KEY CHALLENGES IN CONDUCTING DEVELOPMENT APPRAISALS IN SRI LANKA

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ABSTRACT

Property development is an activity constituent with both huge returns and risks. Development appraisal is a method, primarily used to check the financial viability of a property development project. In Sri Lanka, it is known as feasibility study. Several development appraisal techniques are practised in association with risk analysis methods in the Sri Lankan property market. Development appraisal is subjected to many variables and therefore it is a challenging task. This research investigates the challenges in conducting development appraisal and suggests ways of resolving such challenges.

Survey approach with 32 sample questionnaires was adopted in investigating the research problem. The Relative Important Index was used to rank the challenges based on the magnitude and significance of challenges. The research found that discounted cash flow method is being used extensively in Sri Lanka. Top ranked key challenges are client's influence and estimating the variables. The research suggested carrying out detailed market survey to obtain relevant data, maintaining internal building cost database and practicing risk analysis techniques to overcome the challenges. Therefore, the research recommends that a Quantity Surveyor who involves in development appraisal could provide building/construction cost data, calculate the net lettable areas of the building, and determine the timing of cash inflows and outflows during construction period.

Keywords: *Appraisal; Challenge; Development; Feasibility Study; Sri Lanka.*

1. INTRODUCTION

Property development is defined as "a process that involves changing or intensifying the use of land to produce buildings for occupation" (Wilkinson and Reed, 2008: 2). Development appraisal is an important task undertaken during the initial stages of the property development process (Wilkinson and Reed, 2008). Development appraisal was termed as the calculations, which can inform the property developer on the cost to pay for the land in its existing state or what profit the property developer is to make from the proposed development (Bello and Babajide, 2005). Morley (2002) stated that development appraisal is approached in a particular manner by each of the developers in the property market, primarily because of their differing development objectives.

Conducting a development appraisal is a challenging task. Morley (2002) highlighted that the development appraisal concept and method is straightforward, but the estimation of the many variables contained in the appraisal is difficult. Further Morley (2002) expressed that the final residual answer is subjected to a high degree of sensitivity to minor changes of some variables. Complications that distort the accuracy of development appraisals are the imperfection of the property market, the lack of central register of sales, the individual characteristics of buildings and confidentiality of information (Babawale and Omirin, 2012). Isaac *et al*. (2010) pointed out that forecasting would be difficult since there are practical difficulties in obtaining reliable local or project specific time series data to use in the forecasting process.

According to Babawale and Omirin (2012), valuers are often dissatisfied on reliable transactional and other relevant data inadequate in emerging markets because, the publication of such data is not yet an established norm. The property market in developing countries is driven underground by high transaction taxes, levies and by rent controls (as cited in Babawale and Omirin, 2012). Further, Babawale and Omirin (2012) expressed that the basic information on cost, rental and capital values and yields

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required for accurate valuation are not available in the right quality and quantity. Sri Lanka is a developing country (International Monetary Fund, 2012) and an emerging market (BBVA Research, 2012). Therefore, the above characteristics would fairly pose challenges when conducting development appraisals.

Development appraisal requires inputs from different parties including the developers, Quantity Surveyors and agents (Wilkinson and Reed, 2008). The main contribution of a QS is providing building cost details (Morley, 2002). Development appraisal is an important activity which will display beforehand the financial viability of a given proposal. Thal (1982) stated that virtually every real estate disaster is preceded by at least one feasibility analysis that assured its success. According to Bello and Babajide (2005: 1103), "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". Proper knowledge on the challenges would aid in the preparation of more meaningful appraisals that could benefit the client and other parties concerned. Thus, there are challenges remain widespread within the practice of development appraisals.

1.1. AIM AND OBJECTIVES

The aim of this research is to identify and analyse the key challenges in conducting a development appraisal in Sri Lanka. The following objectives are set out to achieve the aim of this research,

1. Identify the different techniques used for conducting development appraisals in Sri Lanka
2. Identify possible challenges in conducting a development appraisal in Sri Lanka
3. Determine the key challenges then analyse and discuss them
4. Identify the roles of QSs' in conducting development appraisals in Sri Lanka
5. Propose solutions to the key challenges identified, in general and specifically from the view point of a QS.

2. LITERATURE REVIEW

2.1. INTRODUCTION OF DEVELOPMENT APPRAISALS

There is no exact and specific definition for development appraisal available. Grimley (2009) stated that there is no set professional code of conduct for development appraisal and the assessment of development viability. It is also known from various titles whereas according to French and Gabrielli (2006) development appraisal is the title given in the United States of America, in the UK it is known as residual valuation and in Europe as a feasibility study. Pagourtzi, Assimakopoulos, Hatzichristos and French (2003) identified development appraisal as one of the traditional real estate valuation methods. It can be explained as a method of valuation used on property with development potential.

There are two basic objectives of development appraisals (Bello and Babajide, 2005; Byrne, McAllister and Wyatt, 2011; Newell, 1989; Ratcliffe, 1983a). First is providing a framework from which a developer can obtain a measure of the likely profit to be obtained from undertaking a development scheme and second is to assist the developer in identifying the maximum price that can be paid for a site for a given development proposal in order to achieve a fixed expected profit.

Development appraisals can take many different forms and there are various guidebooks and best practice on techniques (Grimley, 2009). Ratcliffe (1983a) contended that there have been a number of attempts to standardise the procedure of residual valuation and an example is the 'Property Development Feasibility Tables' produced by Bernard Williams and Associates. Until relatively recently, the discipline of development appraisal has remained the provenance of surveyors and developers (Byrne *et al*., 2011). Further, Byrne *et al*. (2011) stated that it has largely been ignored by other participants in the development process, particularly planners, architects and construction specialists. Most major firms of surveyors will prepare development appraisals according to their own in-house formats (Ratcliffe, 1983a). The use of computers and software packages for development appraisal have become commonplace (Morley, 2002). Some developers have their own tailor made in-house software or programs to conduct development appraisals and others use off-the-shelf software packages; where two most popular such off-the-shelf packages are Circle Developer and Pro-Dev (Grimley, 2009).

2.2. CHALLENGES IN CONDUCTING DEVELOPMENT APPRAISALS

Obtaining Input Data from Sources

Obtaining many variable input data such as rent and sales values, investment yields, building cost data, professional fees, interest rates etc. from various sources is a challenging task (Isaac *et al*., 2010; Ratcliffe, 1983a; Wilkinson and Reed, 2008).

Estimating and Adjusting the Data Obtained

There are several assumptions that the appraiser would make in carrying out a development appraisal. Byrne *et al*. (2011) expressed that there is substantial uncertainty in the key assumptions of costs and revenues. Further, Ratcliffe (1983b) concluded that in practice, the various elements in a scheme are adjusted and aligned to take account of physical and economic factors prevailing in the market for a particular site at a given time. The data obtained might need to be refined by the process of estimation/forecasting in order to suit the given appraisal at hand.

Client Pressure and Influence

From the appraiser's perspective the pressure and influence from the client would pose challenges when conducting a development appraisal. Levy and Schuck (1999) remarked that clients are frequently motivated to influence the outcome of a valuation intentionally or unintentionally, implicitly or explicitly. These would be either in the form of tampering of outcomes to convince funders, partners and government for negotiation purposes (Babawale and Omirin, 2012), sophisticated requirements (Ogunba and Ajayi, 2007), time restriction given for completion, limited resources provided, or by threats and reward tactics (Smolen and Hambleton, 1997).

Skills and Competencies Required

A development appraisal demands a specific set of skills and competencies from the appraiser. A lack of such would also pose challenges. Some essential skills include the identifying and obtaining the inputs from the variety of sources and different parties (Wilkinson and Reed, 2008), in-depth knowledge of the property market (Brandon, 1992; Adegoke, 2008) including comprehensive knowledge of the transaction prices, rent levels and average cost of construction work (Skarzyński, 2006), estimating skills (Lovell, 1994) and presentation and communication skills (Newell, 1989).

2.3. REASONS FOR THE CHALLENGES

A major reason for the challenges in obtaining data is the limitations of price information due to the imperfect nature of the property and construction markets. Property development is highly sensitive to the effects of economic climate and government action (Ramachandra and Zainudeen, 2006). KPMG (2012b) stated that there is a tremendous variation of per perch land registered prices in Colombo city which was due to socio-economic, legal, regulatory issues and pressure of the state. Harvard (2008) stressed that property markets can be hard to anticipate as the demand is continually changing; therefore developers must be careful if they are analysing past trends to determine future demand. The rapid changes and volatility is evidenced when observing the building tender price inflation in Sri Lanka, for example in 2005 it was 32.4% whereas it dropped to 2.1% in 2010 (Gardiner and Theobald, 2011).

Ofori (1990) described that pre-design market surveys and feasibility studies are difficult due to the non-existence of central data banks in the construction industry. The Research Intelligent Unit remarked that gaining access to registered property prices in Sri Lanka is a difficult task (KPMG, 2012a). The Investment Property Databank (IDP) provides indices and market information on the real estate industry across 32 countries (IDP, 2013). However Sri Lanka is not listed in that database. Perera (1996) stressed on the need for an improved land information system in Sri Lanka. Confidentiality and lack of transparency of property price information is a global problem; in developed countries such as the UK (University of Reading, 2010), in mature markets such as Taiwan (Lin and Chang, 2012) and also in developing countries (Babawale and Omirin, 2012).

The complexity of the property highly affects the valuation. Each property is heterogeneous because of its exclusiveness of its location. This increases the challenge when adjusting comparable data.

McAllister and Loizou (2009) found that heterogeneity of the property with varied specifications would make the input variables of the appraisal prone to increased uncertainty.

Babawale and Omirin (2012) remarked that clients' pressure on the valuers to report their desired results would increase as a result of the increase of the criticality of the valuation to the clients' interest. Ogunba and Ajayi (2007) contended that sophistication of client requirements was due to rapid changes in the property market such as swift rent reviews, surge of institutional investors, advent of new property finance methods and use of investment portfolios. Lin and Chang (2012) stated that the lack of transparent market information was a reason for high client influence.

According to Baum and Crosby (1988), valuers' skills, experience and judgement affect valuation accuracy. Gallimore and Wolverton (2000) also stated that additional criteria such as ability of valuers in applying valuation models, processing and interpreting information under different conditions affect valuation accuracy. Levy and Schuck (1999) found that valuers used cognitive shortcuts (heuristics) to value property which are less accurate.

2.4. SOLUTIONS FOR THE CHALLENGES

Many of the reasons for the challenges as highlighted before are external to the appraiser, however amidst this the appraiser still can take measures to counter the challenges. Marshall and Kennedy (1993) concluded that practitioners must acquire a greater knowledge of the factors involved in the development and investment process. This is necessary especially for the key inputs which the output is highly sensitive to (Byrne *et al*., 2011).

Risks related to the accuracy of input variables are inevitable and therefore techniques to incorporate risks should be used in development appraisals. Newell (1989) suggested methods to incorporate risks in development appraisals such as including a higher profit level, contingency allowance, sensitivity analysis, scenario planning and testing for the impact on expected profit of trading risk off against profit. Other methods as stated by Babajide (2006) which were used in Lagos, Nigeria include risk adjusted discount rate, certainty equivalent method and Monte Carlo simulation. Baroni, Barthélémy and Mokrane (2007) found that the use of simulated cash flows by using the Monte Carlo simulation enables the user to estimate the real estate portfolio's price distribution for any time horizon and enables values-at-risk computations.

The use of computer packages is helpful when using advanced techniques. French and Gabrielli (2006) studied the use of a computer programme called 'Crystal Ball' that allows the appraiser to model this uncertainty by carrying out multiple calculations and they argued a one-dimensional simulation is better than single-point estimates such as cash flow techniques since it displays the true probability of risk.

Lovell (1994) concluded that the appraiser must strive to be objective amidst pressure and not to influence his professional judgement with personal beliefs and socially desirable objectives. Further, Lovell (1994) stressed that to minimise forecasting errors valuation methods must be selected carefully, not because they are simple; to examine assumptions carefully, not to over rely on historical data and the use of a rigorous systematic approach. Maroney (2005) suggested that relevant experience of an appraiser, proper development of a transparent and a detail report is required to optimise good service to the client.

2.5. QS'S INVOLVEMENT IN DEVELOPMENT APPRAISALS

The main contribution of a QS as identified by several researchers is providing building cost details (Morley, 2002; Wilkinson and Reed, 2008). Ashworth and Hogg (2002) reviewed the development of quantity surveying and identified that currently many quantity surveying firms have extended the range of services offered to clients, had a shift from cost to value and this included the provision of development appraisals. The QS has an edge over other professionals for the above skills given due to the QS's proficiency and background. Brandon (1992) stated that QS has an in-depth knowledge of the property market and also is highly proficient in estimating.

3. RESEARCH METHODOLOGY

3.1. RESEARCH STRATEGY AND APPROACH

The research strategy adopted for this study is a quantitative research strategy. Bryman stated the role of the quantitative research as fact-finding based on evidence or records (as cited in Naoum, 1998). The literature review brought to light answers for objectives 2, 4, and 5 of this research. This justifies the availability of related evidence and records. Bryman further stated that in a quantitative research the relationship between theory and research are tested or confirmed.

Survey that is conducted to advance scientific knowledge, referred as survey research approach (Kraemer, 2002) was adopted to the current research. According to Naoum (1998), surveys are used to gather data from a relatively large number of respondents within a limited time frame. Therefore, a survey would make it possible to obtain a broader general view of the context prevailing in Sri Lanka rather than an in-depth analysis, which ultimately is needed to fulfil objectives 1, 2, 3 and 5 of this research. From a survey very large samples are feasible and thus it makes the results statistically significant even when analysing multiple variables. This research consisted many variables falling under the areas of the techniques, challenges, solutions and the roles of the QS that were required to be analysed.

3.2. DATA COLLECTION TECHNIQUE

The method used to collect data for this research was through questionnaires. According to Naoum (1998) the main advantages of using questionnaires include economy, speed and consultation. A questionnaire would be suitable in situations where the purpose can be met with questions that are not over-elaborated. All of the objectives of this research can be given as questions for the respondents to select or rate as appropriate. Considering the numerous advantages as well as the suitability of questionnaires for the context of this research it was adopted as the data collection technique.

3.3. SURVEY DESIGN

Sample Design

A sample was termed by Naoum (1998) as a specimen or a part of a whole population which is drawn to show what the rest is like. Levine *et al*. (2008) stated that rather than selecting every item in the population, statistical sampling procedures concentrate on a small representative group of the larger population to collect data. This research used a convenience sampling technique. In such a sampling technique the items selected are easy, inexpensive, or convenient to sample, without knowing their probabilities of selection (Levine *et al*., 2008). Since development appraisals are done in several types of organisations and different professionals get involved in it, the sampling profile included respondents from these organisations consisting construction consultancy firms, management and financial consultancy firms and property development firms. Taylor (2010) contended that if a survey sample size is more than 30 it would reflect the characteristics in the population. Thus, a total number of 48 questionnaires were distributed and 32 were received.

Questionnaire Design

The questionnaire contained five sections which were structured around the aim and objectives of the research. The first section contained general information such as the respondent's name, designation, employed organisation and experience. With the name of the organisation and designation it was possible to get an idea on what type of companies that does development appraisals as well as the type of professionals involved. Section two of the questionnaire was based on objective 1 which contained details of the techniques used to conduct development appraisals and the risk analysis techniques. Section three of the questionnaire was based on objective 2 which were the challenges in conducting development appraisals. It included opinion questions on a 5 point Likert-type response scale. Response scales enabled to measure the different attitudes towards a statement and this was used for subjective measurements. For each challenge the respondent was required to rate two perspectives of a challenge.

The first was the magnitude of the challenge which is the size or extent of the challenge and the second was the significance of that challenge to the development appraisal process and outcome.

Section four included a list of possible solutions to mitigate the challenges which was based on objective 5 of the research. The respondent had to rate the importance of each solution for its ability to resolve or reduce the challenges based on a 5 point Likert-type response scale. Section 5 of the questionnaire was based on objective 4 which were to identify the roles of QS when carrying out development appraisals. Here the respondents were required to rate from a 6 point Likert-type response scale on the frequency of each role being done by a QS. An electronic format of the questionnaire was also prepared using the software Adobe Acrobat X Pro and was distributed via email.

3.4. DATA ANALYSIS TECHNIQUES

The data collection techniques that are useful in analysing quantitative data are statistical techniques. The scale of measurement was selected first which enabled to select several statistical techniques.

Scale of Measurement

As stated by Ary, Jacobs and Sorenson, there are four categories of measurement as given in the Steven's Scale of Measurement; which includes nominal, ordinal, interval and ratio scales (as cited in H.N. Boone and Boone, 2012). The ordinal scale is a ranking or rating scale which can be used when attitudinal questions are asked and the respondents required to rate the magnitude (Noaum, 1998). In this scale the interval between the ratings are not equal and it only implies a greater than relationship and does not indicate how much greater (H.N. Boone and Boone, 2012). The scale that is appropriate for this research and thus was selected was the ordinal scale since the questions asked were attitudinal questions and the ratings namely: high, medium and low, only indicate a greater than relationship and not indicate how much greater.

RII

To determine the relative ranking of the factors, the results obtained from questionnaire survey were transformed to importance indices based on the following formula (Kometa *et al*., 1994).

$$RII = [\sum (W \times n) \times 100] / A \times N \quad \text{(Eq.01)}$$

where, W = constant expressing the weighting given to each response, A = the highest weighting, n = the frequency of responses of that weight and N = total number in the responses.

In this research the RII was used for the ranking of the frequency of usage of techniques for conducting development appraisals in Sri Lanka, the frequency of usage of risk analysis techniques, the magnitude and the significance of challenges in conducting development appraisals, importance of solutions to deal with the challenges and the frequency of the roles carried out by a QS when conducting a development appraisal.

Frequency Distribution Methods

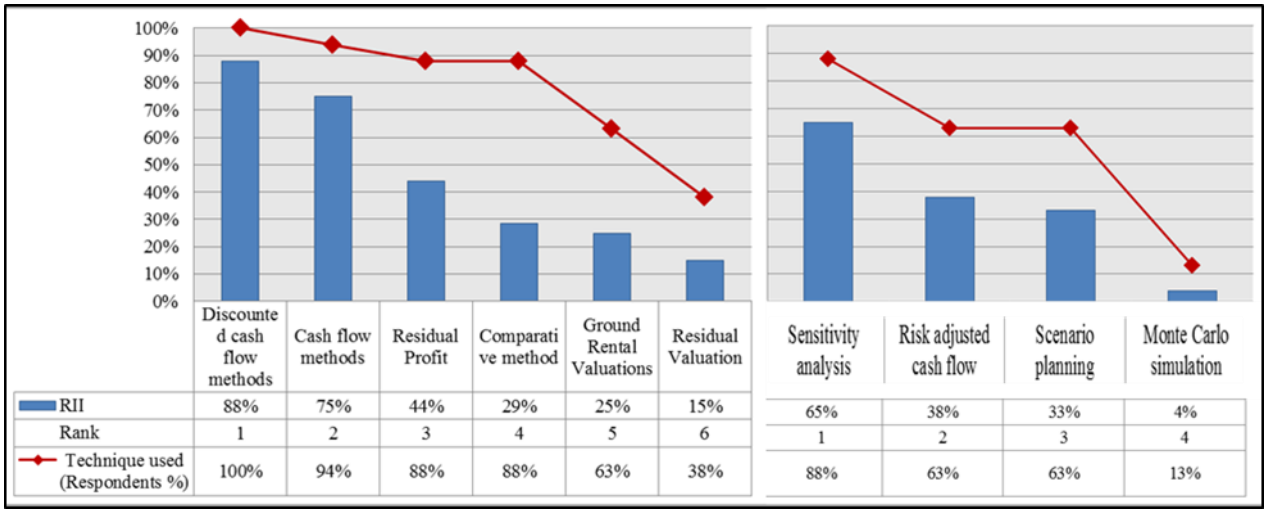
Frequency distribution methods would distribute the data into categories or classes and display the frequency belonging to each category by percentages or by actual numbers (Naoum, 1998). This research used frequency distribution methods of bar charts to analyse the use of techniques to conduct development appraisals and risk analysis techniques to incorporate risks into development appraisals.

4. DATA ANALYSIS AND DISCUSSION

4.1. TECHNIQUES USED TO CONDUCT DEVELOPMENT APPRAISALS AND TECHNIQUES USED TO INCORPORATE RISKS IN SRI LANKA

To identify the frequency of usage (i.e. the regularity of use) of each technique a 4 point Likert-type scale which represents 'high', 'medium' and 'low' frequency of use were assigned values of 3, 2, 1 and another point to represent the technique not being used was assigned a value of 0. Thereafter the RII

was calculated and the techniques ranked. A higher RII value represents a higher rank and vice versa. Furthermore with the number of respondents who did not use the technique known it was possible to calculate how many respondents had used a given technique at least even once.



	Discounted cash flow methods	Cash flow methods	Residual Profit	Comparative method	Ground Rental Valuations	Residual Valuation	Sensitivity analysis	Risk adjusted cash flow	Scenario planning	Monte Carlo simulation
RII	88%	75%	44%	29%	25%	15%	65%	38%	33%	4%
Rank	1	2	3	4	5	6	1	2	3	4
Technique used (Respondents %)	100%	94%	88%	88%	63%	38%	88%	63%	63%	13%

Figure 1: Techniques Used to Conduct Development Appraisals and Incorporate Risks

Cash flow techniques take prominence for conducting development appraisals where all respondent had used the discounted cash flow methods and 94% having used cash flow methods (non-discounted). With a RII of 88% the discounted cash flow methods also have the highest usage among the respondents.

The residual valuation technique has the lowest usage among the respondents with a minute RII value of 15%. It was also found that only 38% of the respondent had used this technique even once to conduct development appraisals. The literature review highlighted that this technique was criticised in the UK due to the inherent weaknesses and limitations and these can be reasons for its unpopularity in Sri Lanka as well.

It was found that all of the respondents had used even one risk analysis technique at least once when conducting development appraisals but there was no high frequency of usage of the techniques. According to Babajide (2006), in Lagos and Nigeria the use of sensitivity analysis, risk adjusted cash flow approach and Monte Carlo techniques for development appraisals were 45%, 0% and 0% respectively. When compared with the obtained results the use of each of the above techniques in Sri Lanka corresponds to 88%, 63% and 13% respectively. This shows that in the Sri Lankan context more prominence is given to incorporate risks into development appraisals as compared to that of Lagos, Nigeria.

4.2. IDENTIFICATION OF KEY CHALLENGES IN CONDUCTING DEVELOPMENT APPRAISALS IN SRI LANKA

For each challenge there were two 5 point Likert-type response scales, one for the magnitude of the challenge and the other for the significance of the challenge (Refer Section 3.3.). The 5 ratings were ‘very low’, ‘low’, ‘medium’, ‘high’ or ‘very high’ which were assigned values of 1, 2, 3, 4 and 5 respectively and then the RII values calculated. Two conditions were followed to determine a key challenge, which are:

Firstly the RII based on the significance of the challenge had to be over 70%. The rationale here is that a very large (high magnitude) challenge if it does not impact the outcome/process of the development appraisal calculation substantially then the effect from that challenge towards the overall development appraisal would be low. Therefore, it is not meaningful to further consider, discuss or study. Secondly the RII based on the magnitude of the challenge had to be over 50%. If both conditions were met it was considered as a key challenge. If the rank given by based on the magnitude was the same for two or more issues they were ranked considering the highest RII values of the significance of challenge.

Table 1: Key Challenges in Conducting a Development Appraisal in Sri Lanka

Key Challenge	RII (%)		Rank
	Magnitude of Challenge	Significance of Challenge	
Client uncertain about project requirements	91.25	82.50	1
Limited time given for the appraisal/short deadlines by the client	82.50	83.75	2
Estimating the sales growth up to the completion of project	82.50	82.50	3
Estimating the rental growth up to the completion of project	80.00	88.75	4
Estimating the timing of cash inflows and outflows	76.25	86.25	5
Estimating/forecasting skills requirement	76.25	80.00	6
Client influencing outcomes to satisfy other parties	73.75	80.00	7
Estimating the future inflation rate	73.75	78.75	8
Obtaining rental values/rates from similar projects	72.50	86.25	9
Estimating discount factor (Cost of capital)	72.50	80.00	10
Availability of the development period (total time)	71.25	83.75	11
Availability of the basic specifications of the project	66.25	77.50	12
Obtaining investment yields (return on capital/funds)	66.25	76.25	13
Obtaining building cost data (similar projects or otherwise)	65.00	78.75	14
Presenting and communicating the outcomes/results	65.00	75.00	15
Selecting a suitable technique	63.75	78.75	16
Estimating building costs	61.25	81.25	17
Availability of profit percentages	60.00	75.00	18
Adjusting rent values/rates	58.75	80.00	19
Adjusting building costs	57.50	86.25	20
Obtaining sales values from similar projects	56.25	80.00	21

4.3. ANALYSIS AND DISCUSSION OF THE KEY CHALLENGES

Development appraisals are commissioned at an initial stage of the development process and at this stage it cannot be expected the client to have a comprehensive or fixed requirement. Client requirements would change due to availability of new information, changes in market and economic conditions which are reasons for the top ranked key challenge. Changes would also require additional time to be incorporated and thus since time is also limited (2nd key challenge) it would make it further challenging. Due to this uncertainty of requirements it would also affect the availability of the development period, the basic specifications, profit percentages and selection of a suitable technique which are the 11th, 12th, 18th and 16th ranked key challenges. As found previously the respondents' frequency of usage of risk analysis techniques are not high (Refer Section 4.1) and a major reason for this can be the limited time available (2nd key challenge) to do a risk analysis which is only a supplementary task.

The sales and rental growths (3rd and 4th key challenges) would depend on external factors such as general economic conditions, market conditions, customer preferences, government influences etc. This is further complicated due to the nature of the property market and construction industry explained in Section 2.5. Growth rates can be obtained by extrapolating and analysing historical data. Since estimating growth rates are a major challenge it would mean that historical sales and rental value data is of less importance to predict the future due to the dynamic nature of Sri Lankan market or even mean that there are no sufficient and relevant data available. This contrast with the situation in the UK as stated by Morley (2002) that compared to the 1990's the uncertainties which pervade predictions of

rental growth and cost inflation had been reduced. Estimating future inflation was ranked as the 8th key challenge which shows that the Sri Lankan situation is not comparable to that of the UK.

The timing of cash flows is needed when using the discounted cash flow technique. Since the availability of the development period is also challenging due to uncertainty and unavailability (11th key challenge) this would affect the estimation of the timing of cash flows (5th key challenge).

A development appraisal in itself can be known as an estimate or forecast. And as explained in Section 2.5, property markets are imperfect in nature with the lack of perfect information which is further magnified by its dynamic and unpredictable nature. All these factors would make estimating very challenging which will require a considerable estimating skill from an appraiser (6th key challenge). The challenge of estimating building costs (17th key challenge) compared to other estimating related key challenges (3rd, 4th, 5th, 8th and 10th ranked) at the lower end of the ranking. A reason for this would be the availability of cost databases that would make estimating building costs less challengeable.

Development appraisals are required to obtain finance and if the outcome is not favourable financing institutions would not be willing to provide finance for the development project. Therefore clients may have a tendency to impact on the development appraisal to show improved results (7th key challenge). A reason for the 15th ranked key challenge would be due to the lack of time given to the appraisal (2nd key challenge) which would mean that limited time would be available for comprehensive and attractive presentation material to be prepared.

4.4. SOLUTIONS FOR CHALLENGES IN CONDUCTING DEVELOPMENT APPRAISALS IN SRI LANKA

Section four of the questionnaire (Refer Section 3.3) contained 13 main solutions identified through the literature review which were required to be rated by the respondents as 'very low', 'low', 'medium', 'high' or 'very high'. These points were assigned values of 1, 2, 3, 4 and 5 respectively to calculate RII.

Table 2: Ranking of the Importance of Solutions for Challenges in Conducting Development Appraisals

Solution	RII (%)	Rank
Detailed market research activities to obtain rent and sales data	88.75	1
Maintaining internal building cost databases	85.00	2
Use of risk analysis techniques	83.75	3
Recording of past project details	80.00	4
Hiring marketing, advertising consultants and obtaining data	72.50	5
Upward adjustment of costs, cost of capital, investment yield	71.30	6
Hiring market research firms and consultants	70.00	7
Use of contingency sums	70.00	7
Use of standard methods and formats (Internally developed)	63.75	9
Developing customised software packages for development appraisals	60.00	10
Use of guidebooks and manuals of development appraisals	56.25	11
Use of RICS code of measurement	50.00	12
Purchasing development appraisal software packages	47.50	13

4.5. ROLES OF THE QUANTITY SURVEYOR IN DEVELOPMENT APPRAISALS IN SRI LANKA

Section five of the questionnaire (Refer Section 3.3) contained 14 main roles of a QS identified through the literature review. The values given to the ratings and the procedure followed to calculate the RII is similar to that given in Section 4.5. However this was a 6 point Likert-type scale which consisted an additional point to indicate the role not being carried out by a QS in the respondent's organisation. This point was assigned a value of 0 for the calculation of the RII. The results are given in Table 3.

Table 3: Ranking of the Frequency of Roles carried out by a QS during Development Appraisals

Roles	RII (%)	Rank
Providing building/construction costs data	97.78	1
Calculating the net lettable areas of the building	82.22	2
Determining the timing of cash inflows and outflows during construction period	68.89	3
Determining professional fee percentages	68.89	3
Determining the duration of construction	53.33	5
Calculating the discount factor (Cost of capital/cost of funds)	42.22	6
Arriving at rental values/rates for the project	33.33	7
Determining finance costs/interest rates and funding fees amounts	31.11	8
Conducting the whole development appraisal	28.89	9
Calculating the investment yield	24.44	10
Estimating the inflation rate	22.22	11
Arriving at the selling prices of units	20.00	12
Estimating the rental growth and sales growth rates	20.00	12
Determining sales/ promotional costs, letting fees	17.78	14

The main role of a QS when conducting development appraisal is providing building cost data. This confirms with the main roles of a QS given by many authors as roles dealing with construction costs (Ashworth and Hogg, 2002). Roles ranked from 1 to 5 have a RII of more than 50% and these would be relatively more frequent roles carried out by the QS. These roles are related to construction and can also be grouped as falling into the expenditure side of a development project. The 7th, 10th, 12th and 14th ranked roles fall into the revenue side of a development project. This shows that the QS's involvement in the revenue side is lower.

These roles can be linked to some of the challenges given in the questionnaire. Since the respondents also rated the significance of each challenge to the development appraisal process and outcome, from the ranking of challenges based on their significance it can enable to identify whether a given challenge is of higher importance to the appraisal process and outcome to determine whether the role is of importance.

For the top role of providing building/construction cost data challenges linked are adjusting building costs (RII of 86.25%, refer Table 1) and estimating building costs (RII of 81.25%, refer Table 1) which were ranked as 2nd and 9th based on the significance of challenge. Thus, the top ranked role carried out by the QS is of very high significance to the development appraisal process and outcome. A reason for this is that building/construction cost amounts to a very high percentage of the total costs of a development project. For the 3rd ranked role of determining the timing of cash flows during the construction period the linked challenge is estimating the timing of cash inflows and outflows (RII of 86.25% refer Table 1) was ranked as the 2nd based on the significance of challenge. This is another important role carried out by a QS. The 4th ranked role of determining professional fee percentages links to challenges of obtaining professional fees (RII of 51.25%) and adjusting obtained professional fees (RII of 55%) which were ranked as 37th and 35th based on the significance of challenge. Therefore, this role however is not relatively important.

Out of the respondents' whose organisations employed QS's (33%) rated as the QS not conducting the whole of the development appraisal. This would mean that a higher percentage (66%) have had conducted the whole of the development appraisal even though the frequency of carrying that role is low with an RII value of just 28.9%.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. CONCLUSIONS

With the use of discounted cash flow methods it would enable an additional benefit of the ability to use investment appraisal tools such as IRR and discounted payback period which are also useful to consider the viability of a project.

The use of the residual valuation technique in Sri Lanka is not popular. Since this technique has limitations and drawbacks and had been criticised, the lack of usage is acceptable. From this technique the price for the land can be calculated and if this technique is rarely used then it can be concluded that a main objective of development appraisals in Sri Lanka is not to find the land value. Risk is part and parcel of property development. Development appraisal is used in the property development sector and also since it is used from the initial stages of a project risks would be immense. Therefore the use risk analysis techniques to support development appraisals are of paramount importance

Out of the 21 key challenges, 6 challenges (29%) were related to estimating and therefore it can be concluded that estimating skill is vital when conducting a development appraisal. If the clients influence is significant enough to vary the integrity of the outcome then there is a huge risk that Sri Lankan appraisers and even clients would also encounter a negative reputational impact which happened in the UK (Refer Section 2.1).

A development appraisal requires many inputs which can be viewed as revenue and expenditure related. The majority of expenditure related amounts come from construction related tasks. The major role of a QS when conducting development appraisals in Sri Lanka is to provide building cost data. This confers to the scope and expertise of a QS as an expert and professional dealing with construction costs.

As discussed in Section 4.5, the most frequent roles carried out by the QS of providing building cost data and determining the timing of cash flows during construction have a high importance to the appraisal process and outcome and thus it can be concluded that a QS's contribution is important. As given in prior Section 2.6, many quantity surveying firms have extended the service of development appraisals to clients. In the Sri Lankan context this can be seen from the findings however the frequency of doing development appraisals are low.

5.2. RECOMMENDATION OF SOLUTIONS FOR KEY CHALLENGES

Several top ranking key challenges falls under client's pressure and influence. Solutions that an appraiser can take in these situations are to maintain and adhere to professional ethics and standards in order to maintain the integrity and objectiveness of the development appraisal. For the limited time available it is recommended to use customised software packages, computerised networks between stakeholders such as intranet for speedy communication and maintain consistency across workings and the like to reduce the time for appraisals.

Estimating sales and rental growth had been identified as the 3rd and 4th ranked key challenges. Therefore, for this it is highly recommended to conduct detailed market research activities (Top ranked solution with a RII of 88.75% as given in Table 2) and not to solely rely on historical data.

Even though the use of risk analysis techniques have been identified as the 3rd ranked solution with a RII value of 83.75% by the respondents (refer Table 2), in practice risk analysis techniques does not seem to be highly used (Refer Section 4.2). Therefore it is highly recommended to frequently use risk analysis techniques when conducting development appraisals. Simple risk analysis techniques such as upward adjustment of costs, cost of capital, investment yield (6th ranked solution) and use of contingency sums (7th ranked solution) are also recommended. However, they are recommended to be used in scenarios where time is limited and more encouragement is given to use proper risk analysis techniques such as sensitivity analysis etc.

Maintaining internal cost databases had been rated by the respondents as the 2nd ranking solution with a RII of 85% (refer Table 2). This shows the awareness of the importance of having cost databases and might even be a reason for the relative reduction of ranks for obtaining and estimating building costs

compared to that of the revenue side. Therefore it is highly recommended to create, update and improve data bases containing economic, revenue and financial data as well.

5.3. RECOMMENDATIONS FOR QUANTITY SURVEYORS

Management and financial type companies have economic data, sales, rental data and other financial related knowledge which would be needed when conducting a development appraisal. Since the roles related to the revenue side of the development appraisal done by a QS are low, this statement can be justified (refer Table 3). Therefore, it is recommended for quantity surveying firms to enhance their databases and focus on collecting the above mentioned additional data.

It is also recommended to develop, practice and enhance estimating skills since these were found as the core skills required for a development appraisal in order to deal with the many of the key challenges.

Development appraisal is not an individual person's work and it requires inputs from a wide array of parties and professionals and thus it would not be wise to conclude that the QS is the most suitable person to do a development appraisal. Each project would be unique and would demand special features and thus the development appraisal needs to acquire inputs from the different parties. It is teamwork where it is recommended as a professional to develop networking skills, obtain the inputs from the most suitable/competent person and also to respect each person's input and perspective.

As found out from this research the client influence and pressure related challenges are top ranked key challenges. This influence would tamper the professional judgement and decisions of the appraisers and even a QS's. A QS is a professional and would be obliged to behave ethically. Therefore, it is highly recommended for the QS as well as appraisers to maintain integrity and objectivity when conducting development appraisal to avoid any risk of damage to the organisation and the profession as overall. It is further recommended to adhere to ethical codes and standards issued by professional bodies.

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