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## Assessing the Feasibility of Business Propositions

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### **Introduction**

It is becoming increasingly important that producers are given the appropriate tools to succeed in value-adding initiatives as they are encouraged to embark on these initiatives and adopt entrepreneurial perspectives on their businesses. This document presents an overview of feasibility studies from the viewpoint of its role in helping entrepreneurs determine the viability potential of business ideas that they come across. We begin with a definition of feasibility assessment and provide a framework for performing a feasibility assessment process. We sum up with a check list of the characteristics of an effective feasibility report. The objective is to help entrepreneurs assess feasibility reports they contract from consultants to ensure that the pertinent questions addressing the ability of their project to succeed have been adequately addressed.

### **What is Feasibility Assessment?**

Feasibility assessment is the disciplined and documented process of thinking through an idea from its logical beginning to its logical end to determine its practical viability potential, given the realities of the environment in which it is going to be implemented. While feasibility studies are conducted for engineering, educational, program initiatives, our discussion in this document is limited to the feasibility of business initiatives. In that vein, feasibility studies help entrepreneurs to decide if their business idea can be viable given its domain conditions.

Feasibility study or assessment is conducted at three levels. The first level involves operational feasibility and the question that is asked at this level is “Will it work?” The second level involves technical feasibility and its associated question is “Can it be built?” Sometimes, the first and second levels are addressed together and simply referred to as technical feasibility. The third and final level is economic feasibility and it brings the operational and technical levels together into a common unit by asking “Will it make economic sense if it works and it is built?”

The environment within which the feasibility is conducted is critical since it defines the external factors that influence the feasibility of the initiative. For example, an initiative that is feasible in a community with a rail line may be infeasible in one without a rail line if rail transportation is a bottleneck in the initiative’s value chain. For this reason, it is important to proceed with the development of a feasibility study within the framework of the proposed business initiative’s

value chain.<sup>1</sup> Using the value chain framework helps ensure that all the pertinent components involved with moving a product or service from its inputs to its customers are evaluated.

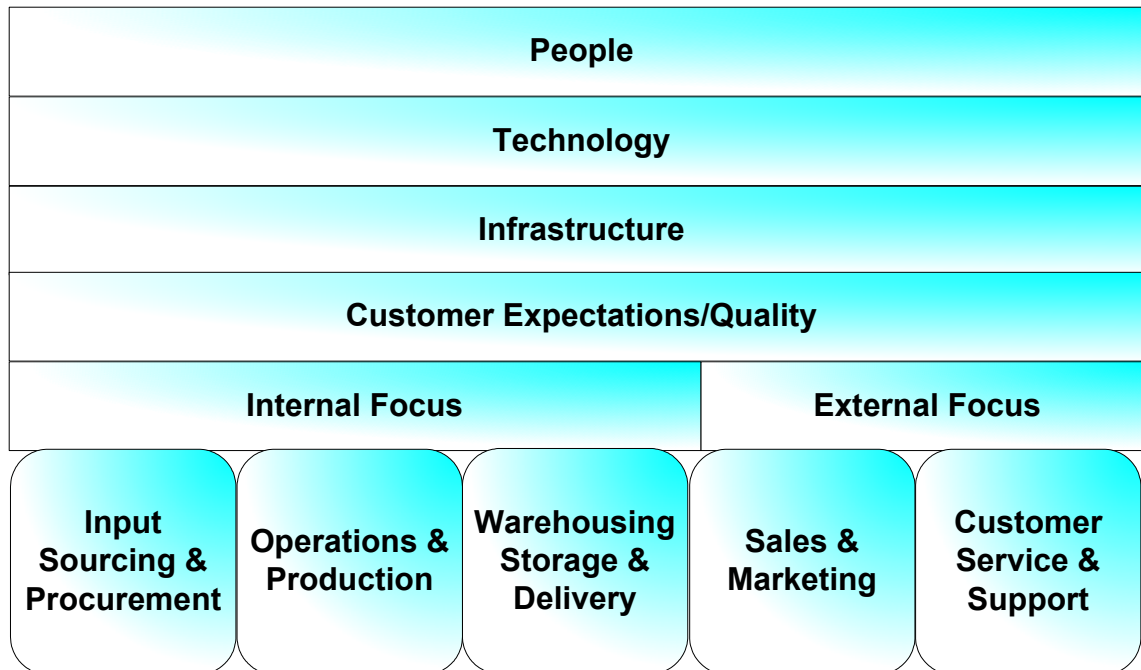
There can be three possible outcomes for a feasibility study or assessment: (1) Feasible within the defined domain; (2) Feasible with changes to certain domain factors; and (3) Infeasible within the defined domain. The results of feasibility reports must be challenged by project proponents to ensure that nothing has been overlooked that would invalidate the conclusion. Thus, entrepreneurs need to take their feasibility studies seriously because good studies may not only contribute to saving them significant amount of time, money and goodwill with investors but could also uncover project alternatives that have not considered.

### The Feasibility Assessment Process

It is often suggested feasibility studies should encompass at least two assessments: technical feasibility; and economic feasibility. The technical feasibility embodies an assessment of the physical, technical and technological dimensions of the project while the economic feasibility assesses the project’s economic viability within its defined domain.

The value chain approach allows the two assessments to be embedded into a single initiative, facilitating an increased understanding and appreciation of the domain’s effects on the different stages from input sourcing and procurement to customer service and support (Figure 1). It also facilitates an appreciation of the resources, technology, customer expectations and infrastructure required for the initiative to succeed, allowing an assessment of their level and depth at each subsequent stage in the value chain.

**Figure 1: The Value Chain Approach to Feasibility Assessment**



<sup>1</sup> The value chain concept was developed by Michael Porter of Harvard in his 1985 book, *Competitive Advantage*.

## Input Sourcing and Procurement

We begin conducting the feasibility of the business initiative from the logical point in the value chain, i.e., input sourcing and procurement. The technical dimension the analysis at this stage encompasses the availability of the required inputs in the appropriate levels of quality and quantity. The assessment of availability involves an evaluation of cycles and trends for both quantity and quality of the inputs. We are also interested in the physical movement of the inputs from their origination points to the facilities where they will be processed. Different sources of supply are evaluated for their quality and quantity as well as cycles/trends in these characteristics. If specific human resources and technologies are required to facilitate the effectiveness of the input sourcing and procurement stage, their availability is assessed within the domain of the project. Likewise, the infrastructure support for effectively procuring inputs from origination points to processing facility is also assessed.

The economics of input sourcing and procurement emanates directly from the technical assessment. The prevailing market prices of inputs as well as costs associated with the procurement are assessed at the input sourcing and procurement stage. The objective is not to determine the price but the range of prices that have been typical in the domain over a reasonable period of time to allow for the capture of the trends and cycles in the prices. The price trends and cycles can be matched against the quantity and quality trends and cycles to provide insights into potential bottlenecks in the input sourcing and procurement function of the business initiative under consideration.

For agricultural value-added initiatives, secondary data can suffice for the input sourcing and procurement segment of the feasibility assessment. The sources of these secondary data include industry and trade publications as well as statisticians of industry associations. Additionally, a number of government departments collect, analyze and publish some of these data. In special cases, primary data collection may be necessary and this may be done through formal surveys or interviews. For example, different suppliers may be asked to provide information on their products – prices, quantities and qualities – as well as the stability of their quotes, e.g., the frequency with which they change their prices, quantities and quality. In most cases, where potential suppliers feel the project initiative is credible, they will invest their best efforts to provide the required information.

It is important to note that effective execution of primary data collection can be expensive and time consuming. An alternative to primary data when secondary data is not neatly available is to pull them together from different sources, ensuring that measurements and definitions are similar across sources. It may be sometimes necessary to transform data from different sources to comparable units to attain the necessary congruence required for analysis.

## **Operations and Production**

The transformation of inputs into outputs occurs at the operations and production stage of the value chain. For project proponents, this is also the stage that will generally absorb the lion's share of their investment capital. Therefore, from capital resource allocation perspective, the feasibility requirements at the operations and production stage must be conducted with all the diligence necessary to address all the requisite issues.

The objective of the technical feasibility assessment at operations and production stage of the value chain is to determine if the technology being envisaged for the proposed project's is suitable for the desired quantity and quality of product the project wants to present to the marketplace. It also seeks to determine if the operational scales of the equipment and their associated technologies are at the appropriate operational scale. Within the value chain framework, the feasibility assessment of the operations and production technologies is conducted by laying out the physical process from input receipts to packaging and transfer to storage and warehousing and/or delivery.

Because of the level of specialized knowledge required to do justice to the operations and production technical feasibility study, it is pertinent that the professionals with the required knowledge and experience are recruited to provide the intellectual content to the process. It is important that project proponents do not lock themselves into a technological jam by myopically focusing only on a single technology. Instead, they must encourage their engineering and technical professional input providers to provide them with the full range of their knowledge about the technologies and equipments available. We are also interested in the physical layout of the equipment and their impact on operational efficiency. Additionally, the scalability of the equipments and associated technologies must also be assessed to ensure that the project is not locked into a scale that does not allow it to take advantage of its success and expand without massive rebuild or recapitalization. These professionals must also be encouraged to provide insights into how the different technologies compare with respect to the number of people and their requisite skill level required to operate them from beginning to end as well as their attendant operational inputs – electricity, natural gas or gasoline, maintenance protocols and shut down protocols, availability and turnaround of technical support, etc.

The foregoing information provides the foundation for the economic assessment of the alternative technical solutions that can be used in the production process and their attendant operational requirements. The technical efficiencies of the alternative technologies should be weighed against their economic efficiencies to determine their overall effectiveness in the project's feasibility. The best sources of the economic data to support the assessment of the technologies and operations are the suppliers of the equipment. Such primary data can be collected by providing a detailed description of the product under consideration in the proposed business initiative to potential suppliers in a Request for Quote (RFQ) offer. The principal advantage of using an RFQ is to improve the proponents' knowledge about alternative solutions which they may be unaware of should they settle on the supplier they know. Given the rate of technical obsolescence, it is imperative that capital investments in technologies are made to maximize their longevity given technical and economic efficiency considerations. Proponents should not overlook the alternative of not making direct investment in operations and production technologies, but seek to assess the possibilities of allying with a company with processing and operation capacity and open to such initiatives.

The technical nature of operations and production stage of the feasibility study demands that unbiased, knowledgeable people about the operations and production processes are hired to help review the responses to the RFQ. If deemed necessary, the proponents of the project should arrange for the responding suppliers to make presentations before these knowledgeable people so

they can ask the necessary questions that people not knowledgeable in the subject will not know to ask. Although this process can be cumbersome and time consuming, it is worth every effort if the equipment, buildings and other operational inputs are a significant component of the proposed project's capital outlay.

### **Warehousing, Storage and Delivery**

Generally, products of agricultural value-added initiatives are stored or warehoused prior to delivery to customers. Therefore, the feasibility study should assess the implications of warehousing, storage and delivery systems for the project. It is important that the feasibility study assesses alternative sources of warehousing and storage – from own build through renting to strategic alliance opportunities. The objective of these alternatives is to provide the project with realistic alternatives for consideration should the project be found feasible, leading to the need to develop a business. The feasibility study should not only focus on the physical facilities but also on the management technologies that are enhancing the efficiencies of warehouse and storage facilities management. The product tracking systems that facilitate maximization of space utilization and turnover are critical components of the assessment process. Additionally, available infrastructures to support the physical movement of products to warehouses or storage and from there to customers must also be assessed. For example, transportation systems infrastructure may influence how consumer-ready products can be and how efficiently intermediate products can be shipped to further processors efficiently.

The economics of the physical buildings, location, infrastructure, technologies and other associated resources are brought to bear on the technical options to ensure that the most technically efficient and economically effective alternatives are those that qualify for consideration. The best sources for both technical and economic information are suppliers of warehousing and storage services. Trucking and rail companies are often very forthcoming in providing information on delivery charges for specific products from certain locations to certain destinations. The accuracy of the data supplied by these service suppliers is dependent on the clarity and precision of the input information they need to calculate their estimates. Thus, the stepwise process of gathering information is important because it provides the requisite information that feeds into future steps.

### **Sales and Marketing**

Marketing and sales is often taken for granted in feasibility studies. However, they provide a direct insight into the project's domain and the structure, conduct and performance (SCP) characteristics of the players within the domain. Therefore, the sales and marketing feasibility assessment bridges the intra-firm feasibility dimensions with the extra-firm feasibility dimensions.

The conceptual backbone to the SCP is the assessment of the demand and supply conditions of the product and the behavior and outcomes of the firms in the industry. The supply and demand conditions should cover the size and scope economies in the industry, seasonality and trends, availability and strength of substitutes to the product, industry growth rates and demand elasticities.

Market or industry structure is the number and size distribution of the firms in the marketplace for the product that the project intends to enter. Industry conduct describes the pricing behavior and price discovery mechanisms used by firms in the industry. In addition, it assesses product distribution mechanisms and available channels as well as promotional initiatives that are used in the industry. The intensity of research and development and the extent of legal tactics in the industry all provide indications of the depth of the transaction costs emanating from the conduct of firms in the industry. Finally, the industry performance assesses the profitability of firms in the industry. This requires information on prices, product quality, technical progress and industry capacity utilization.

A technically and economically feasible project can fail when confronted with certain government policies and/or regulations. Therefore, feasibility studies should assess the existing and/or planned regulatory initiatives that impinge on the project. For example, environmental regulations that are in place and their technical and economic compliance effects on the project must be analyzed to assess their implications for technology, location, and other decisions. Similarly, there is need to assess the implications of specific policies targeted to the industry of interest and evaluate changes in these policies. For example, policies that offer significant competitive advantage to the industry but are subject to change by administrative fiat need to be assessed for the potential effect on the viability of the proposed project.

The results of the foregoing analysis form the backdrop for assessing the feasibility of the proposed project's products in the defined market domain. They help the proponents *position* their product within the context of what already exist and how they may differentiate themselves to ensure their competitive advantage. The product characteristics that are engineered into the product offer as well as the pricing, promotion and distribution or placement opportunities are all influenced by a clear understanding and appreciation of the industry's structure, conduct and performance. They also help assess the product differentiation index of the project's offer vis-à-vis the current best offers in the marketplace.

Information on industry structure and performance may be obtained from various government statistics, such as those developed and maintained by the Department of Commerce. These databases offer information on number of firms and employees, average wages and benefits, total value of shipments, gross margins, etc. In addition to government databases, specific industries also collect their own statistics and commission reports that may be purchased or consulted. Interviews with specific industry experts can also be a major information source. Similarly, significant information may be obtained from industry news in the main media or in industry-specific publications. For example, when industry news reports indicate that plant closures are increasing, it may be logically extrapolated that industry capacity is high and utilization is low. The implication of this for performance is often easily inferred for undifferentiated product marketplace in the industry. Marketing and promotional information may be obtained from special publications focusing on product marketing and promotions. These function-specific publications often discuss the successful initiatives and can provide significant insights into the approaches used in particular industries. Another source of information on industry situation is academics publications and government documents. Because SCP issues present important policy implications, they are the subject of study in many government and academic documents

and they can provide immense significant insights on market structure, conduct and performance situation in many industries.

### **Customer Service and Support**

What do customers want? Ask them. The final step in the value chain framework to feasibility assessment is finding out what customers needs are not being satisfied by the current marketplace. The purpose of this is to determine if the proposed project's offer stand to make a difference in satisfying customer needs. The results will provide a credible input into the project's product differentiation index and allow the proponents to identify the appropriate placement and promotional options to employ. Customer service and support research allows the proposed project to gain insights into the nature and structure of its potential market. It can develop market segments at this step, allowing it to refocus other components of the initiative or revisit earlier steps in the feasibility assessment process. Since customers are the final arbiters on the success of a product, assessing how the project's offering addresses their unmet needs is fundamental to the project's economic feasibility.

Information for the customer segment of the feasibility can be obtained from reviewing consumer publications and industry publications for general assessment of needs and how the project's offering addresses them. Direct information may be obtained by conducting using focus group interviews, direct surveys and/or interviews. While these initiatives can be expensive, they are worthwhile if technical and economic assessments thus far are supportive of the project and more information is required to make the decision. For this reason, it is prudent for the customer segment to be where it is in the value chain, i.e., the end. However, it is important to remember that the process described in this document is hardly linear but rather iterative, using information from one stage to dig deeper into or gather new information gathered from an earlier stage.

### **The Decision Recommendation**

The purpose of a business feasibility study is to make a decision about whether to proceed with a particular business opportunity. It provides the general internal and external value chain conditions that confront the business initiative and evaluates the proposed initiative's ability to be economically viable if it is found to be technically and operationally feasible. Therefore, the emphasis on the decision recommendation of the feasibility study is economic or financial.

The easiest approach to the economic decision is to gather all the information at the different stages of the value chain and identify those that require capital expenditure and estimate these expenditures. Additionally, identify the different types of people and skills required to operate each stage of the value chain and determine what their wages, salaries and benefits will be. Finally, identify other project related costs such as infrastructure development or improvements, occupancy, advertising and promotion, office supplies and utility as well as fees and municipal or state development taxes specific to the project. Next, using the production capacity, projected market share growth rates and the estimated market size, in conjunction with price information collected in the various stages of the feasibility study, develop a projected revenue or sales statement. It is important to specifically define all assumptions that drive the income and cash flow projections, e.g., the mean or median wages, salaries and benefits, current price and industry average of plant operating capacity, etc. Also, analyze all the data that were collected to

determine their ranges, adjusted for special circumstances and used these to conduct the sensitivity analysis on the economic outcomes of the project.

The cost and revenue projections together allow the development of the net cash flow emanating from the business over the projected time frame. This statement can then be subjected to capital investment analysis by selecting a reasonable discount rate and estimating the net present value and/or estimating the internal rate of return associated with the projected cash flow. A positive net present value implies an economically feasible project and the larger the positive net present value, the more economically feasible the project, assuming the technical and operational feasibility can be assumed. If the project owners are making a decision based on the internal rate of return, then they need to determine their required rate of return and compare it to the estimated internal rate of return. If the internal rate of return exceeds their required rate of return, then the project is economically feasible. On the other hand, if the estimated internal rate of return is less than the proponents' required rate of return, then the project is deemed economically infeasible even if it is both operationally and technically feasible.

It is important that the project cash flow is subjected to the full range of sensitivity analysis given the data that is collected for the feasibility study. This will provide the full range of conditions that support the feasibility of the project. The wider the band of feasibility on the critical variables, the more confident the projects' proponents can be about the viability of their project. On the other hand, if the band of feasibility is narrow vis-à-vis the critical variables, then the project's viability is more susceptible to uncertain shifts in its marketplace. For this reason, it is here emphasized that the sensitivity analysis of the feasibility analysis be conducted over the full range of the project's industry realities. These realities may be divided into three blocks – worse case, normal case and best case scenarios. Additionally, the sensitivity analysis must be conducted for different combinations of scenarios, e.g., best price with worst demand conditions. This provides insights into the critical bottlenecks to the project's viability and allows the proponents to assess the decision recommendations within a more informed framework.

## **Conclusion**

The purpose of a feasibility study is to help assess the viability of a business proposition, technically, operationally and economically. The value chain framework for conducting feasibility studies has the unique advantage of laying out the project in its logical configuration – from input procurement to customer service – and assessing the technical, operational and economic feasibility at each stage, and finally putting it all together to assess the total project feasibility. The advantage in this approach is revealed in exposing the bottlenecks to feasibility along the value chain so they can be assessed for possible amelioration. The iterative nature of the approach is also helpful because it allows the analyst to revisit previous steps when information from latter steps suggests the need. In the end, the logical and step-wise process for conducting feasibility assessment within the value chain framework helps enhance transparency of the analysis and provide the foundations for better decisions.

The report was laid out to reflect our expectation of presentation of a good feasibility report. Thus, it is expected that such a report will cover the input sourcing and procurement, operations and production, warehousing, and storage and delivery. These three cover the logistics aspects of the production process and draws on the infrastructure conditions, technological and technical

realities, human resource availability, capabilities and skills and customer expectations of quality associated with the product. Sales and marketing and customer service takes the analysis into the project's external domain to assess industry structure, conduct and performance characteristics as well as regulatory hurdles that confront the project. The customer service and support component demand of the analyst to determine the specific needs of customers that may be addressed by the project's offering and estimate the product differentiation index.

Pulling all the information together into financial units, the analyst can build the investment, operational costs and revenue projections over a reasonable time frame and estimate the net present value and/or the internal rate of return to facilitate making decision recommendations. A project returning a positive net present value is deemed feasible and the larger the net present value the better. Project analyst needs to determine the required rate of return that investors in the project would deem acceptable and compare it to the internal rate of return to determine the project's feasibility. If the former is lower than the estimated internal rate of return, then the project is judged to be feasible and vice versa.