Original Research

The BIDANI Strategy in the Face of the New Normal: Learning from the Experiences of Baybay City in Leyte, Philippines

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Abstract

The definition of the new normal stretches towards the notions of pandemic-ready and climate-resilient communities. The recent COVID-19 pandemic and the intensification of climate-related hazards have challenged the disaster management and preparedness of those in developing countries. Baybay, among other cities in the Philippines, had endured the devastation of typhoons and landslides in the middle of the pandemic. While the city grappled with its responses to address the dual threats of the new normal, its implementation of the Barangay Integrated Development Approach for Nutrition Improvement (BIDANI) strategy in 2010 through the Visayas State University (VSU) equipped the local government unit (LGU) with sectoral data and database management for evidence-based decision-making, digital information systems, and nutrition-related interventions in the barangay level.

Using the narratives of the LGU and VSU-BIDANI teams, this paper intends to present a comprehensive overview of the significance of BIDANI in addressing LGU governance challenges, especially in planning and development for disaster responses. This paper suggests strengthening the partnership between LGUs and academia to foster good local governance.

Keywords— *BIDANI, evidence-based decision-making, digital information system, new normal*

1 Introduction

The notions of pandemic-ready and climate-resilient communities provide a new lens for defining the new normal. The coronavirus disease 2019 (COVID-19) and the changing climate are disrupting countries' economic growth and sustainability. Therefore, transformative ideas are required for the world to operate along with its threats [1].

The COVID-19 outbreak has kept the world on hold for some time. Countries have suffered tremendously, affecting the economy and society. As a response, governments have implemented and coordinated various containment and mitigation strategies. While the impacts of COVID-19 are highly heterogeneous across different geographical locations, the effectiveness of various measures depends on several factors, including socioeconomic and demographic conditions and cultural and political factors [2]. Responding effectively to such a public health emergency requires timely and accurate information. The effectiveness of national efforts to combat COVID-19 also depends on the ability of the government to monitor its spread and use the information to target its social initiatives [3].

As countries are grappling with the management of COVID-19, climate hazards such as tsunamis, floods, tropical cyclones, and drought, alongside typhoons and heavy rains, which cause flash flooding and landslides, are also intensifying in an uncontrolled manner and redefining the landscapes of risk across the globe [4]. The climatic changes threaten where and how people live. They endanger people's physical safety, livelihoods, sense of place, heritage, and overall well-being [5]. As a result, displacement patterns, migration, and relocation within and between countries are accelerating [4], mainly affecting people with low income and low social status. Like COVID-19, response management and climate change adaptation strategies also require accurate and reliable data for timely responses and suitable adaptation measures [6].

The City of Baybay, among other areas in Region VIII in the Philippines, experienced the devastation of Tropical Storm Agaton (known internationally as Megi) amid COVID-19, which resulted in deadly landslides. How the city responded to the challenges of the new normal using the Barangay Integrated Development Approach for Nutrition Improvement (BIDANI) strategy through the Visayas State University (VSU) was notable and underscores the importance of database management and evidence-based emergency response in local government units (LGUs).

As an extension program of VSU, BIDANI dedicates itself to empowering State Universities and Colleges (SUCs) to implement the program effectively with their partner LGUs. By capacitating local leaders at the barangay and city/municipal levels in sectoral development planning and management, BIDANI fosters evidence-based policymaking and development planning. Moreover, the program emphasizes the establishment of comprehensive databases to facilitate informed decision-making and efficient nutrition program management, thus advancing the cause of food and nutrition security for all and poverty alleviation.

Specifically, the VSU-BIDANI program aims to:

1) Provide capacitating responsibilities to SUCs in Region 8 in operationalizing BIDANI as an extension program, project, or tool and as a development strategy in local governance;

2) Train city and municipal line agencies in operationalizing the BIDANI strategy in sectoral development planning and management;

3) Partner with city and municipal LGUs in empowering the barangay LGUs to come up with sectoral plans and Barangay Integrated Development Plans (BIDPs);

4) Capacitate barangay, city, and municipal LGUs in establishing a barangay management information system (BMIS) for evidence-based policy, decision-making, and development planning;

5) Build the capacity of the local leaders and nutrition front liners in nutrition program management towards food and nutrition security; and

6) Empower nutrition advocates in implementing participative and individualized interventions to prevent malnutrition among 0–24-month-old children through the life cycle approach.

Overall, this paper intends to provide a comprehensive overview of the application of the BIDANI Strategy in addressing challenges that come with the "new normal," focusing on the COVID-19 pandemic and climate-related hazards. Likewise, to present cases on how the corporate identity of the strategy can be of the best help for LGU's planning and development, including disaster responses.

2 Background on BIDANI

2.1 The Importance of Data and Information in Disaster Responses

As disasters have become more frequent, there is growing apprehension on the need to extend the critical knowledge and innovation in managing disaster responses. Several research studies have extensively discussed using timely, accurate, and effective disaster information in disaster management and preparation scenarios [7]. Similarly, decision-makers, including those in public administration, require a process that systematically analyzes well-structured data [8]. Therefore, techniques to efficiently collect, organize, search, and disseminate real-time disaster-related data have become a government priority [9].

While disaster has been viewed as a systematic problem because of the complex, multi-faceted, and interconnectedness of the danger it poses to society, the environment, infrastructure, and the economy, addressing such has become a global necessity and social responsibility [10]. Considerably, local government plays a vital role in disaster-related decision-making, as they not only have a responsibility to their constituents but are likewise expected to know the community's needs, especially vulnerable ones [11].

In the research survey conducted by Jillson et al. [12], most respondents shared the need to improve the engagement of multiple stakeholders to facilitate the development of evidence-based disaster planning and response, more so on community participation. Among other community participation initiatives for integrated development in the Philippines is the BIDANI program. A community-based development approach enhances transparent and professional governance focused on community needs-oriented interventions [13]. The BIDANI database provided relevant information to examine the relationship of household resources to other sectors in the locality, such as food security, social services, and environmental and disaster management.

2.2 The Barangay Integrated Development Approach for Nutrition Improvement (BIDANI)

The BIDANI was conceived in early 1978 at the University of the Philippines, Los Baños to address the problem of malnutrition, which later transformed into a Program Network in the country [14]. The

VSU, formerly Visayas College of Agriculture (ViSCA), is one of the seven original key regional member SUCs of the BIDANI Network Program. Being institutionalized as a regular extension program of VSU, BIDANI endeavors to capacitate SUCs in operationalizing BIDANI with their partner LGUs and capacitates local leaders at the barangay and city/municipal levels in sectoral development planning and management, database establishment for evidence-based policy, decision-making, development planning, and nutrition program management towards food and nutrition security.

BIDANI has three major innovative components, encompassing the program's corporate identity, namely Barangay Integrated Development Approach (BIDA), BMIS, and Participative Nutrition Enhancement Approach (PNEA). The BIDA component focuses on advocacy, linkage, and fostering sustained and active participation among all sectors within government and non-government organizations to create awareness and empower actors to actively participate in development efforts in their communities and enhance the capacity of the local leaders in planning, implementation, monitoring, and evaluation of development programs/projects/activities [15] for the formulation of Barangay Integrated Development Plan (BIDP) [16] and City Municipal Integrated Development Plan (C/MIDP) or Comprehensive Multi-Sectoral Development Plan.

The BMIS is an innovative and people-centered platform that serves as the barangay's data and information system/center for situational analysis. Such data provides a critical insight into the specific needs of the barangay, which are vital for effective development planning, project implementation, and ongoing monitoring. The primary focus of BMIS is to enhance the Barangay Development Council's capacity for e-governance.

The PNEA is an individualized and family-focused approach to address malnutrition among children aged 0-24 months while promoting overall improved nutrition via a life cycle approach [15], including promoting food production and market-driven activities at the household level through close collaboration with LGUs and other stakeholders. This component strives to cultivate a healthy and thriving environment for all, paving the way for a brighter future for the children and their families.

The framework of the BIDANI Strategy (see Figure 1) recognizes the household as the unit of analysis. It is where the production, consumption and exchange, transaction and decision-making, and resource management for primary needs take place. However, a household's vulnerability may be stimulated by events beyond its immediate control, such as climate change, pandemic, and economic crises. The ability of households to reduce risk depends on how they manage their needs and interests within their existing situation [13]. Thus, the BIDANI components come into play. The housing figure of BIDA represents the sectoral committees handled by the barangay councilors who formulate sectoral plans that will result in NI (nutrition improvement) in terms of good governance, poverty alleviation, food security, and health and nutrition improvement of the general populace [17].

At its core, BIDANI represents a comprehensive nutrition-in-development strategy that emphasizes achieving crucial nutritional goals. Beyond being an extension program of SUCs, BIDANI also serves as a development strategy for LGUs in local governance, fostering a cooperative and inclusive environment for sustainable progress.

2.3 Importance of the BIDANI Strategy in Nation-Building

The Philippine Government's unwavering commitment to eradicate all forms of human deprivation, including hunger and poverty, is firmly reflected in the country's long-term vision, "AMBISYON
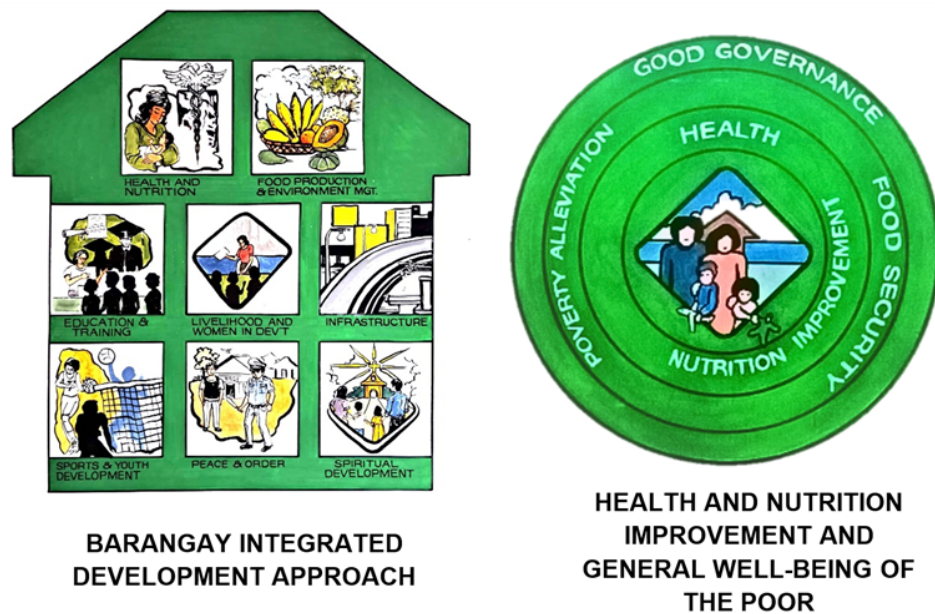
Figure 1.
The Framework of the BIDANI Strategy [17]

NATIN 2040," and its adoption of the United Nations Sustainable Development Goals (SDGs). Within this context, the BIDANI Program is vital in localizing the SDGs, focusing on SDG 3 (good health and well-being) and SDG 17 (partnerships for the goals). The program's comprehensive strategy, which involves all development sectors in barangay integrated development planning for nutrition improvement, leads to significant contributions to multiple other SDGs, including SDG 1 (no poverty), SDG 2 (zero hunger), SDG 5 (gender equality), and SDG 11 (sustainable cities and communities).

Additionally, environmental protection through proper environmental management remains a challenge in the Philippines. Unless tackled urgently, It impedes the country's development, resulting in high poverty incidence [13]. Poverty reduction programs have failed to effectively address the needs of the poor while experiencing the escalating threats of environmental hazards. Environmental management and poverty reduction are top priorities in the Philippines. Yet, they are treated as separate endeavors despite having the same root causes, poor governance, and economic policy [18]. The BIDANI strategy, with its holistic nature, takes into consideration food security, social services, livelihood, gender and development, infrastructure, sports and youth development, peace and order, environmental management, and disaster risk reduction and management to achieve poverty alleviation and good governance, among others [17].

BIDANI serves as the academe's unique and continuing contribution to national development. On the side of governance, it enables local leaders and their people to appropriately intervene directly and indirectly in solving problems regarding nutrition and development through the BIDA. It also institutionalizes effective and efficient development planning and implementation through the BMIS. Regarding its nutrition components, BIDANI reduces malnutrition prevalence in barangays covered by the network program through the PNEA [13].

Moreover, the BIDANI Network Program is recognized by the National Nutrition Council (NNC) as partner in the implementation of the Philippine Plan of Action for Nutrition (PPAN) through its various engagements in the following: 1) policy and program formulation as member of the NNC

Technical Committee; 2) evaluation of nutrition programs as member of the National Evaluation Team (NET); 3) planning as member of the Scaling Up Nutrition Movement Academe Network; and 4) research and capacity building (Dayanghirang [19] during the 45th BIDANI National Convention).

BIDANI plays a significant role in PPAN implementation as it aims to improve nutrition through food security and good governance, particularly at the barangay, municipal, and city levels. BIDANI represents the pioneering effort of the academe in realizing good governance in a decentralized local government. The NNC recognizes BIDANI as an essential component of PPAN and as a practical approach to planning and implementation. BIDANI provides continued support to building the capabilities of LGUs and their nutrition workers and advocates the integration of nutrition into local development plans and programs. BIDANI continually promotes and advocates for nutrition improvement through its network of SUCs [17].

3   Methodology

3.1   The Geographical Focus: The City of Baybay

Baybay is situated on the western coast of Leyte, overlooking Camotes Island and bordered by the Camotes Sea of Cebu. Covering a vast expanse of 46,050 hectares, the City of Baybay ranks among the largest in the Eastern Visayas region. It is divided into 92 barangays, comprising 24 urban and 68 rural ones. As of the 2010 BMIS records, the city is home to 104,993 residents. Over the past two decades, Baybay's population has grown by an average of 1.43 percent yearly [20].

Nestled in coastal, mountainous, and river-crossed terrain, the city faces the challenge of its predominantly wet climate and susceptibility to frequent typhoons, up to seven annually. These meteorological dynamics, often leading to landslides, impacting the community and local economy [21].

In the last three years, Baybay has grappled with developmental setbacks. The dual impact of the COVID-19 pandemic and the aftermath of Typhoon Odette and Tropical Storm Agaton have taken a toll on its progress. In particular, the agricultural and fisheries sectors bore the brunt of these challenges, casting shadows on the city's economic landscape [22].

3.2   Approach of the Study

The study's research design fell under a qualitative and non-experimental approach using a case study. This paper banks on the participant observation of the VSU-BIDANI extension staff for a period of twelve years (2010-2022) and the experiences of the decision-makers in the City of Baybay, primarily the City Mayor and the staff of the City Planning Office on the BIDANI program. This paper explores narrative analysis as it invoked a strong collaboration between VSU-BIDANI and the LGU of Baybay. It further involved a) the collection of stories as data and b) retelling the narrative on how the City of Baybay benefited from implementing the BIDANI strategy.

In its entirety, this paper is not human-subject research. Likewise, it does not directly identify people, their experiences, or their event involvement. The LGU data presented in this study had already appeared on their website before its publication for this study.

3.3   The VSU-BIDANI and Its Implementation Approach

BIDANI was institutionalized as a regular extension program of VSU in 1998 through the efforts of Dr. Samuel S. Go, then VisCA President. Despite its institutionalization, VSU introduced and modeled the BIDANI strategy to several cities/municipalities and provinces in Eastern Visayas (see Figure 2).
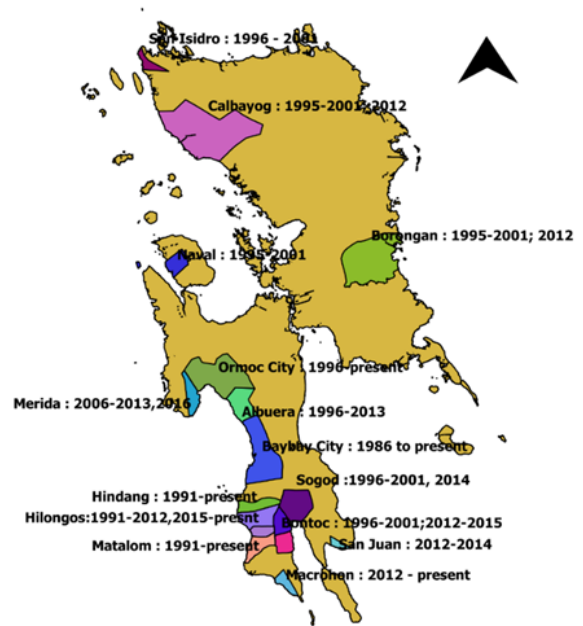
Figure 2.
Area coverage of VSU-BIDANI (1986-Present)

In practice, the VSU-BIDANI program tries to religiously follow the entire BIDANI process, starting with social mobilization, nutrition and situation analysis, training and action planning of the Program Planning and Implementing Committee (PPIC), implementation and monitoring of BIDP and nutrition interventions, up to the assessment and reprogramming of BIDP and Barangay Nutrition Action Plan (BNAP) (see Figure 3). Any LGU interested in only one of the BIDANI components is encouraged to adopt the entire strategy through social mobilization.

Figure 3.
The VSU-BIDANI Process

Step 1: Social Mobilization

Initially, the objectives and goals of the BIDANI strategy are presented through orientation meetings at the municipal or city level through social mobilization. This is an essential step in addressing queries and ensuri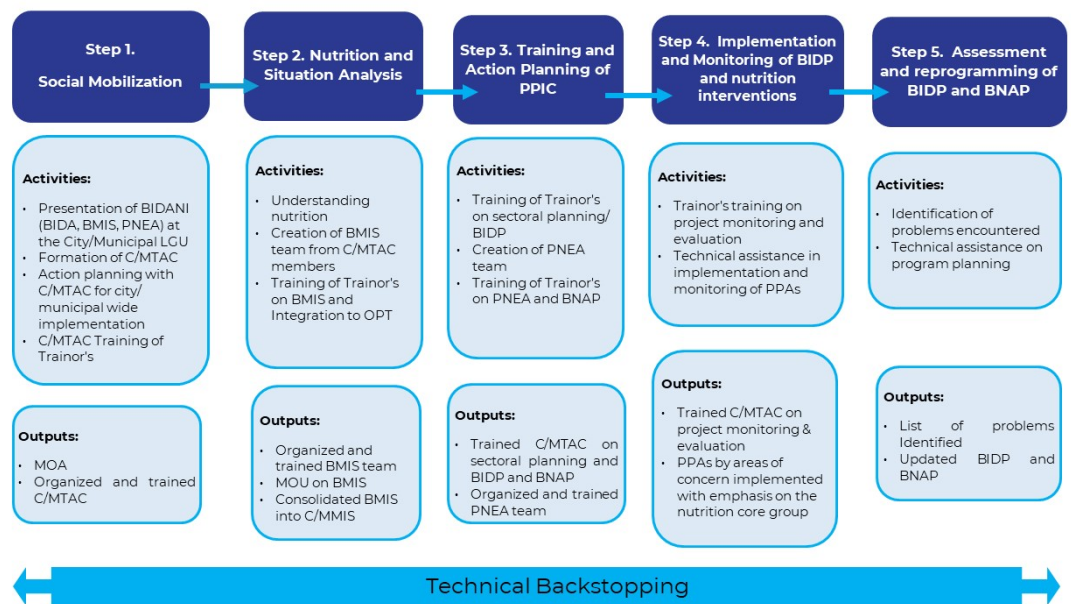ng stakeholders grasp the significance of BIDANI. Over time, when a consensus between VSU-BIDANI and the municipality or city is achieved, it is solidified through a Memorandum of Agreement (MOA), marking a formal partnership with academia. This partnership fuels joint efforts in implementing BIDANI in the barangays of the municipality or city.

Having forged the MOA, the City/Municipal Technical Working Group (C/MTWG) or the City/Municipal Technical Action Committee (C/MTAC) is also formulated (see Figure 4) to be trained in program planning and implementation of the BIDANI strategy.
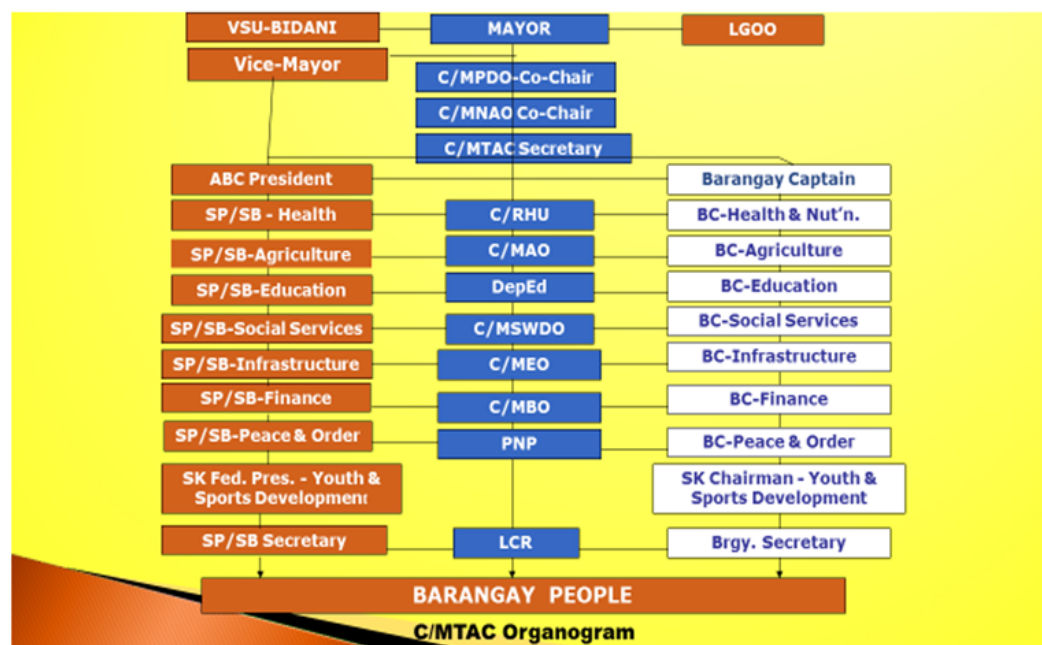

Figure 4.
Composition of the City/Municipal Technical Working Group or City/Municipal Technical Action Committee

After introducing the BIDANI concepts and processes to the C/MTAC, the LGU and VSU jointly develop an action plan for the city/municipal-wide implementation of BIDANI. The C/MTAC are expected to (1) assist in the appraisal and prioritization of socioeconomic development programs and projects; (2) facilitate in the formulation, implementation, monitoring, and evaluation of socio-economic development plans and policies and public investment programs; (3) support the Local Chief Executive in public hearings and other consultation sessions; (4) help in the preparation of the Executive Legislative Agenda; (5) act as a unique planning body for the local sectoral plans; and, (6) and facilitates for the barangays to have an organized and systematic nutrition and situational analysis, comprehensive and updated barangay database for BIDP.

The BIDANI network usually selects pilot barangays for BIDANI rollout; ideally, these are the barangays with a high prevalence of malnutrition in children ages 0-6 [17]. For VSU-BIDANI, it is valued that implementation of the BIDANI strategy covers all the barangays as they have different needs to achieve good governance, thus targeting the municipality/city level in the social mobilization itself.

Step 2: Nutrition and Situation Analysis

After building a connection with the stakeholders, the assessment of the social, economic, health, nutrition, food security, and environmental conditions of the barangay is undertaken through a comprehensive nutrition and situational analysis to identify problems at the community level. This was done through the establishment of BMIS.

The BMIS serves as the hub for situational diagnosis, reducing data discrepancies and ensuring accurate, dependable, and easily accessible information for program planning. Data input for the BMIS is sourced from meticulously filled two-page Family Data Sheets [17].

For the institutionalization of BMIS, the LGU assembled a team led by the City/Municipal Planning Officer (C/MPDO), which will be trained for BMIS utilization. The training includes on-site data collection, standardization of the terminologies and survey procedures, interview techniques to acquire accurate information from the community, and data encoding and cleaning. VSU-BIDANI provides technical support during the duration of the training to ensure seamless project implementation and prompt assistance on any data-related issues.

While it is common for the BIDANI Network to develop a BMIS team at the barangay level, VSU-BIDANI is convinced that the utilization of BMIS is more successful if the city/municipal LGU spearheads the undertaking as it holds higher authority in giving orders to the barangays.

VSU-BIDANI also capacitates the BMIS team at the city/municipal level on the conduct of regular field monitoring of actual data encoding and validation of the BMIS software, which is echoed to the barangay LGUs, to formulate the collection and analysis of the data for the nutrition and situational analysis. Additionally, VSU-BIDANI requires an annual updating of the BMIS questionnaire to incorporate additional variables suggested by the LGUs and cater to the data validation requirements from the experiences of the BMIS enumerators. Customization of the data is free of charge by the BMIS developer at UPLB for as long as this is done properly with VSU-BIDANI.

Following the initial training, the City/Municipal BMIS team is upskilled in integrating Operation *Timbang* Plus (OPT) into the BMIS system for monitoring the height and weight measurements of children aged 0-6 years. Combining the two systems or software allowed the proper cross-checking of the data. For example, the correct spelling of the full names, middle names, initials, and surnames or family names of both the child and the caregiver, the correct birthdates, and the correct sexes.

The BMIS findings are presented during the Training and Action Planning for the Program Planning and Implementation Committee (PPIC), which is the expanded form of the Barangay Development Council. This approach enhances the decision-making process of the barangay LGU based on the comprehensive insights gained. Whatever problems are identified through the situational diagnosis of BMIS, especially health and nutrition issues, are given priority solutions during the BIDP preparation.

Step 3: Training and Action Planning of Program

Planning and Implementing Committee (PPIC) Once the nutrition and situation analysis of all barangays in the target city/municipality is complete, the VSU-BIDANI assists in organizing the political, technical, and sectoral leaders in the barangay into the PPIC. This committee is mandated to provide leadership to pursue development projects leading to nutrition improve-

ment and upliftment of the community's general well-being. The PPIC comprises the barangay council, heads of diverse government and non-government organizations, and representatives from various community sectors. Within the local government framework, the PPIC takes charge of planning, executing, monitoring, evaluating, and adjusting the BIDP, with support from the Barangay Nutrition Scholars (BNS). Through VSU-BIDANI, training is conducted to supplement their technical expertise to elevate the planning, execution, and management of barangay programs [17].

Led by the barangay captain, the VSU-BIDANI helps ensure that the PPIC embodies community interests, wherein the project concepts are formulated by the community, grounded on the barangay's specific needs, as reflected in the BMIS diagnosis results, and aligned with the principles of decentralization embodied in the Local Government Code (LGC) and is reflected in the BIDP.

The BIDP is an expanded version of the Barangay Development Plan (BDP), a document that barangays must craft following the LGC. The BIDP serves as a testament and blueprint for the barangay's development endeavors. Forged through workshops and community engagement, it reflects the barangay's vision, needs, and aspirations. The LGU mandates the PPIC to devise its annual project plans, ensure proper distribution of the barangay budget, harness local resources, and foster collaborations with government agencies and NGOs. The BIDP encompasses a situational analysis, prioritized needs, issues, and an operational framework for projects and activities within the barangay. The VSU-BIDANI assures that the initial draft of the BIDP undergoes finalization within the PPIC before being presented to the municipal officials and representatives from different agencies and organizations within the barangay. Among others, the unveiling of BIDP to the barangay residents during an assembly upon approval [17] and the ratification of BIDP through a resolution by local authorities and involved stakeholders. With this, the VSU-BIDANI secures that a commitment to materialize the BIDP is formulated to enhance cooperation between barangay residents and the municipal and provincial administrations, fostering successful program execution and empowering communities in shaping their barangay development initiatives.

Step 4: Implementation and Monitoring of BIDP and Nutrition Interventions

Once the BIDP is already approved, the VSU-BIDANI ensures that the PPIC/BDC and C/M/TAC/TWG collaborate with government and private agencies to facilitate the execution of barangay projects, thereby assisting people in accessing available services and resources for their development needs.

Additionally, VSU-BIDANI provides specialized training for development projects in barangays, including carrying out food and nutrition initiatives and monitoring development initiatives to warrant the successful implementation of the BIDP. These efforts encompass producing and utilizing BIDANI Nutripak and other nutrition programs that align with the BIDANI strategy, using PNEA.

Step 5: Assessment and Reprogramming of BIDP and BNAP

Finally, the VSU-BIDANI collaborates with the MTAC/MTWG and the PPIC/BDC for the strategic reprogramming of the BIDP and BNAP. Workshop sessions were conducted to refine the BIDP and ensure the seamless continuation of those projects that were only partially fulfilled from the previous year while heralding the initiation of novel projects within the barangay based on the BMIS results.

These five steps are a continuous cycle that occurs every five years for the validity of BIDP, except for social mobilization. The VSU-BIDANI religiously follows these steps in implementing the strategy in all partner LGUs.

4 Results and Discussion

4.1 The BIDANI Program in Baybay City

Recognizing the importance of the BIDANI strategy, the City of Baybay officially adopted the program on July 6, 2009, through Resolution No. 132 during a regular session of the *Sangguniang Panlungsod*. However, the city faced challenges at the outset due to the need for more data to facilitate the BIDA and PNEA components. To address this, a MOA was signed between the City of Baybay, its 92 barangay LGUs, and the VSU on January 15, 2010, granting the city LGU's access to the BMIS software for use in the BIDP formulation following the BIDANI-VSU strategy (see Figure 5).
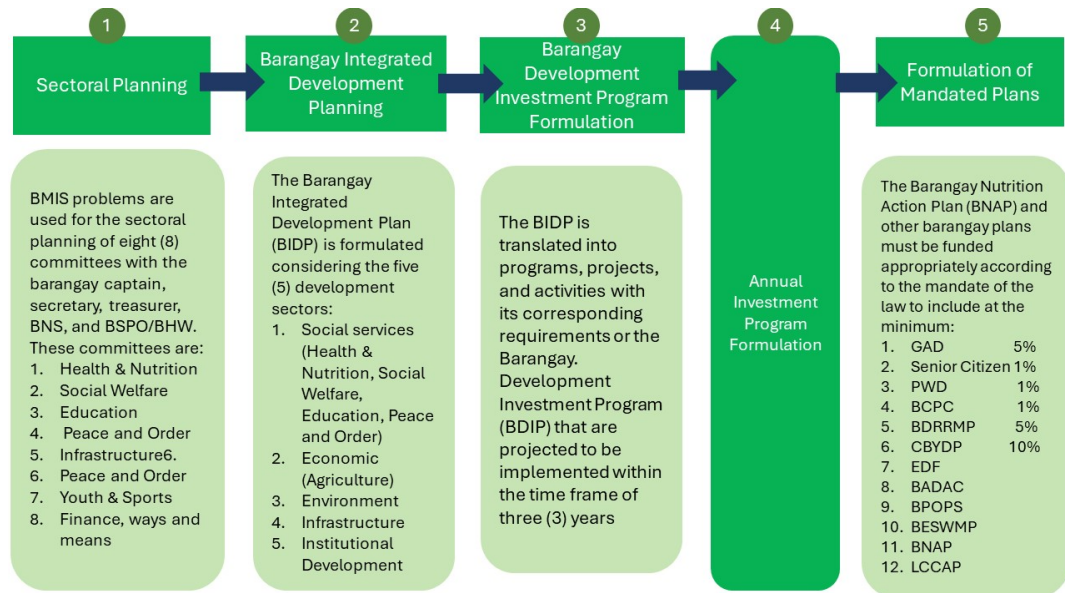

Figure 5.
Barangay Integrated Development Planning using the VSU-BIDANI Strategy

Over the years, BMIS has played an essential role in the city's development process. For the calendar year 2020, the BMIS data was instrumental in the first sectoral planning and the formulation of the first three-year BIDP for all 92 barangays, with support from VSU. Since then, the BMIS team, operating through the City Planning and Development Office (CPDO), has continued to conduct annual sectoral planning for BIDP formulation. Recognizing the value of BMIS, the City of Baybay took further steps to institutionalize it by enacting City Ordinance No. 7, Series of 2014, creating the City Management Information System (CMIS) and mandating the establishment of BMIS in all its barangays. In subsequent years, BMIS data were regularly updated by the barangays and printed by the city BMIS team for distribution to all barangays, promoting a sense of accountability and ownership of the data.

The city LGU's dedication to data quality improvement is evident in the annual revision of BMIS forms based on information needs identified by the CMIS team. An example is integrating socio-economic-related questions to assist the City Welfare Development in determining low-income residents in the barangays to cater to all resident's needs regardless of political lineup. Additionally, built from the experience that most of the interviewed residents will not disclose their actual income with the presumption that the interview is conducted to identify potential beneficiaries of government support, a question on the kind and number of appliances owned by the family at the time of the survey was added to assess their financial status. Over time, questions such as type

of water facilities per household, migration information, COVID vaccination status of each family member, and numbers of Senior Citizens, Solo Parents, and Persons with disabilities were also added to cover more comprehensive data as a reference for LGU development initiatives.

Likewise, regular training sessions are conducted among barangay BMIS team members, with the City Information Office providing essential technology empowerment for education, employment, entrepreneurship, and economic development.

Over time, the BMIS and the OPT system for PNEA were also integrated to provide an accurate barangay location and address of the children monitored by the BNS. This innovation was highly inspired by the fallacious information gathered by BNS during Operation *Timbang* wherein, in some cases, children from different barangays visited their relatives or participated in immunization sessions led by Rural Health Midwives, resulting in their records being reflected in the barangay that are not their permanent residence.

To commit to the sustainability of BMIS in the city, an allocation of annual funds from the city's 5% GAD budget and creation of the CMIS team were legalized through Executive Order No. 14.

The City of Baybay's diligence and achievements have not gone unnoticed, garnering numerous awards and recognition. Among others, the Seal of Good Local Governance from CY 2017 to 2022, the Green Banner Seal of Compliance for passing the 2019 and 2021 Monitoring and Evaluation of Local Level Plan Implementation (MELLPI) Pro for LGUs [23].

The city's efforts in nutrition implementation also earned recognition from the Provincial Health Office for having the highest rating during the 2021 Provincial MELLPI Pro.

Individual awards, such as Outstanding City Nutrition Action Officer and Outstanding City Nutrition Program Coordinator, showcase the city's dedication to health and nutrition. Further demonstrating innovation and active participation, the city received a special citation for its First 1000 Days initiative and Pre-Recorded *Idol ko Si Nanay* Videos for Mothers Classes. These efforts increased coverage in the 2022 MELLPI Pro in Eastern Visayas, further solidifying the position of Baybay as a proactive and exemplary local government unit.

4.2 Baybay City Responses to COVID-19 Using the BIDANI Strategy

The BIDANI extension project of VSU, specifically the BMIS component, was utilized to respond immediately and effectively to the threats brought by COVID-19. Among these are the identification of the below-food threshold families for the distribution of relief goods, identification of Social Amelioration Program beneficiaries, and identification of the poorest of the poor in the barangays by generating the income of the family, which guided the LGU in identifying the beneficiaries of its food and resiliency program. Baybay City resorted to five waves in giving relief goods to all its constituents [23].

The first wave was based on a monthly income of P5,000.00, reflected in the 2019 BMIS data. The second wave was those having a P10,000.00 monthly income, while the third wave was those families declaring a P15,000.00 monthly income. Lastly, all Baybay City families, regardless of monthly income, received relief goods during the fourth and fifth waves of distribution [23]. However, some barangay captains complained that constituents who qualified for the first three waves were missing from the list. Yet, the BMIS in charge at the city level clarified that the data used as a

reference came from their barangays and was only submitted to the CPDO for consolidation. In this case, the issue was traced back to the barangay level during their data collection, encoding, and cleaning. Notwithstanding, there was still chaos in giving relief as some of the BMIS data were not updated. Some residents who had already migrated to other places and those who were already dead were still on the list of barangay residents. New residents were not listed, causing them to not receive financial assistance from the LGU. This discovery heightened the LGU's reinforcement to the barangays on the annual updating of the BMIS upon the realization that their BMIS updating should be done correctly, as it is the primary tool of the city executive officials in generating lists of beneficiaries of aids and programs.

BMIS data was also used in contact tracing by identifying the household members of the COVID-19 patient for testing and quarantine and the master listing of the priority groups for COVID-19 vaccination. With these, the City of Baybay was featured on national television for its data-driven response to the threats and challenges of the pandemic, especially on how BMIS facilitated contact tracing in the city.

Additionally, with the facilitation of PNEA in Operation *Timbang* and the Nutrition Situation Analysis in the 92 barangays of the City, along with the integration of the nutrition-related information in the BMIS software, the City was able to continue its monitoring of malnourished children and the provision of nutrition programs and services by the City Nutrition Office and the City Nutrition Council with the help of the BNS and Barangay Health Workers. All 92 barangays through the Barangay Nutrition Committees formulated their BNAP using BMIS data. Notably, the prevalence of malnutrition decreased from 8.8% in 2021 to 7.22% in 2022, an indicator that the nutrition situation of the city has improved [23].

4.3 Baybay City Landslide Recovery Response using the BIDANI Strategy

Tropical Storm Agaton hit Baybay City on April 10, 2022. Several barangays, including Kantagnos and Mailhi, experienced severe landslides. The Mines and Geosciences Bureau-Region VIII later declared the two barangays unsafe for habitation. During the event, families were displaced, 89 were confirmed dead, and 95 were reported missing. These data were verified using BMIS, which facilitated the head counts of the affected households. The quick reporting of casualties and fatalities of the landslide-affected communities enabled the LGU and other public and private organizations to determine the necessary emergency aid and relief operations. With the help of the Office of the Civil Defense, the International Organization for Migration, and the LGU of Baybay City, transitional and permanent shelters for the landslide survivors were constructed.

4.4 Data-driven Management and Response to the Challenges of the New Normal

While there is no published literature on the significance of the BMIS during COVID-19, significant reports emphasize the pivotal role of data in responding to the challenges of the pandemic. In the Municipality of Magallanes in Cavite, the Community-Based Monitoring System (CBMS) was utilized to identify and target beneficiaries and implement responses for COVID-19 [24]. CBMS is a nationally institutionalized monitoring system; like the BMIS, it intends to provide disaggregated data for planning, program formulation, policy impact, and poverty monitoring at the local level, as envisioned to serve as a tool for local governance, especially in the national poverty monitoring system [25]. However, while the implementation and administration of CBMS is under the Philippine Statistics Authority through the Community-Based Statistics Service of the Censuses and Technical Coordination Office [26], the BMIS full implementation is under the authority of the City/Municipality with the comprehensive participation of the barangay from the formulation of

the questionnaire to data collection, encoding, and data analysis. Thus, it allows the manipulation and integration of data and utilizing the system's full potential for decision-making.

Moreover, the continuous occurrence of natural disasters in the Philippines requires enhancing public understanding of vulnerability. Robielos et al. [27] established a Vulnerability Assessment Framework wherein they argued that vulnerability assessment should clearly define the temporal reference, the point in time, or the point of interest—making it essential to investigate the specific disaster events, geographical location, and regional condition. In assessing resiliency, they further identified indicators such as social security, tangible assets, appliances, vehicles, cooperative membership, and social organization, which are household-level data. Hence, CBMS was cited as a viable source of data for vulnerability assessment, highlighting the need for updated data.

While CBMS updating happens every three years, which needs regular funding for survey personnel, BMIS updating could be done annually in partnership with the BNS, like the approach conducted by the City of Baybay. These, as well as the accessibility and management of the system, pose a promising role for BMIS in development planning.

4.5 Other Initiatives of the City of Baybay in Addressing the Challenges of the New Normal Using the BIDANI Strategy

Data-driven planning using the BMIS data was applied in crafting different plans for the city, such as Comprehensive Development Plan, Contingency Plan, City Disaster Risk Reduction and Management Council Plan, Executive Legislative Agenda, Gender and Development Plan, Senior Citizen and Children in Conflict with the Law Plan, City Nutrition Action Plan, and Barangay Nutrition Action Plan. BMIS also aided the National Anti-Poverty Council in targeting its beneficiaries.

Furthermore, the three-year BIDPs formulated by the barangays were the basis for choosing and allocating projects to be funded by the city government. The Baybay City mayor carefully reviewed these BIDPs with the help of the CPDO staff in selecting those projects identified by the barangays needing financial assistance or counterparts from other sources aside from the barangay Internal Revenue Allotment. Usually, these were infrastructure projects which required a large amount to be accomplished in three years. The VSU-BIDANI's strategy in formulating the BIDPs aided crafting the Barangay Development Investment Plan (BDIP) of the Department of Budget and Management and Department of Interior and Local Government (DILG). This is the sum of the total project cost for three years identified from the three-year sectoral or committee plans.

Additionally, the BIDANI-VSU program initiated the Geographic Information System (GIS)-based planning for the City of Baybay through the CPDO in 2022. The geographic coordinates for the 92 barangays were gathered. The geotags of the Poblacion District have already been merged into the BMIS. With this, the city can now identify the specific locations of the hazardous areas in the barangays and readily plan for appropriate interventions. The BMIS-GIS integration data are useful in crafting the Comprehensive Land Use Plan.

Furthermore, Baybay City has received official certification from the Philippine Commission on Women (PCW) as the pioneer Gender and Development-Local Learning Hub (GAD-LLH) in the Philippines from 2019 until the present specifically for its GAD-related intervention which is the Sex-Disaggregated Database (SDD). The certification was only valid for three years. It can be renewed for another three years after thoroughly validating PCW if Baybay City is still implementing and using the system. One of the criteria is getting the list of other LGUs that visited Baybay City and

were willing to be taught on BMIS. During the validation, VSU-BIDANI suggested PCW help advocate or advertise to other regions and LGUs regarding this certification of Baybay City as GAD-LLH in the entire country. This recognition validates the BMIS utilization of sex-disaggregated data at the grassroots level, thereby enabling the practical application of SDD within the local community. This innovative system effectively supports gender-responsive development planning and enhances the delivery of essential services within the LGU. The certification is issued upon the city's outstanding commitment to gender and development and the successful implementation of noteworthy GAD initiatives and infrastructure.

As a GAD-LLH, Baybay City is tasked with the ongoing implementation, facilitation, and provision of technical assistance to LGUs and other institutions seeking to benefit from the BIDANI strategy, especially on BMIS development and deployment. Additionally, Baybay City offers interested LGUs and institutions access to the BMIS program through information sharing, knowledge management resources, peer-to-peer learning and coaching sessions, and on-site visits.

Another remarkable GAD initiative involves Baybay City's dedicated efforts to establish and fortify women's micro-entrepreneur organizations, promoting local products and handicrafts to advance women's economic empowerment.

4.6 Moving Forward: BIDANI and the City of Baybay

Before introducing BIDANI in the City of Baybay, the LGU appreciated it as a better foundation for their sectoral planning. Little was it known that the strategy had prepared them for the new digital normal.

While the City of Baybay has a long way to go in improving its digital information technology for data-driven disaster management, its database management system, timely data, and data analytics have advanced considerably since 2010. The constant revision of the BMIS questionnaire manifests an improved understanding of data requirements in response to the different challenges in time. Beyond data appreciation and integration in all its plans, the City of Baybay is now moving towards digital transformation, incorporating GIS information in its database for better disaster management planning.

The City's achievements have not gone unnoticed, as other LGUs have expressed interest in adopting the BIDANI strategy, having Baybay as the model and the champion LGU. This increasing interest signifies the strategy's potential to empower more communities in their efforts toward sustainable development and resilience.

However, while the BIDANI strategy was successfully implemented and utilized in the City of Baybay, its implementation remains a challenge in most LGUs because of (1) the constraints brought about by the change in political leadership, (2) lack of commitment and active participation of the local chief executives (LCE) and LGU officials to finish and continuously update BMIS; (3) the barangays' non-utilization of data collected despite the LGUs' efforts in data collection and budget provision; (4) establishment and proliferation of local databases at the LGU level due to organizations' specific data needs and (5) lack of knowledge of some *Barangay Kagawad* on nutrition program management and formulation of BNAP due to low educational attainment and/or age limitation.

5   Conclusion

Data played an important role, especially in local government, facilitating better planning and informed decision-making. Building from the experience of Baybay City with the BIDANI strategy, it is concluded that data-driven planning and sustainable database management are essential factors in strengthening local development and disaster responsiveness. Data and analytics provide a revolutionary approach to address the challenges of the new normal, mainly on the dual threats of pandemic and natural hazards. COVID-19 has restricted individuals in their movement and livelihood activities; with a digital system, identifying close contacts and beneficiaries for social support and relief operations could be done effectively and remotely. Similarly, as the size and frequency of such natural disasters increase alarmingly, data availability can support relief efforts and immediate response initiatives.

Considerably, to warrant a sustainable utilization of extension projects or programs, such as BIDANI, the initiative should present a framework that caters to localized holistic development, empowering communities, especially local leaders, to translate it in a way that promotes the general welfare of the constituents and the communities. Yet, realizing its objectives will require time; adapting to the changes and opening opportunities for innovations is essential.

6   Recommendations

Higher education institutions have ventured into various community projects to strengthen LGUs' and communities' capacity to address several socioeconomic and environmental challenges. The success of the BIDANI strategy in Baybay City underscores the value of strong partnerships and collaboration between government institutions, educational organizations, NGOs, and local communities. LGUs should actively engage with academic institutions and research centers to tap into their expertise in data analytics and disaster resilience, fostering a culture of knowledge-sharing and continuous improvement. The extension projects, skills, and competencies of the academe and the expertise and resources of the LGUs, coupled with their shared vision and interest, will produce positive outcomes and impacts.

To tackle the challenges met in the adoption and implementation of the BIDANI strategy at the LGU level, it is further recommended to continue advocacy and social marketing of the strategy through social mobilization, highlighting its importance in planning for appropriate development projects in nation-building; identify a champion in the LGU who can facilitate the production of commendable outputs that can convince the LCE and LGU officials of the importance of BIDANI; provide assistance to the barangay LGUs in identifying community problems using BMIS data as bases for planning; and conduct capacity building activities through a buddy system approach wherein some of the older *kagawad* will be partnered with younger and more capable barangay officials and health and nutrition volunteers.

Statements and Declarations

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Conflicts of Interest

The authors have no competing interests to declare.

Ethical Considerations

The authors recognize stakeholders' diverse perspectives and interests whose knowledge and rights may be affected by the extension activities. Transparent communication, respectful collaboration, and constant engagement were practiced throughout the program's implementation to promote equity and inclusivity among LGU partners and its constituents.

Authors Contributions

The authors confirm their contribution to the paper as follows: study conceptions and design, and responses to the review comments: **Merry Jean A. Caparas & Lilian B. Nuñez**; collection of implementation and field experiences: **Saloma B. Gisulga, Melodina P. Edullantes, Randy G. Omega, & Ian Dave B. Custodio**; analysis and interpretation of the results: **Merry Jean A. Caparas**. All authors contributed to the draft manuscript preparation, reviewed the result, and approved the final revision of the manuscript.

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