Development of a Systematic Approach to Project Selection for Rural Economic Development

Susan Murray
Missouri University of Science & Technology
Rolla, Missouri, USA
murray@mst.edu

Amanda Alpaugh
United States Air Force
amanda.alpaugh@gmail.com

Karl Burgher
Missouri University of Science & Technology
burgherk@mst.edu

Barry Flachsbart
Missouri University of Science & Technology
barryf@mst.edu

Cassandra C. Elrod
Missouri University of Science & Technology
cassa@mst.edu

Abstract

Projects can be an effective methodology for community economic development. An easy-to-use and easy-to-implement systematic nine-step approach to project portfolio selection is presented. A version of the Analytical Hierarchy Process (AHP) and a scoring methodology are used in the project selection process and then the Benefit-to-Cost Ratio Method is applied to determine the acceptability of the public projects. The approach takes into account the unique needs, possible limited subject expertise, and possible technological constraints of small municipalities. The approach was successfully beta-tested by a group of community members involved in developing a project portfolio of taxpayer-owned projects ranging in budget from three hundred to over one-million U.S. dollars and the results of this test are presented.

Keywords: Analytical Hierarchy Process, Missouri, Systematic Approach, Economic Development

1.0 Introduction

Economic development activity is essential for the survival of both large and small municipalities worldwide. Economic growth, brought on by economic development, often brings new capital into municipal governments by increasing the taxbase, allowing for further development and quality of life improvements. Without a sustaining level of economic growth and activity, municipalities may no longer be able to support the needs of an evolving community, resulting in population loss and economic distress.

For example, over the six years prior to 2007, in the state of Missouri, 43% of municipalities with a population of less than 3,000 had negative population growth. The average decrease in population of these municipalities was 3.7% (Population Division, U.S. Census Bureau, 2007). To survive, these smaller municipalities must develop strategic plans designed to maintain their current populace and infrastructure by promoting healthy and sustainable economic activity.

In an ideal setting, many communities have developed mission statements and have set long term goals for the community. However, communities are falling short of reaching the stated goals because of failure to complete the final two activities in the strategic planning process: development of strategies and implementation of these strategies through projects. Even if communities develop strategies that will help meet their objectives, they often do not implement these strategies through projects due to a variety of capacity limitations. This shortcoming is not only inherent in communities; businesses also find the final stage of the strategic planning process to be the most difficult step. As Gray and Larson (2006) stated, "the key is selecting from the many proposals those projects that make the largest and most balanced contribution to the objectives and strategies of the organization." They suggest using a project portfolio system to select proposals. In such a project portfolio system, projects are prioritized so the organization's resources are assigned to projects that will best help the organization implement its strategies.

Generally, three problems occur when projects are assigned without a prioritizing system: the first problem is what is known as "The Implementation Gap." This gap refers to the misunderstanding of the organization's strategy by top and middle management. This misunderstanding causes confusion when middle mangers implement projects that they feel would be best for the company, but go against the strategy developed by upper management. This can lead to an inefficient use of valuable resources and strife between levels of management. The second problem deals with organization politics. When organizations have a poorly defined project selection system, projects can easily be implemented based not on the benefits they produce, but on the persuasive ability of a project champion. The third problem deals with resource conflicts and multitasking. When a project's priority is not clear and resources are limited, conflicts arise when trying to obtain the resources to complete it. Multitasking is also a problem in organizations that have reached their labor resource limit. Multitasking adds delays and costs to projects and reduces worker efficiency (Gray et al., 2006).

All three problems can be avoided by assuring that the organization has a documented project portfolio system that uses integrative criteria, a structured process for project evaluation and selection that support the organization's higher-level strategies and objectives. By implementing a set prioritizing system, all levels of management know which projects are important to the strategic goals of the organization, eliminating "The Implementation Gap." With a prioritizing system in place, it will also be less likely for projects to be implemented based solely on the persuasiveness of an individual or small group. Another important outcome of a prioritizing system is that by understanding the priority of the projects, organization leaders can allocate resources accordingly and reduce multitasking.

While these systems of assigning weights and variables, deriving cost factors, and making a decision based on a calculated outcome can be useful, it is sometimes unclear as to whether they make sense for rural economic development. Many organizations, including smaller communities, do not implement a project portfolio

system. Failure to do so can result in communities failing to meet their long-term goals that, in many cases, include economic growth and increasing the quality of life. Some communities have the desire to implement a strategic planning process, but are unable to do so because they discover the need for planning and engineering, but they lack the funding to hire support. This is especially true in smaller communities with an extremely small tax base. When addressing rural economic development efforts, it is often difficult to force the types of projects small communities face into a very quantitative model for project selection. Numerous project sets considered by rural communities involve "quality of life" projects (new sidewalk in front of library, walking trail for citizens, etc.) where there may be no way to assign the necessary quantitative variables needed in traditional financial based project selection processes, such as the payback or net present value models. Communities that try to implement a project portfolio system without a systematic approach often fail because they lack an easy-to-understand and easy-to-implement project portfolio process (Alpaugh, 2008).

2.0 Literature Review

Throughout the course of time there have been numerous models, methods, guidelines, and techniques developed for selecting projects when faced with limited resources and an abundant opportunity for potential projects in organizations, enterprises, and communities. Various models have proven useful throughout the literature regarding project selection and management; however, when facing small municipalities and rural economic development, the amount of information can be limited and the nature of the project somewhat unfit for some quantitative, structured models (Meade & Presley, 2002; Oddershede, et al., 2007; Saaty, 2007). The following discusses these existing models, methods, and guidelines, as they appear in the literature.

2.1 Project Portfolio Management System

Traditionally, a project portfolio system evaluates, prioritizes, and selects the projects that best meet an organization's objectives. Seven benefits of a successful project portfolio system (Gray et al., 2006):

1. Build discipline into the project selection process
2. Link project selection to strategic metrics
3. Prioritize project proposals across a common set of criteria, rather than on politics or emotion
4. Allocate resources to projects that align with strategic direction
5. Balance risk across all projects
6. Justify killing projects that do not support organization strategy
7. Improve communication and supports agreement on project goals

These benefits seem to fit well not only in general portfolio selection, but in selecting projects for small municipalities, as well.

2.2 Community Development Strategic Planning Model

A strategic planning model for implementing community development block grant programs was developed by Lang (1975) from his research experience working with the city of St. Joseph, Missouri. The model consisted of a five-stage process

that was used to develop a strategic plan for the community. Although not all five stages are relevant to project portfolio selection and economic development, it appears that the first two stages, Community Commitment and Needs Identification, are important factors in any community project.

Lang described the need for community commitment and identified three groups that needed to be involved and committed: 1) political and administrative leaders, 2) a city staff taskforce of administrative and technical people chosen by the administrative leaders, with sufficient power to operate autonomously, and 3) a community council or citizen organization, comprised of citizens with a variety of backgrounds, such as retail trade, industry, financial, housing, health, education, news media, religion, social service, elderly, youth, women, and minorities. In a small community, this kind of citizen organization can function very effectively, drawing upon the city staff taskforce for administrative support (Alpaugh, 2008).

Needs Identification should come as a result of an interactive process involving idea generation from both the city staff taskforce and the citizen organization. The citizen organization would then hold public hearings to obtain feedback and refinement from the public. The goal of the groups described by Lang (1975) is to create a project portfolio and to manage it effectively.

Research conducted by Sun, Ma, Fan, and Wang (2008) dealt with reviews of R&D projects and the assignment of a subset of expert reviewers to rank proposed projects. One of their primary goals was to assign the correct reviewers. However, in the case of municipalities, the expert reviewers are expected to be the citizen organization. In general, it would be unadvisable to attempt to choose a subset of these organization members to rank all project proposals due to the fact that the citizen organization is likely to be small enough to function effectively and the entire group is probably needed in order to fully provide intimate knowledge regarding the municipalities' goals, objectives, and limitations.

2.3 Portfolio Framework

Archer and Ghasemzadeh (1998) outlined a framework for project portfolio selection for private enterprises, summarized in Figure 1. Archer and Ghasemzadeh also detailed the project evaluation stages, including pre-screening and screening, and elaborating on portfolio selection, which was the first step in the optimal portfolio selection phase. They proposed that screening should be used, based on carefully selected pre-set requirements, to eliminate unnecessary projects before the portfolio selection phase. They identified four primary ways to screen projects: economic evaluation, benefit/cost techniques, risk, and market research. Given the differences in objectives for private enterprise vs. city government, these screening criteria are only partially transferable. Archer and Gasemzadeh further defined portfolio selection as "simultaneous comparison of a number of projects on particular dimensions, in order to arrive at a desirability ranking of the projects." Once ranked, those projects at the top of the list would be placed into the portfolio, subject to resource constraints. The five main project selection techniques proposed by Archer and Gasemzadeh include ad hoc approaches, comparative approaches, scoring model techniques, portfolio matrices, and optimization models.

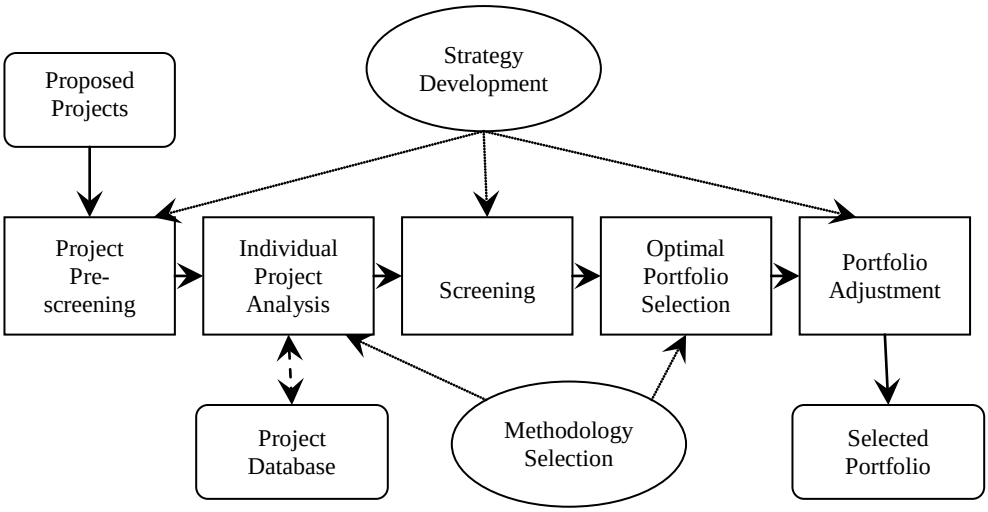

Figure 1. Archer and Ghasemzadeh Portfolio Selection Framework

Another prioritizing system is an extension of the Balanced Scorecard Approach used by Eilat, Golany, and Shtub (2008). They built on the work of Stewart (2001), who had explored using Balanced Scorecard Approaches for ranking. Eilat et al. then identified ways of quantifying some aspects of the Balanced Scorecard and integrated it into a data envelopment analysis framework. This method was developed for ranking R&D projects; most municipalities would probably require consulting assistance to set up and use this approach for project evaluation due to the highly quantitative nature of this approach.

Another approach was developed by Liesiö, Mild, and Salo (2008), which dealt with issues of incomplete cost information and project interdependencies. They extended the robust portfolio modeling approach they had developed earlier (Liesiö, Mild, & Salo, 2007) for project portfolio selection in the presence of multiple evaluation criteria and incomplete information with independent projects and a fixed budget. The extension admits a wide range of project interdependencies, handles incomplete information about project costs, and considers variable budget levels. While this computational approach accounts for incomplete information and a wide variety of factors, its complexity probably hinders its use in a small municipality setting unless consulting assistance is available.

2.4 Analytical Hiearchy Process

The Analytical Hierarchy Process (AHP) is characterized by the organization of factors in a hierarchical structure and the prioritization of them to allow trade-offs to be made between decision criteria and alternatives (Dyer, 1990; Forman & Gass, n.d.). The goal is to identify the best policies and/or actions to achieve the desired growth in a particular area. Unlike municipalities most organizations focus almost exclusively on financial factors. They have not seen the need to incorporate qualitative factors formally in the analysis process. As a result, AHP has not been commonly used in the project selection process.

Research has been conducted on a variety of other project prioritizing systems. Table 1, developed by Bitman and Sharif (2008), summarizes previously

developed project selection techniques for R&D projects and corresponding evaluation criteria. As can be noticed in the table, the existing techniques use financial factors such as profit, growth, and return. Municipalities have a responsibility also to consider non-financial factors such as quality-of-life and safety. Small municipalities, in particular, need a project selection process that is easy to implement, transparent to community members, and able to incorporate selection criteria beyond financial criteria.

Table 1. *Comparison of Project Selection Techniques*

Year	Authors	Perspective	Criteria
1994	Merrifield	Attractiveness, Business Fit	Profit Potential, Growth, Risk, Restructure, Political, Social, Capital Availability, Manufacturing, Marketing, Technical, Access, Champion
1994	Brenner	Strategic, Customer, Product, Company, Competency	Regimes, Means, Sales, Profit, Growth, Advantage, Platform, Life, Technical, Commercial, Capabilities, Competitors, Intent
1999	Henriksen & Traynor	Relevance, Risk, Reasonableness, Returns	Relevance, Risk, Reasonableness Basic Research Return, Programmable Return, Business Return
2001	Mikkola	Competitive Advantage, Customer Benefits	(Many criteria specific to domain)
2002	Osawa & Murakami	Strategic Importance, Probability, Sales, Profit, Efficiency	Strategic Importance, Probability, Sales, Profit, Efficiency
2003	Reisinger,Cravens, & Tell	Financial, Customer, Operational Excellence, Growth	Profitability, Liquidity, Independence, Customers, Internal Customers, Partners, Value Added, Internal Processes, Culture, R&D Sales
2005	Hsu	Financial, Customer, Internal Process, Innovation	Profitability, Sales, Market Shares, Quality, Cost, Utility, Success Probability
2006	Eilat, Golany, & Shtub	Efficient, Effective, Balanced	Efficient, Effective, Balanced

3.0 Proposed Solution Methodology

As previously mentioned, it is often difficult for many types of projects and all types of entities (municipalities, rural communities, organizations, and others) to organize the limited information they may have regarding a need or a project into criteria and variables to fit into a quantitative model or process that requires

defining criteria and a desired outcome (Meade et al., 2002; Oddershede et al., 2007; Saaty, 2007). Small communities and municipalities need a structured method to weigh each potential project without such quantitative data being involved, since numerous projects involve quality of life, rather than large projects where a life cycle and benefit cost ratio analysis could prove useful. Yet a structured, more comprehensive, process is also important to small communities and municipalities, so that their economic development is not run solely on "wheeling and dealing" and "the squeakiest wheel" domineering the selection process or so that the process is not based on information required by some models that may not be readily available.

Based on the work described in the literature review, the following nine-step process was synthesized by the authors, and later proven useful from a case study in a small, rural community. The steps shown in Figure 2 have been designed to be completed by either a second party brought into the city for the process or by a community member. They might often be carried out by a volunteer citizen organization, with help from city staff. If the steps are performed by a community member, it is important that the member act only as a facilitator of the process and refrain from showing favoritism to any particular project; in other words, they must remain unbiased. If a committee carries out the process, the chair of the committee can assume the facilitator role. Unlike existing project selection models, the developed steps require no complicated calculations or computer programming, thus they can be performed in communities with few economic development resources, or for those who desire to make structured decisions about projects that will not offer a high rate of return on the investments made (for example, quality-of-life projects).

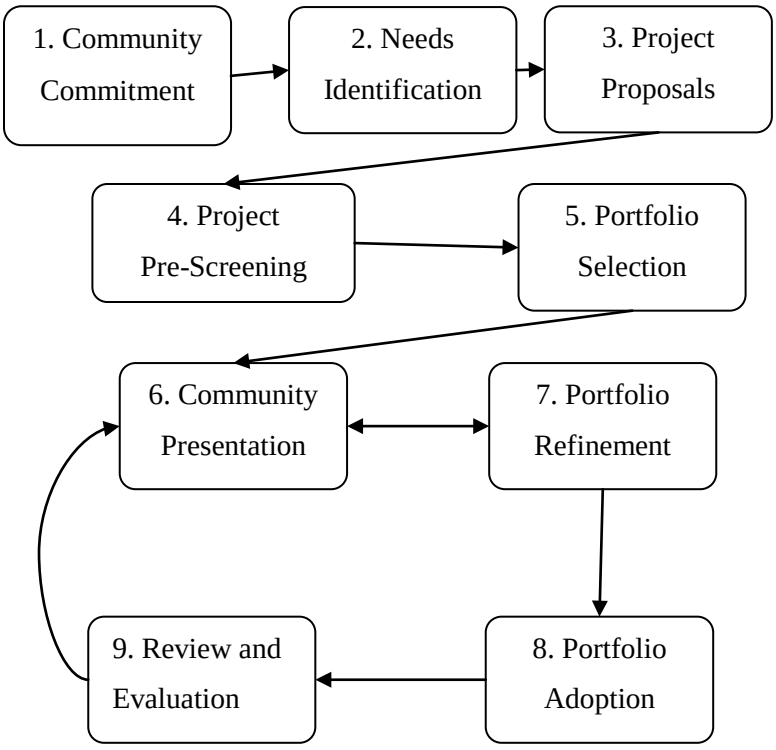

Figure 2. Project Portfolio Selection Approach

Step 1: Community Commitment

The first step in promoting economic development in rural communities is to ensure that the community wants to enhance its economic state. Community commitment is the cornerstone of the nine-step process; if the community does not want to manage economic development, citizen needs, and quality-of-life issues, continuation of the project prioritization process is futile. In order to determine whether the community is committed, the nine-step process utilizes two further sub-steps. The first sub-step involves confirming the official commitment of the local government. This commitment should be achieved by presenting the development process to the city's government at a regularly scheduled meeting. The governmental agency should indicate whether or not they would like to proceed with the process by an official vote that is recorded.

The second sub-step should be performed after the governmental agency approves continuation of the process. A citizen organization as suggested by Lang (1975) should be developed. This organization should consist of volunteer members from both the governmental and private sectors of the community. It is important that the citizen organization represent a wide variety of community interest, such as business, retail, religion, health and welfare, and education. The citizen organization should also appropriately represent minorities in the community. The chair of the citizen organization would have the responsibility to facilitate the meetings so that the steps in the process are completed.

When forming a citizen organization, all members should be citizenry volunteers and they should be personally committed to the goal of the council. The importance of having an all volunteer organization is that those who have volunteered will typically accept ownership of the process and work diligently until it is complete. Members who are forced to participate are less productive because they may not feel the same ownership in the project as volunteers. Good leadership is, of course, paramount.

Step 2: Needs Identification

The second step in the process is determining the city's needs. Needs identification should be performed by the entire citizen organization so as to provide a comprehensive picture of the community needs from various viewpoints. The organization members should focus on interests, not positions, by developing broad community needs rather than specific community projects. A good example of a community need would be to increase the tax base. This need is broad and covers everything from encouraging new businesses to enter the area to encouraging community members to shop locally. A poor example of a community need would be to bring in company "XYZ" that would create fifteen jobs. This need is too focused and would confine project proposals to too narrow a scope. Another good example would be to find ways to improve the quality of life in the community in order to improve the retention of skilled workers and businesses.

The selected community needs should be broad, but specific enough to accomplish the overall goal of economic development. If the needs are not focused on economic development, unrelated projects will be considered and valuable time and resources will be spent analyzing projects that do not promote the overall goal. Once the citizen organization develops a set of needs, it should vote to accept them as the official community needs. Once accepted, the set of community needs should remain unchanged throughout the rest of the process.

Step 3: Project Proposals

The third step in the economic development process is to accept project proposals that address the established community needs. Accepting project proposals may take up to one month to complete, depending on how many members are on the citizen organization. The process facilitator or citizen organization chair should meet with each individual on the citizen organization and discuss project ideas. Performing this step individually promotes an environment in which the organization members are not afraid to share their ideas. At this time, no particular project should be scrutinized and a list of all proposed projects should be compiled and submitted to the citizen organization. Although it may take some time and significant work effort to perform this step, it is recommended that it be completed within approximately one month to prevent citizen organization members from losing interest in the process.

Step 4: Project Pre-Screening

Pre-screening is the fourth step in the nine-step process. There are two sub-categories to the pre-screening process: project versus needs comparison and a scoring method. Once the projects have been proposed, the first part of this step is to compare them to the community's needs. This step will eliminate projects that do not directly meet a community need or the overall goal of economic development. For projects in a small community, the comparison of the projects to the needs can be done in a simple manner. The citizen organization can examine each individual project and determine which needs that project fulfils. If the organization determines that no needs were met, the project can be eliminated.

After comparing the proposed projects with the community needs, the remaining projects move on to the second part of the pre-screening process. The citizen organization must look at the remaining projects to determine whether the community has the resources to provide appropriate analysis of each. If resources are limited, a further elimination step should be performed. Since detailed analyses of the projects have not been completed at this point, information such as total cost and benefit to the community is uncertain. In this situation, the best elimination technique is to utilize a scoring method. The citizen organization can also be used to score the projects. Each member of the organization can be asked to rank each proposed project, based on how well it meets their views of the needs of the community. The summations of these scores become the overall score for the projects, which are then ranked; the most desirable are selected. The citizen organization should then assign resources to analyze the projects, starting with the project that received the most points and continuing downward until all resources are exhausted. In some cases a project may require more resources than are available and it may be dropped in favor of another (or more than one other) that is further down the list.

The scoring, or ranking, method is a simple way to eliminate further projects from the portfolio selection process, but it certainly has some limitations. The lack of a complete project analysis requires that the organization members rank the projects based on limited cost-benefit knowledge, which can lead to the elimination of projects that could have more favorable economic results. Individual biases about projects can also impact this method. To minimize these potential problems, the scoring method should be completed individually to prevent groupthink or peer pressure. A discussion of each project should be performed and both the pros and cons of the projects should be presented to the members of the citizen organization,

thus allowing them to make free and informed choices on what projects they feel would best benefit the community. Projects to be further analyzed should be chosen by the citizen organization as a whole, enabling the organization to claim ownership of the projects and assume responsibility for their success.

Once the projects are selected, project champions must be assigned. A project champion is a community member, who will head the team assigned to further analyze a particular project. A project champion should be a community volunteer who is interested in the project's success and willing to push for its completion should it be chosen for the final portfolio.

Step 5: Project Selection

The fifth step in the nine-step process is portfolio selection. A scaled down version of the traditional Analytical Hierarchy Process was incorporated into the systematic approach that was developed, as a means to assign objectives and weigh each project against the community's overall objectives. In portfolio selection, the Analytical Hierarchy Process (Dyer, 1990) is used to compare the remaining projects and rank them according to selected weighted attributes. The AHP process involves two parts. First, weights for a set of objectives for the projects are determined. This is done essentially through a process of comparisons between objectives. Members of the citizen organization carry out the comparisons and then calculate the objective weights. The second part of the AHP process involves identifying how much each proposed project meets each objective. A similar comparison system is conducted by the citizen organization and final project rankings determined.

There are a number of concerns about AHP and suggestions on how to address those concerns (French, 1988; Leskinen & Kangas, 2005), but the process can be appropriate for use in small municipalities, because, even though it is highly quantitative, parts of the process can be used, thereby making it less difficult to implement. The AHP was used in the study as a subset of steps, rather than the sole process used, thereby making the systematic approach developed in this study unique. Given the small set of projects likely to be considered in a rural community, those involved in the ranking process are likely to note any anomalies. Adjustments can be made in the process as needed.

Step 6: Community Presentation

The sixth step in the nine-step process is to present the project portfolio at a special community meeting. The meeting should consist of an open house where the project champions and their team members are available to answer questions regarding their particular projects. All projects that were analyzed should be represented at the meeting, but those receiving portfolio spots should be highlighted. All data used in the selection process should also be available, including economic analysis and AHP results. It is important for the project champions to "sell" their project to the community at this time. This part of the process is essential to having the community members feel as though they own the portfolio.

Step 7: Portfolio Refinement

Following the community meeting, the next step is to refine the portfolio to reflect the views and decisions of the community. As indicated earlier, this process is iterative. Once the feedback from the community meeting is compiled, the portfolio projects may require rearrangement. This rearrangement should be

performed by the citizen organization. If the revised portfolio is significantly changed, it should be presented again to the community for further feedback.

Step 8: Portfolio Adoption

Once the community is satisfied with the portfolio, the citizen organization should present the portfolio to the local government for a vote to accept or decline the portfolio. If the portfolio is accepted, the government and the individual project champions must ensure that the projects are completed.

Step 9: Review and Evaluation

The final step in the nine-step process is review and evaluation. In this step, systematic evaluation of the progress of the portfolio should be scheduled. The evaluation should be conducted by the citizen organization, and the results presented to the community. If the portfolio requires refinement, the citizen organization should adjust it and then return to the seventh step to proceed through the finalizing steps.

4.0 Systematic Approach Applied to a Case Study: Vienna, Missouri

4.1 Overview

To implement the proposed systematic selection process, a case study was performed in Vienna, Missouri, a small town located at the intersection of Highway 63 and Highway 42 in rural Missouri. Vienna is the county seat of Maries County and is located next to the Gasconade River. According to the 2000 census, the population of Vienna was 628, with 30.7% of the population aged 65 or older (U.S. Census Bureau, 2000). Vienna was chosen for this process because of its need for economic development and ease of accessibility.

The systematic project selection process was applied to the Vienna community, as it lacks the resources to undertake a rigorous selection procedure, making it an excellent candidate for the systematic approach developed in this study. Also, the community had several projects for which the economic impact of the finalized project would be hard to determine, thereby making it difficult to use an established, and more rigorous, methodology.

The process initially identified 17 projects, quickly narrowed the list to 16 projects, and further narrowed to 12 projects using the scoring method. Of the 12, four were private projects, outside the scope of the municipality to carry out, so the list was further reduced to eight projects. After the consideration of objectives was finalized (via a variation of the Analytical Hierarchy Process) and resources were compared, two additional projects were dropped and the remaining six became the community portfolio. Implementation of these six remaining projects was underway at the time of this reporting. The final portfolio for Vienna, Missouri, thus consisted of six public projects all aimed at managing community economics, growth, and quality of life. The projects ranged in budget from $300 to over $1M. The process was completed in six months.

4.2 Implementation of Systematic Approach

Information about the steps and the actions taken at each step are described below.

Step 1: Community Commitment

The first step in promoting economic development in rural communities is to ensure that the community is committed to the process, as outlined in Figure 2. To determine whether the Vienna community was committed, the nine-step process utilized two further sub-steps:

The first sub-step involved confirming the official commitment of the local government. This commitment was achieved in Vienna, Missouri, by presenting the economic development process to the city's government at a regularly scheduled meeting. The city council was asked to indicate whether or not they would like to proceed with the process by an official vote that was then recorded. This presentation to the city council was made in November, 2007. The process was discussed, along with the expectations for the community members. A motion was made to proceed with the economic development process, the motion was seconded, and it carried unanimously.

The second sub-step was performed after the governmental agency approved the continuation of the process. A community council composed of 16 local citizens was formed. To form the community council, business owners, religious groups, and school officials were notified and informed of the ongoing process and of a public meeting that was scheduled. The meeting was also publicized in the *Maries County Gazette*, which serves the city of Vienna and local surrounding areas. The goal was to obtain representation from a variety of community interest groups, including business, retail, religion, health and welfare, and education. At the meeting, the process was again presented and attending community members were asked to volunteer for the community council. Ten community members initially volunteered for the council and developed a name: Vienna Economic Team (V.E.T.). The V.E.T. was later expanded to include six additional members. The V.E.T. then voted to continue the process by identifying community needs.

Step 2: Needs Identification

In the second step in the process, Vienna's Community needs were developed by the V.E.T. through open discussions and via brainstorming sessions. Seven community needs were originally developed, but the V.E.T. narrowed the community's needs down to four by eliminating needs not relevant to economic development. The V.E.T. then voted to accept four needs as the official needs of the community:

1. Increase the tax base of the community
2. Create safe transportation methods for the community
3. Provide recreational facilities for the community
4. Make the community more environmentally friendly

Step 3: Project Proposals

The third step in the process was to identify potential project proposals. Once community needs were determined, the V.E.T. adjourned and the facilitator of the process scheduled private meetings with each individual V.E.T. member. The goal of the private meetings was to promote an environment in which each member was free to share ideas. During the individual meetings, the facilitator recapped the community needs and recorded the council member's project ideas. Three weeks were devoted to interviewing Vienna's V.E.T. members and compiling the proposed projects. At this time, no particular project was scrutinized and

eventually a list of seventeen projects was submitted for further V.E.T. consideration:

a) Construct sidewalks along Ball Park Road and Vienna-Rolla Road
b) Construct walking path through the park
c) Construct soccer fields
d) Construct arcade and bowling alley
e) Construct country club with golf course and pool
f) Organize a weekend farmers' market
g) Construct multi-purpose building
h) Construct recycling center
i) Revamp current chamber dollars plan
j) Develop plan to utilize windmills for electricity
k) Develop plan for implementing rural water treatment systems
l) Construct helicopter pad
m) Design a way to reduce the echo inside Youth Building
n) Build tee-ball fields
o) Construct a new pavilion at City Park
p) Construct new announcer stand at the rodeo arena and design new parking lot
q) Develop plan to acquire public access to Gasconade River

Step 4: Pre-Screening

The pre-screening step involves two activities, comparison of projects to the previously identified community needs, and narrowing the list by an initial scoring comparison. Once the projects had been proposed, the first part of this step was then to compare the proposed projects to the community's needs. The process was performed by the V.E.T. They examined each individual project and determined which needs that project fulfilled. Projects that did not meet any need were to be eliminated, even though they might be meritorious projects in some other way. This step eliminated one project that did not directly meet a community need or help achieve the overall goal of economic development. The eliminated project was identified earlier as project k) develop plan for implementing rural water treatment systems, as it only somewhat addressed one of the four official needs (4. make the community more environmentally friendly) that were identified by the city. The other projects were thought to meet more than one of the official needs, and were thereby not eliminated at this stage.

After comparing the proposed projects with the community needs, the remaining projects moved on to the second part of the pre-screening process. The V.E.T. looked at the remaining projects to determine whether the community had enough resources to provide appropriate analysis of each. Because the resources were limited, a further elimination step was performed. Since detailed analyses of the projects had not been completed at this point, information such as total cost and benefit to the community was uncertain. In this situation, the best elimination technique was to utilize a scoring method. Each member of the V.E.T. was asked to rank the proposed projects. The summation of these scores become the overall score for the projects, which were then ranked and the most desirable were selected (Alpaugh, 2008). The V.E.T. then assigned resources to analyze the top twelve

projects, starting with the project that received the most points. The result of this scoring step was a list of twelve projects:

1. Construct sidewalks along Ball Park Road and Vienna-Rolla Road
2. Construct walking path through park
3. Construct helicopter pad
4. Construct a new pavilion at the City park
5. Construct recycling center
6. Construct multi-purpose building
7. Build tee-ball fields
8. Develop plan to utilize windmills for electricity
9. Design a way to reduce the echo inside Youth Building
10. Organize a weekend farmers market
11. Construct new announcer stand at the rodeo arena
12. Revamp current chamber dollars

Once the projects to be analyzed were selected, project champions were assigned. As mentioned earlier, a project champion is a community member who will head the team assigned to analyze a particular project. A project champion should be a community volunteer who is interested in the project's success and willing to push for its completion should it be chosen for the final portfolio. Some additional community members with strong interests in specific projects were added to the V.E.T. at this time and took on project champion roles.

Step 5: Project Selection

The fifth step in the nine-step process is portfolio selection. For small municipalities, a pre-step must be to determine project ownership. Four of the twelve projects were privately owned projects, while the other eight projects were taxpayer owned. The goal is to develop a project portfolio that a city can implement. Since a city cannot implement private projects, the privately owned projects were not analyzed further. Some of the privately owned projects, however, may be able to move forward - but they would not be controlled by the municipality. Four projects were eliminated at this point.

Project selection continued for the remaining eight taxpayer owned projects. In portfolio selection, a portion of the Analytical Hierarchy Process (AHP) was used to compare the remaining projects and rank them according to selected weighted attributes. As mentioned earlier, the AHP was used as a subset of steps in the systematic approach developed in this study, rather than the sole process relied upon to make a selection decision. The AHP process involved two parts. First, weights for a set of objectives for the projects were determined. This was done through a process of comparisons between objectives. Members of the V.E.T. carried out the comparisons (Alpaugh, 2008) and the final rankings were:

Objective	Weight
Increase Tax Base	45%
Safe Transportation Venues	25%
Recreational Facilities	4%
Environmentally Friendly	26%

The second part of the AHP process involved identifying how much each proposed project meets each objective. A similar comparison process was used. Final rankings for the public projects were:

Potential Projects	Score	Ranking
Develop plan to utilize windmills for electricity (Windmills)	33.77	1
Construct sidewalks along Ball Park Road and Vienna-Rolla Road (Sidewalks)	14.80	2
Construct multipurpose building (Multi)	14.15	3
Build tee-ball Fields (Tee-ball)	8.91	4
Construct helicopter pad (Heli pad)	8.58	5
Construct walking path through park (Path)	8.07	6
Design a way to reduce the echo inside Youth Building (Echo)	7.73	7
Construct a new pavilion at City park (Pavilion)	3.98	8

Once all the final rankings were determined, they were compared to the city's resources and projects were assigned to the portfolio based on available resources. The following projects were a part of the final portfolio.

Potential Projects	Score	Ranking
Develop plan to utilize windmills for electricity (Windmills)	33.77	1
Construct sidewalks along Ball Park Road and Vienna-Rolla Road (Sidewalks)	14.80	2
Build tee-ball Fields (Tee-ball)	8.91	3
Construct helicopter pad (Heli pad)	8.58	4
Construct walking path through park (Path)	8.07	5
Design a way to reduce the echo inside Youth Building (Echo)	7.73	6

Step 6: Community Presentation

The next step in the process was to present the project portfolio to the citizens of Vienna. A special community meeting was held in the cafeteria at the public school. The meeting consisted of an open house where the project champions and their team members were available to answer questions regarding their particular projects. All projects that were analyzed were represented at the meeting, but those receiving portfolio spots were highlighted. All data used in the selection process was also available, including AHP results. Feedback forms were distributed to solicit citizen inputs. The forms were collected after the question and answer session.

Step 7: Portfolio Refinement

The V.E.T. members scheduled a meeting following the community presentation. At this meeting, the team members read through the feedback forms completed by the citizens and then decided on whether or not to adjust the portfolio. Vienna citizen feedback was generally positive, so no portfolio changes were made. If significant changes had been needed, the V.E.T. members would have held another community presentation to present the revised portfolio and explain the changes that were made.

Step 8: Portfolio Adoption

The eighth step in the process was to have the portfolio officially approved and obtain approval for moving forward with the individual projects. The V.E.T. presented the finalized portfolio to the city council for a vote to accept or decline

the portfolio. The portfolio was accepted unanimously. It was then up to the project champions to ensure the projects in the finalized portfolio were completed.

Step 9: Review and Evaluation

The final step in the process is review and evaluation. In this step, systematic evaluation of the progress of the portfolio should be scheduled. In Vienna, this step is still in the future. The evaluation should be conducted by the V.E.T., then the results presented to the community. If the portfolio requires refinement, the V.E.T. should adjust it and then return to the seventh step to proceed through the finalizing steps.

4.3 Discussion and Conclusions of Vienna, Missouri Case Study

Most of the steps of the systematic process worked smoothly and the results were satisfying to the citizen organization and to the political and administrative leaders of the city. In the application to Vienna, teams of students from an Engineering Management - Project Management class at *University name removed for review* were used to carry out the in depth analysis. The students made the analysis process more expedient and easier for the City of Vienna. However, community members without technical backgrounds completed tasks essential to the completion of the nine-step process. By allowing community members to perform the in depth analysis, the community gained a greater sense of ownership and understanding of the projects. In addition to the students' involvement in the in-depth analysis, the portfolio refinement process was also slightly altered. The citizen organization was used to provide finalizing feedback, using limited responses from other citizens. This was considered an acceptable method of representing community opinions.

The mayor of the community was especially pleased with the results of the systematic process. His enthusiasm and appreciation was shown during a meeting between the *name removed for review* students and the citizen organization, where he said, "I am very thankful for the assistance in providing a process for establishing a set of projects for the City of Vienna. The community is very enthusiastic about these projects and can't wait to get started."

5.0 Conclusions

The systematic process developed in this study has been shown to be useful for rural communities struggling to balance various types of potential projects and limited funding. The process was tested through its application in a small rural Missouri community, faced with decision making based on limited detailed information for the majority of potential projects and a lack of the quantitative values necessary for traditional quantitative selection techniques. The use of a structured project management approach to manage the project selection process is essential for the effective use of community funds. The existing selection approaches based on financial returns is not appropriate for communities that need to consider quality-of-life benefits not just profits in their decision making. Without an appropriate unbiased decision making process, the project selection process will likely degrade into an exercise in political infighting and favoritism. Once the community has systematically selected the projects to fund, it is ultimately the responsibility of the project champion(s) to manage the project(s). To assist in the project implementation existing project management concepts

(such as resource constraints, critical path methods, Gantt charts, risks, and scope creep) should be introduced to the project champion(s) as they manage the project(s). This should help the champion(s) avoid major pitfalls common in rural community development projects.

Future research is needed to further simplify the portfolio selection step. The AHP rankings were tedious due to the number of potential projects. The rankings tended to be somewhat variable which is common when individuals are making rankings with some degree of subjectivity. Researchers could explore the possible methods of providing additional meaningful information to the decision makers without greatly increasing the complexity and data requirements. Some confusion existed among the community leaders concerning the AHP calculations and their meaning. The systematic approach presented used a reduced AHP approach, but efforts could be explored to further simplify this process. The scoring method used within the approach worked well in this setting. Future research could explore possible adaptations of existing scoring methods for this portion of the systematic approach. As obtaining community involvement is a constant struggle, further research could also be conducted in the methods to obtain strong community involvement in strategic planning efforts. In order to successfully complete this process, community participation from a variety of individuals is necessary. Limited participation in the process steps can lead to a less than optimal portfolio and reduced community buy-in. Community leadership should stay attentive to the process as it progresses.

Economic development is critical for rural communities. Project management presents an effective method for implement changes in a deliberate, focused manner for the benefit the entire community. Those desiring to improve the quality-of-life in rural communities and stem the downward trends in rural communities must act in a unified and strategic fashion. The strategic approach presented in this paper can be a key tool in that process.

6.0 References

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