

FRAMEWORK FOR A SYSTEM TO MODEL CASINO DEVELOPMENT

Moses Karakouzian¹, Ben H. Mamma², and Mohamed S. Kaseko³

ABSTRACT

The purpose of this study is to develop a system such that the user may model a casino's development without the need of preliminary information from architects, contractors, or consultants. The target user is a casino executive or developer with business experience but lacks real estate development experience. A successful casino development is based upon a favorable ratio of income projections to developmental costs known as return on investment (ROI). In this study, factors used to calculate ROI for casino development projects were analyzed by examining actual ROI calculations that were previously performed by experienced casino executives who utilized the support of architects, contractors, and consultants. The preliminary analysis started with the identification of those key elements that led to the ROI projections. All factors were carefully studied and the detailed information that was ascertained was then used to establish a system framework.

The process to determine developmental costs and income projections was identified and illustrated using data flow diagrams. The research broke down the process into two distinct subsystems. The first subsystem, a "business subsystem", is used to generate a complete set of estimates of financial statements. The second subsystem, a "construction developmental subsystem", processes the detailed project budget. This information then is compiled to create a basic simulation system that can be used as a framework to model casino development projects. The study provides the concept, plan, and framework for future research and building of a fully functioning system.

KEY WORDS

System, framework, decision making, model, casino, ROI.

¹ Professor, Civil and Envir. Engrg. Department, University of Nevada Las Vegas, 4505 Maryland Parkway, Box 454015, Las Vegas, Nevada, 89154-4015, Phone 1-702/895-0959, FAX 1-702/895-3936, mkar@unlv.nevada.edu

² Doctoral Student, Civil and Envir. Engrg. Department, University of Nevada Las Vegas, 4505 Maryland Parkway, Box 454015, Las Vegas, Nevada, 89154-4015, Phone 1-702/895-0959, FAX 1-702/895-3936, mkar@unlv.nevada.edu

³ Associate Professor, Civil and Envir. Engrg. Department, University of Nevada Las Vegas, 4505 Maryland Parkway, Box 454015, Las Vegas, Nevada, 89154-4015, Phone 1-702/895-1360, FAX 1-702/895-3936, bmamma@aol.com

INTRODUCTION

The development of a casino project is a very complex undertaking. It requires the knowledge of casino operations, marketing, finance, law, real estate development, construction, architecture and technical systems/equipment. All of those areas of special knowledge need to be carefully integrated into the development process and feasibility determination of a casino project during the planning stages. Failure to consider all of the variables in developing a casino can result in projects going forward and ending up in bankruptcy. Like all other businesses, casino owners are interested in maximizing the amount of profit that can be realized from a particular casino venture. The general definition of profit is total revenues minus total expenses. The term used to quantify the profitability of a proposed project is Return on Investment or ROI. This general concept of ROI is to compare the net profit of a casino business to the initial cost of creating the facilities. Depending on the needs and sophistication of the casino owner, ROI can be expressed as a percentage, present value of years of cash flow or in the length of time (years) necessary to operate the business to recoup the initial investment. But the important concept to understand at this point is that ROI compares the initial cash investment to the anticipated cash returns and can also quantify the risk involved. For example, a \$1,000,000 investment in government insured certificates might yield a ROI of 3% to 6% with little to no risk. Since the development of a casino project carries considerable risk, the anticipated casino ROI could be in the 15% to 20%+ area. There is no standard for casino ROI expectations. Each casino owner determines his own requirements for ROI based upon his own needs and acceptable exposure to risk. The purpose of this study is to develop a system for casino executives or developers to use that will produce ROI estimates that take into account all the major or critical developmental issues in order to produce credible ROI projections.

BACKGROUND AND PURPOSE

Casino executives who understand the business of gaming are usually the individuals who perform the planning and calculations that estimate the ROI of casino projects. This is basically true regardless of the size of the casino project. These executives usually have a strong understanding and feel for the potential revenue and financial profitability of the properties. However, they often do not have complete understanding or knowledge of the costs associated with the development and construction of such projects. The approaches they use are often incomplete, inaccurate and based on misinformation which often produces unrealistic development costs and ROI expectations. This study will develop a framework for a system to replace the current project planning approaches. Improving the accuracy of ROI projections, improving the time required to establish ROI projections and defining a more fully coordinated project description are objectives of this system. This framework would be designed to use as input the revenue projections from the casino executives and would produce detailed developmental and construction costs, financial statements and ROI projections. The framework of this system will supplement the intended users with the disciplines required for real estate development. All would be done for the casino executive without the assistance of consultants, designers, engineers, construction or other necessary professionals. The significance of the study is that a system to improve ROI projections

would provide a significant business advantage for casino owners and developers. Casino executives would be able to proceed with casino projects confidently and with much less financial risk. Quicker ROI calculations would improve time management of casino executives by allowing them to spend less time on projects that would not be profitable. Projects that had attractive ROI projections would be much more fully defined and based upon technical information of many different professions.

ELEMENTS OF THE PROPOSED FRAMEWORK

Figure 1 below summarizes the basic structure of the proposed framework. The systems will use as input the anticipated project size, and financial projections from the Casino developer. These data will be integrated with detailed unit cost estimates based on an extensive historical data base that can more accurately be able to produce estimates of development costs. The output of the system will be detail financial statements with projected revenues and development costs. These will for the basis for estimates of the ROI. In calculating a ROI there are major groups of information such as income projections and development costs that need to be considered. Major groups of information like these relate to each other and are organized in a specific manner to determine the ROI calculations. In this paper the organization and relationships of these major groups is referred to as the “framework.” The framework to model casino development refers to the organization of these major groups of information necessary to model a specific casino development and produce a specific ROI.

FRAMEWORK DEVELOPMENT

It was found that there is not a “typical” form of worksheet currently being used for calculating developmental costs. However, typical developmental budgets reviewed revealed standard budget categories. There were standard financial statements found that are required to produce ROI calculations. These financial documents are standard word-wide. The system framework illustrates the various lines of interrelated dependencies between income projections and developmental cost projections. The financial statements are strongly dependent upon the local market conditions and regulations of specific gaming jurisdictions. These financial statements are also dependent on the construction costs of that same gaming jurisdiction. Construction costs of a particular gaming jurisdiction are dependent on regional construction cost and available resources.

The system framework indicates the overall or general sharing and processing of information between the main elements of the system. As shown in Figure 2 this system framework includes:

- (1) Five information Processor Banks
 1. ROI Processor Bank
 2. Financial Processor Bank
 3. Project Cost Processor Bank
 4. Staffing Processor Bank
 5. Report Writer Processor Bank
- (2) Three Specialized Databases

- a. Staffing Database
 - b. Project Cost Database
 - c. Direct Input Database
- (3) One Direct Input Module

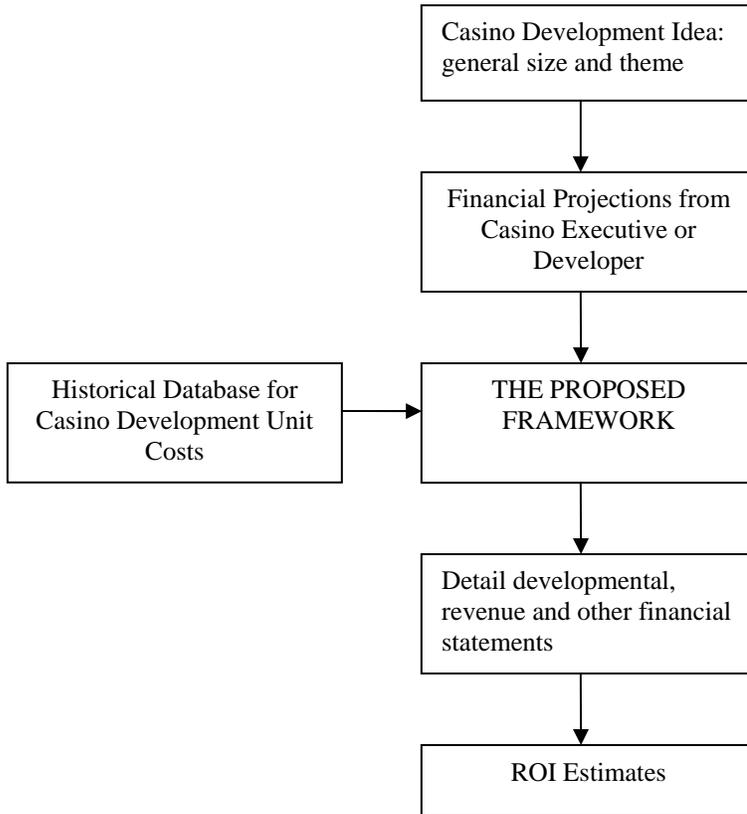


Figure 1: Elements of the Proposed Framework

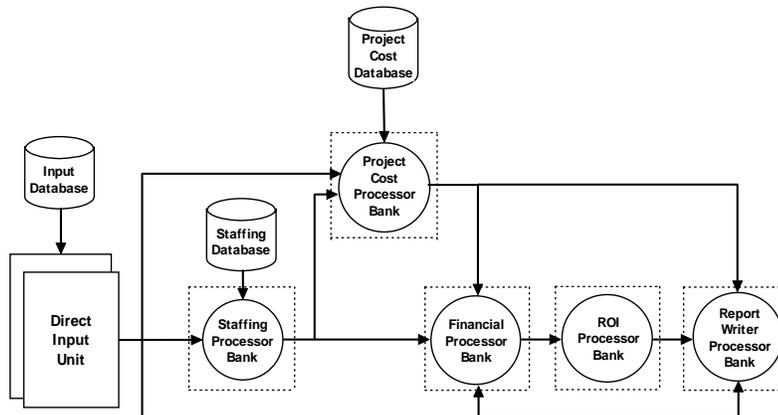


FIGURE 2 Framework of the System.

There are six separate categories of system data listed above. The individual categories of information include: 1) general data such as name of project, 2) financial data, 3) developmental cost data, 4) staffing data, 5) return on investment (ROI) data and 6) report writing data. Specific input data can fall in multiple categories. Gaming jurisdiction for example is in general, financial, staffing and development cost categories.

The ROI Processor Bank is only dependent upon the Financial Processor Bank. That is to say that all of the information needed to calculate ROI is found in the financial calculations. All of its input comes from system processing activities; there is no Direct Input information. The ROI Processor Bank does have information output to the Report Writer Processor Bank. The Financial Processor Bank is dependent upon the Project Cost Processor Bank, Project Staffing Processor Bank and Direct Input Unit. The Project Cost Processor Bank provides information such as total project cost, re-opening expense, construction interest, capitalized interest, depreciation statistics, real estate taxes, insurance costs and debt/equity ratios to the Financial Processor Bank. The Staffing Processor Bank provides the Financial Income Processor Bank with information like labor, cost of goods sold and overhead costs. The Direct Input Unit provides the Financial Income Processor Bank with information like slot win per day, room rates, dinner pricing, etc.

The Project Cost Processor Bank is dependent upon the Staffing Processor Bank and Direct Input Unit. The Staffing Processor Bank provides information such as staff parking needs, back-of-house space requirements, employee dining requirements, uniforms and pre-opening expenses etc. The Direct Input Unit provides information pertaining to the size and quality of the facility; it also provides general information such as interest rates, cash investment, schedule, etc.

The Staffing Processor Bank is only dependent upon Direct Input Unit for information. As the number of slot machines, table games, hotel rooms, restaurants and entertainment units are input to the system, the Staffing Processor Bank computes the total staff required, payroll and facility needs.

Finally, the Report Writing Processor Bank compiles all of the processed information from the ROI, Financial and Project Cost Processor Banks. The Report Writer Processor Bank provides access to the system information for the purpose of allowing the user to receive reports in a format desired.

The Staffing Database is intended to provide the information necessary for the Staffing Processor Bank to operate. On a gaming jurisdiction and level of quality basis the Staffing Database will have staffing plans and pay rates for each department in the casino complex as well as the general areas of overhead and expenses.

The Project Cost Database will house on a jurisdictional and level of quality basis unit costs for developmental costs such as construction, furniture, equipment, supplies and land. It will provide the information necessary to the Project Cost Processor Bank

The Direct Input Database will provide supplemental information for the system user. At the lowest levels of the system the user will have the opportunity to access the Direct Input Database and research the question prior to making an input. This database could store information as well as direct Internet access to appropriate sites.

Finally, the Direct Input Unit operates at the lowest levels of the system. The user responds to basic information about the major elements of the project (casino, hotel, etc.). Selection of the elements will be made by a “drop-down” selection process. Depending on the elements selected at that time, the system will request more input in greater detail (number of slot machines, win per day etc); some will be directly typed in and others will be selected by “drop-down.” Questions asked at these levels will be sufficient to build financial statements, developmental budgets and ROI calculations.

Due to the vast nature of this study’s subject, research and discussion of all framework elements will be limited to the financial and developmental elements of the system. The elements not discussed or only briefly mentioned above are extensive and will require much more research and evaluation in the future to completely describe the framework of a system to model casino development. Specifically, those elements requiring future study are the Direct Input Unit, Staffing Processor Bank, Staffing Database, Construction Database, Direct Input Database and Report Writer Processor Bank. The following discussion is intended to illustrate the highlights of each system.

Hierarchy of Data Flow

The five outlined information processor banks shown in Figure 3 are each composed of their own group of information processors that organize and calculated data so as to produce needed information for the final goal of establishing a ROI for a specific project. In this section a detail discussion of the function of each processor and its overall relationship to the other processors in its group is presented. During the collection of the financial and developmental data it was quickly observed that the processing of this information had a clear organization of timing needs. For example Consolidated Income Statements could not be calculated until Departmental Profit and Loss Statements and Capital Structure calculations were completed. But there was no relationship between the timing of Departmental Profit and Loss Statements and Capital Structure calculations. In other words there was a “critical path” of information that needed to be understood.

Fourteen separate levels of information were identified. Some levels had only one data processing activity while other had multiple data processing activities. These activities and the scheduling activities of the related processor are shown above in Figure 3 as the Hierarchy of Data Flow. The lowest level, 14, is where initial project input begins. Between these levels, 01 and 14 is the critical path of processing information. The clearest method of study to determine this path of information was to start at the ROI Processor activity level and work backward.

Level 1: Return on Investment

The ROI of a project can be expressed in four ways that are useful to casino executives and each expression of ROI has different meanings when interpreting the relative feasibility of a particular project. These four methods are referred to as 1) Net Present Value (NPV), 2) Internal Rate of Return (IRR), 3) Simple Payback and 4) the Return on Cash Investment.

Level 2: Cash Flow & Balance Sheet Processors

Cash Flow Statements and Balance Sheets are key financial indicators in evaluating the financial condition of a project. The Cash Flow Processor requires information from the Depreciation & Amortization, Capital Structure and Consolidated Income Processors. The Balance Sheet Processor only needs information from the Capital Structure and Consolidated Income Processors.

Level 3: Consolidated Income Sheet Processor

The Consolidated Income Statement is the summation of all income statements for all departments that produce income. For those departments that do not produce income (housekeeping, maintenance, security etc.) expenses are calculated in the Sales, General and Administrative Processor. It also receives processed data from the Pre-Opening Processor which includes labor, stocking inventory, marketing and training before the casino is actually open to the public.

Level 4: Capital Structure and Depreciation & Amortization Processors

Capital Structure Processor sums up the total of all developmental cost processors to obtain a total project cost. One of these processors is Interest & Developmental Cash Flow Processor which provides detail about the total project debt and equity. The Depreciation & Amortization Processor sums up all the developmental cost as well, but also sums them into like groups having common depreciation lives. This processor also receives Direct Input so that the user of the system can select the type of depreciation being calculated and the details needed for those calculations.

Level 5: Sales, General and Administrative Processors

Casino projects include departments that do not produce revenue, but are required in order to support those departments that do produce revenues. Examples of non-revenue producing departments would include surveillance, security, marketing, maintenance etc. The projects also include general costs that cannot be reasonably attributed to revenue producing departments specifically. All of those costs are grouped into an expense statement called Sales, General and Administrative (SG&A). The General Construction and Property Tax Processors and Staffing Processor are required for calculations of the SG&A expense statement. Finally, the SG&A requires information from the Direct Input Unit.

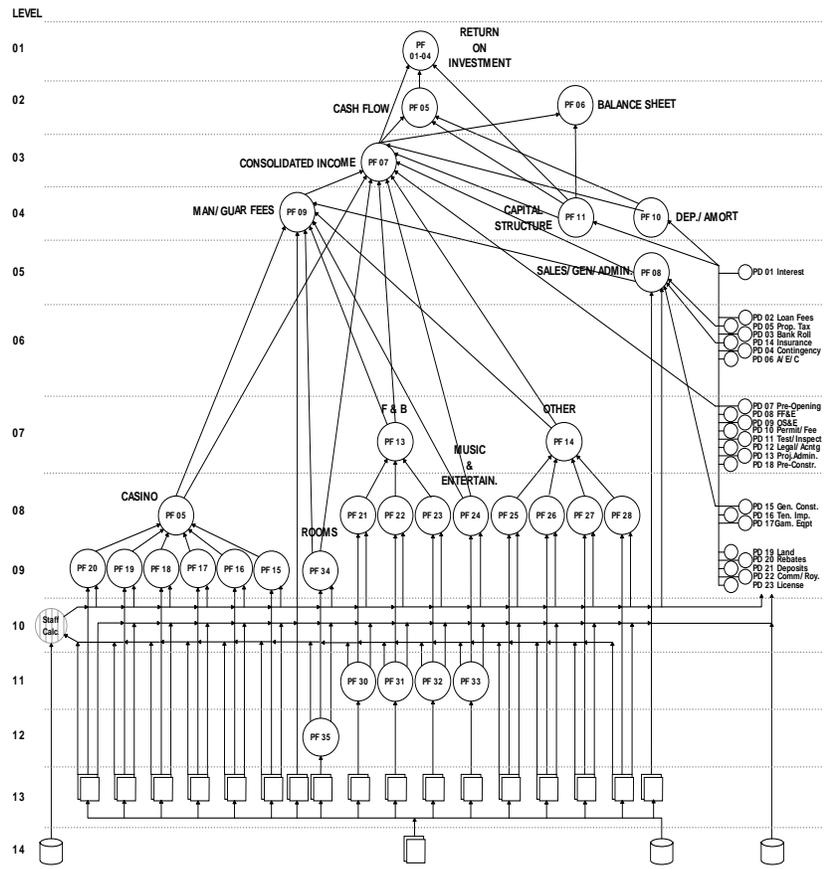


FIGURE 3 Hierarchy of Data Flow.

Level 6:

There are six Development processors working at this level namely Interest and Loan Fee Processor, Contingency & Escalation Processor, Property Tax Processor, Insurance Processor, Start-Up Cash & Bank Roll Processor, Architects/Engineers/Designers/Consultants Processor. As their name suggests they calculate interest on loans, property taxes throughout the life of the project, builder's risk insurance & owner's liability insurance, on-hand cash required from the Sales, General and Administrative Processors plus all P & L processors and determines the extent of services needed from many architects, engineers and consultants and their costs.

Level 7: Food and Beverage P & L Processor

The Food & Beverage Profit & Loss Processor operates by combining the operating results of individual departments. These departments are Food, Beverage and Convention/Banquet which each has their own processors. The six Profit and Loss Processors are basically identical. They process user input from the Direct Input Unit and organize the information into standard Profit and Loss standards.

Level 8: Casino P & L Statement Processor

The Casino Profit & Loss Statement combines the Profit and Loss Statements of all casino-operating departments into one statement. The Casino Profit & Loss Processor organizes the data received and transmits the appropriate data to the Consolidated Income Statement for further processing. This processor requires direct input such as number of gaming tables, number of slots, win per machine per day, gaming tax rate etc.

Level 9: Rooms P & L Statement Processor

The Rooms P & L Processor shown in Figure is a key processor that receives information from the Room Mix Processor, Direct Input Unit and Staffing Processor Bank. When all necessary information has been compiled in the Rooms Profit & Loss Process, the data is transmitted to the Consolidated Income Statement.

Level 10: Complimentary Processor

The information developed in the Complimentary Processor is sent to each of the profit and loss processors for revenue producing departments. It tells each processor two things:

- (1) What goods and services are available to be "comped;" and
- (2) What percentage of the total amount "comped" is attributed to each department.

Level 11: F&B Processors

The types of restaurants, bars and convention/banquet facilities are determined with the use of additional processors: 1) Define Food Outlet, 2) Define Beverage Outlet and 3) Define Convention/Banquet Facilities. The system user specifies the types of facilities and their income criteria.

Level 12: Rooms Mix Processor

The Rooms Mix Processor will allow the user to define all of the types of suites and to calculate suite “average daily rates” and “average occupancy rates.” The standard rooms will likewise be defined in this processor. The number of units and size of all standard rooms and suites will be sent to the General Construction data storage for calculating the development costs.

Level 13 & Level 14: Input Specific to the Defined Project and Project Definition

At this level we define the purpose of the project and prepare a framework for the development of the project. Then we continue to give specific input to the concerned elements in the framework. For example, direct input includes information such as number of gaming tables, number of slots, win per machine per day, gaming tax rate etc. It will provide the Rooms Profit & Loss Processor with information such as expense escalation, credit card use, other costs, etc. It allows the user to enter key information like guest capture rate, average total sales, costs of sales, expenses, etc.

CONCLUSIONS

A brief study on the development and structure of the framework for a System to Model Casino Development has been presented. The preliminary study has highlighted some deficiencies of the current planning approaches in the development of a Casino hotel. This framework helps to avoid economic risks in developing and maintaining a casino hotel by effectively estimating the ROI. This framework has to be implemented to gain a better understanding, about which we would discuss in the next part of our study with a hope that it would lead to a more effective planning for the development and maintenance a casino hotel.