SUSTAINABLE LIVELIHOOD PROGRAM MANAGEMENT INFORMATION SYSTEM WITH SMS NOTIFICATION

I. INTRODUCTION

Today in a modernized world, technology is inevitable in peoples' everyday life. Computers and internet have become part of everyone's daily life. When it comes to convenience, technology improves lot of things like recording of data, security, and storage of information. Apparently, the DSWD and MSWDO office in the Municipality of Sta. Cruz, Laguna have currently used manual process of implementing various livelihood programs. Door to door interviews have done to gather information on a citizen that will be the participant of the implemented livelihood program and write it on a paper. However, after gathering all the information the staff will store it on a cabinet so that, getting information will take time and hassle will occur. From this time forward, people live in a modernized community where technology is still growing that is why through the interview done by the researchers the idea of having a system for client is a must in order for them to have a faster and easier work in terms of implementing livelihood programs.

A livelihood is a means of making a living. It encompasses people's capabilities, assets, income and activities required to secure the necessities of life. A livelihood is sustainable when it enables people to cope with and recover from shocks and stresses (such as natural disasters and economic or social upheavals) and enhance their well-being and that of future generations without undermining the natural environment or resource base.

Nowadays on a modern economy, to aid the poverty, every municipality provides livelihood programs to reduce and inequality through job creation among poor households and by moving highly vulnerable households into sustainable livelihoods and toward economic stability.

In order to enhance the current process of the said Municipality, through the observation and interview the researchers developed a study entitled "Sustainable Livelihood Program Management Information System with SMS Notification" that can help the citizen/participants in applying faster and easier in different programs of the Municipality of Sta. Cruz, Laguna.

II. RESEARCH OBJECTIVES

Generally, the study aims to evaluate and organize their progress tracking of Sustainable Livelihood Program (SLP) of Municipality of Sta. Cruz, Laguna so that each application can have its own schedule and time for appointment and improvise the checking of validity of each requirement needed.

Specifically, it aims to:

1. To develop and design a system that will create programs for new application that the ways of selecting participants in different programs such as Sustainable Livelihood Programs (SLP) and Technical Education and Skills Development

Authority (TESDA) will be applicable for all possible programs in the future.

2. To test the functionalities of the organized and developed record management and progress tracking reports and attendance monitoring based on:
   a) Project Management
   b) Online Application and Tracking.
   c) User Management
   d) Document Management
   e) Report Generation
   f) SMS Notification

3. To assessed the developed system in terms of acceptability and behavioral intention upon use of any related to Sustainable Livelihood Program such as:

   a) Quality factors
   b) Perceive ease of use
   c) Experience
   d) Perceive usefulness
   e) Attitude towards using
   f) Behavioral intention of use
   g) Actual use

III. LITERATURE OF THE STUDY

The literature gathered and used by the researchers as the basis in developing the study entitled Sustainable Livelihood Program Management Information System with SMS Notification. The study focuses on enhancing the current process of implementing different livelihood programs in the Municipality of Sta. Cruz, Laguna. The developed system will be helpful for the community through giving them faster and easier way of applying in different programs under the Sustainable Livelihood Program. Also, the developed system will be helpful for the DSWD and MSWDO office in terms of implementing livelihood programs, for faster retrieving and storing of data, and generating reports accurately. The related literatures gathered by the researchers serves as a basis on improving and developing the system in order for the researchers to understand and support the developed system.

Another study by Osman et. al (2018) entitled "Online Car Rental System using Web-Based and SMS Technology" a web-based system with SMS notifications was developed to give information to the customers. The purpose of developing an SMS notification is to reduce the cost and time consumed which is beneficial to client and the customers. The researchers' Sustainable Livelihood Program Management Information System with SMS Notification will help the DSWD and MSWDO staffs in notifying the schedules of the implemented program that the participants have been applied.

A study by Tangkeko, et al. (2017) in the study entitled "Technical Assistance Project Management Information System (TAPIS)" to respond to widespread and persistent poverty, the Department of Social Welfare and Development (DSWD) intends to improve the delivery of social services to poor and enhance the department's capacity in social protection. DSWD has called for the rapid expansion and strengthening of the core social protection programs, namely Pantawid Pamilyang Pilipino Program, the Kapit-Bisig Laban sa Kahirapan, and the

Sustainable Livelihood Program. The objective of this study is to aid the organization improve its operations by developing project management information system for it to provide adequate progress reports. The researchers' developed system will help the DSWD and MSWDO for proper recording of all the information gathered throughout the implementation of the program and gives accurate reports of the participants record.

Therefore, the literatures gathered and discussed helps the researchers to understand and formulate a solution that would help the clients manual process of implementing livelihood programs. The related literatures give information on how the researchers would improve the manual process of the client which leads in developing the system called "Sustainable Livelihood Program Management Information System with SMS Notification".

IV. METHODOLOGY

Research Design

In order to accomplish the objective of the study, two research designs was use in the researchers' study which are the descriptive and developmental technique in order to improve the current process of implementing various programs under the Sustainable Livelihood Program and to have a database for all the data and information.

The researchers used the descriptive and developmental research technique as a foundation in gathering records for a better grasp to have a higher output. Descriptive research is defined as a research method that describes the characteristics of the population or phenomenon that is being studied. This methodology focuses more on the "what" of the research subject rather than the "why" of the research subject. Developmental research has been defined as the systematic study of designing, developing, and evaluating instructional programs, processes, and products that must meet criteria of internal consistency and effectiveness. The goal of descriptive research is to describe a phenomenon and its characteristics. As said by Hossein, Nassaji (2015) in the Qualitative and descriptive research: Data type versus data analysis, descriptive research is more concerned with what rather than how or why something has happened. Therefore, observation and survey tools are often used to gather data. In such research, the data may be collected qualitatively, but it is often analyzed quantitatively, using frequencies, percentages, averages, or other statistical analyses to determine relationships.

Developmental research is defined by Molenaar, Nesselroade in their research entitled "System Method for Developmental Research", it is shown that a general mathematical theory, called ergodic theory, puts dynamic systems approaches at the center of statistical modeling in developmental science. A general dynamic factor model is presented, which captures most of the statistical models that are appropriate in linear dynamic systems approaches.

Population of the Study

In this section, described the place where the researchers conducted the study. It

shows the location and respondents that the researchers gathered for the purpose of developing the system.

The study is conducted in the office of DSWD and MSWDO in the Municipality of Sta. Cruz Laguna, the main client of the proposed system. The researchers used technique such as interview, library research, and observation. The researchers had 1 MSWDO Head, 2 IT Support, 8 staffs for DSWD and MSDWO office and 89 citizens.

Locale of the study

The study was conducted at the Department of Social Welfare and Development (DSWD) and Municipal Social Welfare and Development Office (MSWDO) which is located inside the Municipality of Sta. Cruz, Laguna. It is near beside the Sta. Cruz Plaza.

Sampling Design

A sample design is the framework, or road map, that serves as the basis for the selection of a survey sample and affects many other important aspects of a survey as well. Therefore, as the researchers ensure that the sampling techniques used in the research is based on the knowledge of the researchers with the use of different data gathering instruments. Purposive sampling is the sampling technique used by the researchers which the main objective is to produce a sample that can be logically assumed to be representative of the population.

As mentioned by Campbell, et. al (2020) in the article entitled "Purposive

sampling: complex or simple? Research case examples" they discuss the reason for purposive that is better matching of the sample to the aims and objectives of the research and improving the rigor of the study and trustworthiness of the data and results.

Data collection instruments

This part shows the process of collecting information from all the relevant sources to find answers to the research problem. This part is where the researchers described the method, they used to gather data and information for the developing the system.

- **Interview** - the Researchers went to Municipality of Sta.Cruz, Laguna to conduct interview last March 4, March 6, March 12, 2020 on the client regarding the processes done for Livelihood programs. Ms. Laarnie Villanueva the Municipal Link, Ms. Maribel Mogro the SLP worker and Ms. Lucy Acosta the MSWDO Staff explained that currently, using paper for recording data and no database. This becomes a problem because of inaccurate outputs given. It also takes longer time in retrieving old records because of filed and misplaced documents.

- **Observation** – it is done by the Researchers during the interview to Ms. Mogro last March 4, 2020 the Researchers asked permission if it is allowed to take a look at some of the data and capture the records that are piled inside their office but the client refused due to data privacy act. The

researchers found out that the MSWDO and DSWD manually gathered information and sorts data by door to door.

- **Online Research** – the Researchers also conducted internet research in enhancing the current knowledge of the Researcher's. Also, the information was used to be more knowledgeable about the different techniques and methods that can be used in the study. Through Internet Research the Researchers have gathered different Related Studies about Sustainable livelihood program, sms notification, Likert Scale, and supporting studies for the methodology used in the study.

- **Consultation**- this method helped to plan the scope and limitations for the study. The researchers acquired ideas that were break downed in order to understand what can be done considering the time allotted for the website to be created and working. With the help of the researcher's adviser, providing features on the website came to a conclusion.

Statistical Treatment

Statistics is one way of collecting the information. To have a general view of the whole state of the study, statistical tool is used. Scaling system is the technique that has been used by the researchers to monitor the interpretations of the respondents.

A study of Joshi (2015) entitled "Likert scale: Explored and Explained" Likert scale is applied as one of the most fundamental and frequently used psychometric tools in educational and social

sciences research. Simultaneously, it is also subjected to a lot of debates and controversies in regards with the analysis and inclusion of points on the scale. With this context, through reviewing the available literature and then clubbing the received information with coherent scientific thinking, this paper attempts to gradually build a construct around Likert scale. This analytical review begins with the necessity of psychometric tools like Likert scale and its variants and focuses on some convoluted issues like validity, reliability and analysis of the scale.

As what was explained in the study Likert Scale is mostly used in educational and social science Research. Thus, the researchers have also use Likert Scale in order to evaluate the User Acceptance of the developed system whether it helps improve the current process of the client positively.

Another study by Awang, Afthanorhan, Mamat (2016) in the study "The Likert scale analysis using parametric based Structural Equation Modeling (SEM)" The Likert scale is commonly used in survey research using primary and secondary data to measure the respondent attitude by asking insofar to which they agree or disagree with a particular question. In generals, Likert scale would be preferred in the questionnaire development stage to ascertain the researchers conducting their research needed.

This study has mentioned that it is more preferable to use Likert Scale in questionnaire development which the current Researchers will be conducting and

will do in order to evaluate the results of the study.

System Development Methodology

Agile software development model begins by defining set of requirements. As mentioned by Abrahamsson, Salo, Ronkainen, Warsta (2017) Software development strategies are trying to provide an answer to the eager business community requesting lighter weight alongside with quicker and nimbler software development processes. This is mainly the case with the rapidly developing and risky Internet software enterprise in addition to for the emerging cellular software environment. The new agile techniques have evoked enormous quantity of literature and debates. However, academic studies on the situation continue to be scarce, as maximum of existing guides are written via practitioners or consultants. The goal of this booklet is to begin filling this gap by using systematically reviewing the existing literature on agile software development methodologies. This e-book has three purposes. First, it proposes a definition and a type of agile software development approach. Second, it analyses ten software improvement strategies that may be characterized as being "agile" against the described criterion. Third, it compares these strategies and highlights their similarities and differences.

- **Requirements Phase** – In this phase, the researchers have done interview and observation with the client which is the DSWD and MSWDO office in the Municipality of Sta. Cruz, Laguna to gather information about the process of implementing livelihood programs in order for the researchers to move on the next phase which is the design phase.

- **Design Phase** – In this phase, the researchers used different diagrams like context diagram in order for the researchers to define and clarify the boundaries of the developed system, use case diagram to represent the users' interaction with the developed system, flowchart to represent the sequence of steps and decisions to perform the process of the developed system, etc. Also, the researchers consulted the client for the layout of the developed system.

- **Development Phase** – In this phase after the researchers have done the different diagrams, the coding and converting the designed diagrams into actual software will take place. The researchers used PHP as programming language, MySQL as the database for all the information gathered. Also, the researchers conducted some suggestions with the adviser and subject specialist for more improvement of the developed system.

- **Testing Phase** – In this phase after the researchers have done developing the functionalities of the system, the software testing will take place. The researchers test the functionalities of the developed system with IT experts through the use of Black Box Testing to ensure that the software is bug-free and the code is clean.

- **Deployment Phase** – In this phase after completing the testing phase, the researchers will deploy the developed system to its working environment. The DSWD and MSWDO Head will be the administrator, the staffs will be the super

users, and the participants of the livelihood programs will be the users.

- **Review Phase** – After all the development phases are completed, review phase is performed to review the progress made towards completing the requirements. And if there are any errors found, then the process starts again from the first phase of the Agile methodology. The developed system will be monitored by the developers that there will be no errors.

V. RESULTS AND DISCUSSION

RESEARCH OBJECTIVE 1: To develop and design a system that will create programs for new application that the ways of selecting participants in different programs such as Sustainable Livelihood Programs (SLP) and Technical Education and Skills Development Authority (TESDA) will be applicable for all possible programs in the future.

The researchers used fact finding techniques to know how the current process of implementing different livelihood programs in the Municipality of Sta. Cruz, Laguna. An interview was conducted with Ms. Laarnie last February 11, 2020, during the interview the researchers asked the client about the process of livelihood programs then replied *"Kung pano? yung ginagwa o selection? kami ang kumukuha ng data sa kanila . pangalan, address, anung natapos… iniinterview namin"* then the researchers explained that if the process goes thru online there will be a form to fill up because Ms. Laarnie said that *"wala kaming form."* And they can register there. They can also view the different programs that they want to

avail. February 13, 2020 the researchers returned to the municipality to gather additional information about the process of implementing Sustainable Livelihood Program. The researchers asked Ms. Maribelle if the data of the past livelihood programs are available in order for the researchers to get another information but Ms. Maribelle said that *"Itatanong ko muna dun sa DSWD pdo ko kung pwedeng ibigay sa inyo. Bakit ano bang kailangan nyo bakit kailagan nyong makuha data nila?"," Hindi ko naman pwedeng ibigay sa inyo yung data kasi ano din sila… pero ano ba gusto nyong malaman? Yung data ng 2019 livelihood kasi may livelihood na katulad nun skills training in cosmetology ang hindi palang dyan ay yung mason carpentry kasi ngayong 2020 yan itetraining pero yung apat nay un ay 2019."* The researchers asked if there are funds used for beneficiaries then Ms. Maribelle said that *"Pondong ginamit yan from DSWD SLP", "May transpo tapos may allowance for 2 days meron silang narerecieve na starter kit yung pang rebond pang gupit basta project ni DSWD funded yan.kaya nga napakaswerte ng mga beneficiaries na papasok na lang samantalang ang daming nagaaral na gumagastos pa sa TESDA di ba? Ang gusto lang ay yung sigurado ang training ay tatapusin at ipapasa kasi ay sayang at employment kasi napakaganda katulad na lang nung sa welding namin meron na ring nakaabang na employer."* The researchers asked the process then *"Dadating yung employer orientation meron ding interview yun.kaya nga ang gusto ng DSWD ay yung mga indigent." "Kasi ganto yan training palang nandito na si employer na*

inaabangan na sila . ang hinahanp ni employer ay yung NCs nila kung nakapasa." There is also a limit for age 18 and above only can participate as stated by Ms. Maribelle. The client also added that *"May mga barangay league meeting lahat ng kapitan edi bumababa ako iaanounce ko para sila may reperal ."* Ms. Maribelle also said that *"Kasi pagka DSWD kasi mahirap hindi mo masasala ang indigent diba? Ang kailangan ng DSWD indigent."* The researchers suggest that there will be a progress tracking of every participant because based on the researchers' idea *"Kasi ang idea po naming hindi po sila basta basta pupunta ditto inonotify po sila kasi iveverify nyo pa po kung indigent sila tas makakarecieve po sya ng text na pwede na po sya."* Ms.Maribelle gladly said that *"Pwede yun.katulda ngayong 2020 ang social preparation namin ay kung ano yung gusto ng tao sa isang barangay na business na hindi sari sara kasi nga sustainable eh kaso mayayare . 2015 pa ang DSWD SLP sa sta. cruz may capital assistance, may hog raising , may organic farming kaya ngayon social preparation kung ano gusto ng tao."* The researchers asked again if there are forms to be fill up then Ms. Maribelle said that *"Nagkakaroon kasi sila ng form kapag acceptance na tumanggap na sila ng ganto mulas sa DSWD pero kapag registration kumpleto pangalan ,edad laging may datos ."* Through this interview the researchers have known the process and different information that is relevant in developing the system

RESEARCH OBJECTIVE 2: To test the functionalities of the organized and developed record management and progress

tracking reports and attendance monitoring based on: a) Project Management, b) Online Application and Tracking, c) User Management, d) Document Management, e) Report Generation, f) SMS Notification.

The researchers used Black Box Testing as software testing to evaluate the developed system with IT experts to test the functionalities if it meets all the given functions.

RESEARCH OBJECTIVE 3: To assessed the developed system in terms of acceptability and behavioral intention upon use of any related to Sustainable Livelihood Program such as: a) Quality Factors, b) Perceived Ease of Use, c) Experience, d) Perceived Usefulness, e) Attitude Towards Using, f) Behavioural Intention to Use, g) Actual Use.

Based on the respondents' perception through using the developed system in terms of quality factors was highly acceptable. The criteria for quality factors in terms of suitability (Mean = 4.37, Standard Deviation = 0.547), operability (Mean = 4.60, Standard Deviation = 0.497), and the respondents does not require much effort in terms understanding the flow of the system through the criteria of learnability (Mean = 4.40, Standard Deviation = 0.553). All of the results of verbal interpretation were highly acceptable with an overall mean of 4.46 and standard deviation of 0.538.

This means that the developed system were able to use by the respondents higher degree. This is done by the criteria of suitability, operability, and learnability that focuses on the developed system entitled

Sustainable Livelihood Program Management Information System with SMS Notification

VI. CONCLUSION

Based on the feedbacks and survey results, it showed that the developed study was ready to use and helpful for the participants especially for DSWD and MSWDO staffs. The researchers proved that the respondents were satisfied and ready to adapt the newly enhance technology for livelihood programs:

1. In order to modernize the current process of implementing different livelihood programs with the client which is the DSWD and MSWDO Office in the Municipality of Sta. Cuz , Laguna, the researchers used fact finding techniques like interview, observation, online research, and consultation to develop the system entitled " Sustainable Livelihood Program Management Information System with SMS Notification".

2. The researchers used Black Box Testing to test the functionalities of the developed management information system in terms of function and features with (5) IT experts and Technology Acceptance Model (TAM) to evaluate the user acceptance of the respondents with the developed system.

3. Sustainable Livelihood Program Management Information System with SMS Notification is an automated system that can help the user to make their applying in various programs easier and hassle less because of its functions that is capable of adapting the purpose of the implemented program.

VII. RECOMMENDATIONS

Here are some recommendations for the improvement of the developed system entitled" Sustainable Livelihood Program Management Information System with SMS Notification":

1. To the future researchers, further improvement to the user interface of the developed system is needed.

2. To the future researchers, create a mobile application that is suited for the developed system.

3. To the future researchers, enhance the functionalities of the developed system.