, W., 1988. A Real Estate Market Research Method To Screen Area of New Construction Potential. The J. Real Estate Res., 3: 51-62.
4. Pagliari, J.L., 1995. The Handbook of Real Estate Portfolio Management. IRWIN Professional Publishing.
5. Darlow, C., 1990. Valuation and Development Appraisal. The Estate Gazette Ltd. London, 2nd Edn.
6. Form, W.H., 1954. The Place of Social Structure In The Determinants of Land Use, Social Forces, 32: 317-323.
7. Lichfield, N., 1956. Economics of Planned Development. Estate Gazette, London.
8. Pilcher Report, 1975. (HMSO Report, 1975) Commercial Property Development, First Report of the Governmental Advisory Group on Commercial Property Development, HMSO, London.
9. Cadman and C. Austin, 1978. Property Development. E. and F.N. Spon, London.
10. Miles, M., E. Malizia, G. Berns and G. Travis, 1991. Real Estate Development: Principles and Process Urban Land Institute, Washington, D.C.
11. Healey, P., 1991. Model of the Development Process-A Review J. Property Res., 8: 219-238.
12. Craven, E.A., 1969. Private Residential Expansion in Kent 1956-1964:-A Study of Pattern and Process in Urban Growth; Urban Studies, 6: 1-6.
13. Kaiser, E.J. and S. Weiss, 1970. Public Policy And The Residential Development Process. J. America Institute Of Planners. Lean and Goodall, 36: 30-37.
14. Drewett, R., 1973. The Developers Decision Process. In The Containment Of Urban England. Hall, P. *et al.* (Eds), Allen and Unwin, London.
15. Mc Namara, P.F., 1951. The Problems of Forecasting Rental Growth At The Local Level. In: Investment Procurement and Performance In Construction P. Venmore-Rowland *et al.* (Eds); E and F.N. Spon, London, pp: 64-78
16. Harvey, J., 1981. Urban Land Economics. Macmillan, London.
17. Frazer, W.D., 1985. The Risk of Property To Institutional Investors. J. Valuation, 4: 45-59.
18. Boddy, M., 1981. The Property Sector in Late Capitalism:-The case of Britain in urbanisation and urban planning in capitalist society, Methuen, London.
19. Ball, M., 1983. Housing Policy and Economy Power. Methuen, London.
20. Ambrose, P., 1986. Whatever Happened to Planning? Methuen, London Babbie, Earl R. (1980) Practical Social Research 4th Edn; Wadsworth Publishing Coy. New York.
21. Goodchild, R. and R. Munton, 1985. Development and the Landowner Urban Land Institute, New York.
22. Udo-Akagha, S., 1982. The Role of Estate Surveyor and Valuer in Urban Property Development The Estate Surveyor and Valuer, 6: 39-47.
23. Idudu, O.J., 1991. Mobilization of Private and Public Investment in Property Development The Estate Surveyor Magazine of the Estate Management Students Association, Obafemi Awolowo University, Ile-Ife. 1991 Edition.
24. Omuojine, E., 1993. Characteristics of Real Estate Development in Nigeria The Estate Surveyor and Valuer, 17: 29-32.
25. Harger, D.P. and D.J. Lord, 1985. The Property Market, Property Valuation and Property Performance Measurement Institutes of Actuaries.
26. Ogunba, O.A., 1997. A Study of Valuation and Pricing Practices in the Residential Property Market in Lagos Metropolis: Unpublished M.Sc. Thesis, Department of Estate Management. Obafemi Awolowo University, Ile-Ife.
27. Bain, J.S., 1968. Industrial Organization, John Wiley and Sons Inc. N.Y. 2nd Edn.
28. Bello, O.M., 2003. The Economic Benefits of Borrowing To Finance Rental Housing In Nigeria. The Nigerian Banker J. The Chartered Institute of Bankers of Nigeria, pp: 35-39.