Effect of Project Design on Sustainability of World Vision Community Development Projects in North Rift Kenya

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Authors’ contributions

This work was carried out in collaboration between both authors. Author ACP designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author GKK managed the analyses of the study. The two authors read and approved the final manuscript.

ABSTRACT

Sustainability of the funded projects is of utmost importance if the impact of funding these projects is to be realized. Despite project feasibility studies being done prior to commencement of the projects, sustainability is still not guaranteed. Thus, the main purpose of the study was to identify the effect of project design on sustainability of World Vision community development projects in North Rift Kenya. This study was guided by systems theory. The research used cross sectional survey design. The target population was 1500 respondents' four County project managers, 20 project officers, 40 project coordinators, 20 accountants, 240 CDF facilitators and 240 community members. The researcher adopted stratified, simple random and purposive sampling technique to select respondent. The sample size was 316 respondents comprising of four County project managers, 11 project officers, 22 project coordinators, 11 accountants, 133 CDF facilitators and 133 community members to participate in the study. Data was analyzed using descriptive and inferential statistics. Descriptive statistics included frequencies and percentages. Regression was used to test the hypotheses. Descriptive statistics included frequencies and percentages.
Regression was used to test the hypotheses. Project design had a significant influence on sustainability of World Vision community development projects ($\beta_1=0.403$, $p<0.05$). To improve Kenya's rating on sustainability, the government needs to focus on the training of beneficiaries on sustainability so that they can take full control of the project when the financial support has come to an end. In addition, incorporation of sustainability into project design, and provision of support beyond the project completion is critical in ensuring that World Vision projects are sustainable.

**Keywords:** Project; development; sustainability; community; design.

1. **BACKGROUND OF THE STUDY**

Incorporation of sustainability into project design stage entails various strategic approaches. The first is ensuring the project has a future orientation Tantoh, & Simatele, [1]. This means that the project planners have to assume that things will change and proactively plan to ensure the community benefits during and from these changes. Secondly, there must be emphasis on external factors Tantoh et al. [1]. Project planners have to recognize the diversity of the environment in which the project is hosted and appreciate the many dimensions that will affect outcomes of the project including policies, politics and weather among others.

In Latin America, a study of development projects as policy experiments of small-scale agricultural projects showed project success requires flexibility management in planning and design, opportunity to adjust plans as project progresses, and continuous redesign during implementation Rondinelli, [2]. It further asserts few projects can survive a rigid blueprint which fixes at the time implementation starts. It further notes most projects scoring high on project performance experienced at least one major implementation management revision after the project managers determined the original project management was not working. The analysis found that there exists a strong linkage between participation of the community members and sustainability of the projects.

In Africa World Bank projects failure rate is over 50 percent Ika, [3]. Bad governance, resource curse, conflicts, lack of project management capacity, poor project design, politics, geographical location, and corruption were some of the challenges that development projects faced Ika & Hodgson, [4]. Incorporating sustainability into project design would result in a win-win situation for both project beneficiaries, financiers and other stakeholders. Their roles range from social development, sustainable community development, sustainable development to sustainable consumption Young & Dhanda, [5]. NGOs have ventured in various sectors including agriculture, water and sanitation, health care, peace and justice, education among other areas on human development (Das, Mukolu, Olufemi, 2017).

A World Vision (2014) evaluation report analysis show that, most community development projects in Kenya have failed to sustain themselves, become self-reliant and the communities have failed to continue running them after funding organizations withdraw their support. Some factors which should have been worked out, in order to stop this trend of projects collapsing are not done despite support being meant for a specified period with the objective of making the projects self-reliant. The Kenya Vision 2030 plan, which is the country’s development blueprint covering the period 2008 to 2030, aims at making Kenya a newly industrialized, “middle income country providing high quality life for all its citizens by the year 2030 in a secure and clean environment”.

2. **STATEMENT OF THE PROBLEM**

Every year, billions of dollars are spent on development projects across the world Hienerth, Von & Jensen, [6]. Similarly, in Kenya, billions of shillings are channeled to a huge number of projects in various sectors of the economy. Many of these projects, while initially appearing to be successful, lack the systems and resources that would contribute to their long-term success, and collapse once outside assistance is withdrawn; they are unsustainable. This issue of project sustainability is therefore of critical importance to the field of national development (Pearce, Barbier & Markandya, 2013). Despite the enormous investment by the World Bank in financing projects in developing countries, a number of challenges are encountered. Projects in Kenya have continued to perform poorly in terms of sustainability Schwerhoff & Sy, [7].
According to ADB (2012), sustainability sometimes has a low priority. Governments and international development agencies commonly hold that development planning processes and those associated with project funding focus more on approval and implementation of projects, and less on the processes and conditions required to maintain project outputs and outcomes during the rest of the project life. Giving a low priority to the sustainability of projects can result in several substantial consequences such as more rapid deterioration of infrastructure and increased maintenance costs, reduction in the level and duration of project benefits, reduced quality of services, reduced access of particular groups to project benefits, and reduced focus on institutional development. Project sustainability may be achieved by involving the beneficiaries in project design, Project sustainability may be achieved by involving the beneficiaries in project design and design, positive involvement of community opinion leaders, exit management inbuilt in the project design and project relying on resources that are not locally available. A project that is not self-sustaining cannot serve the needs of the community for a viable length of time making the whole project investment uneconomically, socially or environmentally viable. Despite of the increasing number of community development projects failing to achieve project design and sustainability of World Vision community development projects. Therefore, this study sought to determine the effect of project design on sustainability of World Vision community development projects in North Rift Kenya.

2.1 Objective of the Study

The objective of the study was to establish effect of project design on sustainability of World Vision community development projects in North Rift Kenya.

2.2 Research Hypothesis

H1: There is significant effect of project design on sustainability of World Vision community development projects in North Rift Kenya.

2.3 Systems Theory

Due to an increase in the integration and duplication of scientific research in the 20th century, Ludwig advanced a general system approach Rousseau, [B]. A system is a set of two or more interrelated elements, where each element has an effect on the functioning of the whole. Each element is affected by at least one other element in the system and all possible subgroups of elements affect the whole. In addition, the subgroups in the system affect each other (Rousseau, 2014; Tantoh & Simatele, [1]). A system will not survive if not purposely supported by an outside agency. Thus, well-organized and coordinated efforts to sustain its structure and function must exist (Rousseau, 2014). The project management context fits into a system as envisaged by Ludwig von Bertalanffy, the founder of systems theory. Since the intention of any organization when initiating a project is to have positive outcomes, sustainability becomes a critical issue. In this context therefore, the systems theory is relevant to the study because the project output is intended to positively affect the environment, and positive impact can only be felt if a projects output is sustainable.

2.4 Project Design and Sustainability of Community Development Project

Project design phase is vital in sustainability of any project and key decisions made at this phase should have considerations for the sustainability of project benefits beyond the funding period. Project design phase has to lay emphasis on supporting critical factors for project benefit sustainability Barasa & Jelagat, [9]. During this stage, the project solution is further developed with the required steps to achieve the project goals identified. It involves planning for resources- human and financial. The participatory planning aspects that lead to project success includes participation in the development of project plan, decision making role and consultation on resources needed (human & non-human).

Ngure (2013) carried out a study on determinants influencing performance of agricultural projects. Poor project design and ineffectiveness in change management to baseline plans were majorly sighted to have impacted negatively on the project implementation process and overall projects performance. The study findings were that monitoring and evaluation was carried out and it was an important component in project management. The study recommendations are that Project design should be crafted carefully as this determines the resources allocation in terms of time, scope, quality and money as well as the need to involve all stakeholders during project initiation and project monitoring.
Caldas and Gupta [10] investigated the effect of project design on the performance of projects. A case study compared the design processes and the project results of two recent developed projects. Both projects were part of a program, initiated by an oil owner company based in Alberta, to upgrade existing refineries. The comparison showed that the project that implemented most of the Workface designing principles had higher labour productivity, and better predictability. The most important differences of the two-designing management that are identified as the causes for the higher performance were: dynamic planning, early involvement of the contractor, communication of all actors, and a proactive attitude towards risk. The initial resistance to a more detailed planning management indicates that many people were concerned that a planning on a higher level of detail would lead to an inefficient planning process.

Maraga et al. [11] on their research study on community participation in project life cycle of afforestation projects the looked at the involvement in the project-planning phase. The study results noted that community members were involved in the planning of the projects.

2.5 Conceptual Framework

The study was guided by a conceptual framework showing the effect of project design on sustainability of World Vision community development projects as shown in Fig. 1.

3. RESEARCH METHODOLOGY

3.1 Research Design

The study adopted the cross-sectional research design. A cross-sectional research design increases knowledge and understanding of what is happening in world vision community development projects across North Rift, Kenya. The adopted design also enabled the researcher to collect quantitative data from a large population for statistical analysis.

3.2 Target Population

The target population was 1500 respondents. World Vision North Rift region have a total of 564 staff which includes; four County project managers, 20 project officers, 40 project coordinators, 20 accountants, 240 CDF facilitators and 1176 community members (World Vision, 2017).

3.3 Sample Size and Sampling Technique

Using Louangrath [12] sample size for proportions at 95% confidence level, \( P = 0.05 \), the sample size was computed as below:

\[
    n = \frac{N}{1 + N(\varepsilon)^2} \quad (1)
\]

Where; \( n \) = the sample size, \( N \) = the population size, \( \varepsilon \) = the acceptance sampling error

\[
    = \frac{1500}{1 + 1500(.05)^2} = \frac{1500}{4.75} = 316 \text{ respondents}
\]

From the target population of 1500 staff, the researcher used proportionate sampling to select 316 staff. Therefore, the sample size for this study was 316 respondents. The researcher used purposive sampling to select all the four County project managers. Simple random sampling was used to select 11 project officers, 22 project coordinators, 11 accountants, 133 CDF facilitators and 133 community members to participate in the study.

![Conceptual Framework](image.png)
3.4 Data Collection Instrument

The research instrument used in this study were questionnaires and interview schedule. The questionnaires were designed according to objectives of the study. The researcher questionnaires, was administered to the project officers, project coordinators, accountants and CDF facilitators.

3.5 Interview Schedule

A structured interview schedule was designed based on the research questions and used to gather information from the county mangers and regional managers.

3.6 Pilot Study

A pilot study was conducted among 10 respondents. The purpose of the pilot was to establish the validity and reliability of the instruments. The views of respondents were used to ascertain ambiguity nature of the items within the questionnaire and its ability to elicit the desired information.

3.7 Data Processing and Analysis

Collected data were coded and entered in the computer for analysis using the Statistical Package for Social Sciences (SPSS Version 22). The research yielded quantitative and qualitative data. Qualitative data analyzed using content analysis. Quantitative techniques such as descriptive statistics and inferential statistics were used to understand relationships between different variables. Inferential statistics was done using Pearson correlation coefficient and regression analysis. Regression analysis was used to test Hypothesis.

The regression equation model was as follows:

\[ Y = \beta_0 + \beta_1 X_1 + \varepsilon \]  

Where:

- \( Y \) represents sustainability
- \( \beta_0 \) represents regression constant
- \( \beta_1 \) represents project design and sustainability
- \( X_1 \) represents project design
- \( \varepsilon \) is Error term

4. RESEARCH FINDINGS AND DISCUSSION

4.1 Response Rate

A total of 316 questionnaires were issued from which 298 were filled and returned which represents a response rate of 94.3%. The response rate is represented in Table 1.

| Response   | Count | Percentage |
|------------|-------|------------|
| Returned   | 298   | 94.3       |
| Non-returned | 18   | 6.7        |
| Total      | 316   | 100        |

Table 1: Response rate of questionnaires

4.2 Descriptive Results of Project Sustainability

During the study the project sustainability was conceptualized as the dependent variable. The respondents were requested to rate their views on the five items reflecting project sustainability in world vision projects using a 5-point Likert scale as summarized in Table 2.

Majority of the respondents 270(90.6%) agreed that the organization ensure continuity of benefits after funding cycle and only 9.4% undecided (M=4.36; SD=0.65). This implies that most organization ensured continuity of benefits after funding cycle. Most of the respondents 256(85.9%) agreed that their organization makes community own the project and 14.1% undecided (M=4.41; SD=0.72). This indicates that the organization makes community own the project. Most of the respondents 256(85.9%) agreed that in order to contribute to sustainable development, our organization satisfies all ‘three pillars’ of sustainability: Social, environmental and economic and 13.4% were undecided (M=4.46; SD=0.72). This implies that in order to contribute to sustainable development, our organization satisfies all ‘three pillars’ of sustainability. Majority of the respondents 256(85.9%) agreed that behaviour and actions of our organizations have an effect on economic, social and environmental aspects, with 9.4% undecided and 4.7% disagreed (M=4.30; SD=0.83). This implies that behaviour and actions of our organizations have an effect on economic, social and environmental aspects. Most of the respondents...
230 (77.2%) agreed that organization ensure that local community members are trained to do minor repairs, with 13.4% undecided and 9.4% disagree (M=4.0; SD=1.06). This implies that organization ensure that local community members are trained to do minor repairs.

Table 2. Project sustainability

|   | SA | A  | UD | D  | SD  | Mean | SD |
|---|----|----|----|----|-----|------|----|
| 1. Our organization ensure continuity of benefits after funding cycle | 134 | 45.0 | 136 | 45.6 | 28 | 9.4 | 0 | 0.0 | 0.0 | 4.36 | 0.65 |
| 2. Our organization makes community own the project | 164 | 55.0 | 92 | 30.9 | 42 | 14.1 | 0 | 0.0 | 0.0 | 4.41 | 0.72 |
| 3. In order to contribute to sustainable development, our organization satisfies all 'three pillars' of sustainability: Social, Environmental and Economic. | 178 | 59.7 | 80 | 26.8 | 40 | 13.4 | 0 | 0.0 | 0.0 | 4.46 | 0.72 |
| 4. The behaviour and actions of our organization have an effect on economic, social and environmental aspects | 146 | 49.0 | 110 | 36.9 | 28 | 9.4 | 14 | 4.7 | 0 | 0.0 | 4.30 | 0.83 |
| 5. Our organization ensure that local community members are trained to do minor repairs | 110 | 36.9 | 120 | 40.3 | 40 | 13.4 | 14 | 4.7 | 14 | 4.7 | 4.00 | 1.06 |

Valid N 298

4.31 0.55
### Table 3. Project design management and sustainability of word vision projects

| Statements                                                                 | SA | A | UD | D  | SD | Mean | SD   |
|----------------------------------------------------------------------------|----|---|----|----|----|------|------|
| 1. Our organization ensure benefits desire by the community from the project are attained | 149 | 50.0 | 128 | 43.0 | 21 | 7.0 | 0.0 | 0.0 | 0.0 | 4.43 | 0.62 |
| 2. Our organization put in place appropriate structures of the project are put in place to ensure community benefits are realized. | 164 | 55.0 | 107 | 35.9 | 27 | 9.1 | 0.0 | 0.0 | 0.0 | 4.46 | 0.66 |
| 3. Our organization ensures the project planning team have identified project stakeholders | 168 | 56.4 | 103 | 34.6 | 20 | 6.7 | 7.0 | 2.3 | 4.45 | 0.72 |
| 4. Our organization analyze the role and expectations of each beneficiary from the project | 108 | 36.2 | 128 | 43.0 | 27 | 9.1 | 28.0 | 9.4 | 7.0 | 4.01 | 1.02 |
| 5. Our organization ensure planners conceptualizes environment ally friendly projects | 114 | 38.3 | 143 | 48.0 | 34 | 11.4 | 7.0 | 2.3 | 0.0 | 4.22 | 0.74 |
| 6. Our organization ensure village leaders | 129 | 43.3 | 106 | 35.6 | 49 | 16.4 | 14.0 | 4.7 | 0.0 | 4.17 | 0.87 |
prepare and plans meetings with ADP committee and other NGOs in the area for assistance.

| 7. Our organization ensure village leaders attend decision making forums at the village and ward. | 149 50.0 115 38.6 34 11.4 0 0.0 0.0 4.39 0.68 |

| 8. Our organization ensure village leaders identifies and mobilize resources to implement development interventions in their villages. | 139 46.6 124 41.6 21 7.0 14 4.7 0.0 4.30 0.80 |

Valid N 298 4.30 0.52

4.3 Effect of Project Design on Sustainability of Community Development Projects

The respondents were requested to rate their views on the eight items reflecting project design in world vision projects using a 5-point Likert scale as summarized in Table 3.

The study findings revealed that majority of the respondents 277(93%) agreed that the organization ensure benefits desire by the community from the project are attained and 7% undecided (M=4.43; SD=0.62). This implies that most organization ensure benefits desired by the community from the project are attained.

Most of the respondents 271(91.9%) agreed that their organization put in place appropriate structures of the project are put in place to ensure community benefits are realized and 9.1% undecided (M=4.46; SD=0.66). This indicates that organization put in place appropriate structures of the project are put in place to ensure community benefits are realized. Most of the respondents 271(91%) agreed that organization ensure the project planning team have identified project stakeholders 6.7% undecided and 2.3% disagree (M=4.45; SD=0.72). This implies that organization ensures the project planning team has identified project stakeholders. Majority of the respondents 236(79.2%) agreed that organization analyze the role and expectations of each beneficiary from the project, with 9.1% undecided and 11.7% disagreed (M=4.01; SD=1.02).

This implies organization analyze the role and expectations of each beneficiary from the project. Most of the respondents 257(86.3%) agreed that organization ensure planners conceptualizes environmentally friendly projects, with 11.4% undecided and 2.3% disagree (M=4.22; SD=0.74). This implies that organization ensure
planners conceptualizes environmentally friendly projects. Majority of the respondents 235(78.9%) agreed that organization ensure village leaders prepare and plans meetings with ADP committee and other NGOs in the area for assistance, with 16.4% undecided and 4.7% disagreed (M=4.17; SD=0.87). This implies that organization ensure village leaders prepare and plans meetings with ADP committee and other NGOs in the area for assistance.

Majority of the respondents 264(88.6%) agreed that organization ensure village leaders attend decision making forums at the village and ward and 11.4% undecided (M=4.39; SD=0.68). This implies that organization ensure village leaders attend decision making forums at the village and ward. Most of the respondents 261(88.2%) agreed that organization ensure community members participates in participatory Rural Appraisal exercises, with 7% undecided and 4.7% disagree (M=4.3; SD=0.80). This implies that organization ensure community members participates in participatory Rural Appraisal exercises.

The study results from interviewed regional project managers revealed that:

"During project design, we detailed how the project will be managed and governed. At this phase, we planned for the project’s key features, structure, criteria for success, and major deliverables." The implied that at this phase is developing one or more designs that can be used to achieve the desired project goals. Stakeholders choose the best design to use for the actual execution of the project.

One of the regional project managers interviewed revealed that:

"We ask a lot of questions during the design stage of the project because we want to know what’s important to the community. We want to discover the community needs and the significant requirements for the project to be considered a success."

Understanding the project design helps determine the utilities and infrastructure to be considered during the project, how the project fits into the strategic plan if the project is a short- or long-term solution, and any concerns with first costs versus life cycle costs. On project design the organization ensure benefits desire by the community from the project are attained, organization put in place appropriate structures of the project to ensure community benefits are realized and ensures the project planning team have identified project stakeholders. The organization analyze the role and expectations of each beneficiary from the project, ensure planners conceptualizes environmentally friendly projects and ensure village leaders prepare and plans meetings with ADP committee and other NGOs in the area for assistance. Organization ensure village leaders attend decision making forums at the village and ward and ensure community members participates in participatory rural appraisal exercises.

5. CORRELATION RESULTS

Having described the study variables using descriptive statistics the study sought to establish the influence project design on sustainability of World Vision community development projects in North Rift. To achieve this Pearson’s product moment correlation was carried out because all the variables were in interval scale.

5.1 Regression Analysis

Regression analysis was used to analyze the effect of a single dependent variable and several predictor variables. The regression coefficient summary was used to explain the nature of the effect of independent variables and the dependent. The study results are presented in Table 4.

| Items | Sustainability | Sig. (2-tailed) |
|-------|----------------|----------------|
| Design | .832            | .000           |

**. Correlation is significant at the 0.01 level (2-tailed).

The study findings revealed that there was a significant positive effect of project design (r=0.832, p<0.01) on sustainability of World Vision community development projects in North Rift. This implies that an improved project design led to an increase in sustainability of World Vision community development projects in North Rift.
The findings showed that project design, had a positive influence on sustainability of World Vision community development projects.

Based on the regression model as summarized in Table 5 the coefficient of determination (R squared) of .810 showing that 81% of the variation in sustainability of World Vision community development projects can be explained by project design. The regression model of project design as a predictor was significant (F=312.208, p value =0.000) showing that there is a significant effect of project design on sustainability of World Vision community development projects.

From the study findings there was a positive significant effect of project design on sustainability of World Vision community development projects. An increase in design led to improved sustainability of World Vision community development projects. The null hypothesis (Ho) was rejected. Therefore, project design had a significant influence on sustainability of World Vision community development projects.

\[ Y = 0.145 + 0.403X_1 \]  

\( \beta \)-value for project design as summarized in the model as:

\[ Y = 0.145 + 0.403X_1 \]

6. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of Effect of Project Design on Sustainability of World Vision Community Development Projects

The correlation results indicated a significant positive effect of project design on sustainability of World Vision community development projects in North Rift. This implies that an improved project design led to an increase in sustainability of World Vision community development projects in North Rift. From the study findings there was a positive significant effect of project design on sustainability of World Vision community development projects. An increase in design led to improved sustainability of World Vision community development projects.

6.2 Conclusions of the Study

Project design had a significant influence on sustainability of World Vision community development projects. Participation of community in conception and design of the projects will enhance sustainability, since there was ownership and commitment to the project. The community participated in making decisions about the project throughout the implementation phase and generate a sense of ownership over the development interventions, thereby promoting sustainability of the project. The study concluded that that System theory can be adopted during implementation of projects. Projects are designed and implemented to meet specific goals and achieve desired change.

6.3 Recommendations of the Study

To improve Kenya’s rating on sustainability, the government needs to focus on the training of beneficiaries on sustainability so that they can take full control of the project when the financial support has come to an end. In addition, involvement of stakeholders, incorporation of sustainability into project design of support beyond the project completion is critical in ensuring that World Vision projects are sustainable. The study has shown that community participation in need analysis has the greatest influence on sustainability of community-based projects, any development interventions targeting a community ought therefore to ensure that the community participates in need analysis if the intervention is to be sustained.
COMPETING INTERESTS
Authors have declared that no competing interests exist.

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