Data Culture in Non-Profit Organizations (NPOs)

Gerardo González Berrios
Master in Computer Science
Advisor: Nelliud Torres, Ph.D.
Electrical and Computer Engineering and Computer Science Department
Polytechnic University of Puerto Rico

Abstract *- Non-profit organizations contribute to societies and are the first in natural disaster relief efforts. These must keep a record of the data to establish a correct analysis and be able to prepare the required reports in the audits. Every organization must have a data culture. The main objective of this study was to investigate whether the studied organizations have such a culture. Surveys were used to obtain information from the data of different entities, and the data of a particular entity was analyzed. It was found that 37% of the entities do not have this data culture and 68.4%, although they know it, have not developed it, so they cannot integrate it into their operations. It is concluded that every organization must generate a data culture that allows everyone to access information supported by data and make the right decisions.*

Key Terms *- Culture, Data, Grant Agencies, Non-Profit Organizations.*

INTRODUCTION

Nonprofit organizations (NPO) contribute to societies where poverty, illiteracy, and lack of health care are common. Non-profit organizations are also first responders in relief and relief efforts in natural disasters such as earthquakes, floods, hurricanes, and droughts in desert areas. Therefore, NPO are now considered the right hand of the government. NPOs must keep an adequate record of the data to establish a correct analysis and to be able to prepare the annual reports required in the audits of the different subsidizing agencies that provide funds, so that they can provide their services to communities in need. In other words, every NPO must have a data culture.

In practical terms, culture is “the way things are done when no one is looking” [1]. “They are the collective beliefs and behaviors of people who value, take advantage of, and promote the use of data to improve decision-making. Data is integrated into an organization's operations, mindset, and identity. A data culture allows everyone to access the information they need to truly drive data and overcome organizational challenges” [2].

Problem

If nonprofits have an effective data culture and the right technology in place, nonprofits can ask questions, challenge ideas, and use data—not just intuition—to make decisions. In this way, everyone works together to achieve the shared mission of improving the organization and themselves thanks to the effectiveness of data, so the main objective of this study is to study how to make data analysis more efficient in an NPO.

LITERATURE REVIEW

Data culture is very important for NPOs since it is extremely essential to be able to present the transparency of their services. NPOs need to learn more about what data analysis entails. They must start by assessing their organization's current data capacity and examining the data sources they currently have and the ones they need to collect. This will give them an overview of the components of data analytics and ultimately start thinking about a measurement plan that is right for their organization. The human team is empowered to actively use data to improve their work and use the maximum potential of the organization to make better decisions and have more effective initiatives and advantages stronger competition [3].

If there's one industry sector that can benefit from big data analytics it is the nonprofit community. Everything from donor contact to targeting services can be part of a data-driven strategy. Usually, NPOs often lack the financial

resources to truly capitalize on the data they have, so to solve this one problem they must enlist outside help.

Let's see the following example. “The nonprofit community is incredibly data-focused,” said Ann Hartman, director of strategic data analytics at Connect2Help211 [4], an Indianapolis-based nonprofit. "We're focused on results, so being able to collect and publish the data, make it visual, is like gold."

Connect2Help211 connects people in central Indiana to community services, which can include everything from food and housing assistance to domestic violence interventions [4]. The organization has long maintained a database of call center data and has used the information to produce reports on the status of the communities it serves, but that was traditionally a tortuous process. Everything was stored in a Microsoft Access database, and Hartman said separate queries would be made for each data point included in the report. In addition, the database was unable to record certain fields on call center forms, which meant that potentially important data was simply being discarded.

Hartman and others in the organization had periodically attempted to clean up the system, but the group did not have the resources to implement a data-driven strategy. A previous attempt to standardize on an Oracle database went nowhere. "Even though people have the skills, other things just get in the way" [4].

To develop a data culture, an articulated vision of the use of data is required. The vision makes it easier for the team to visualize the capabilities and opportunities related to the data with consistency, reducing doubts and confusion. Dey [5] that strategies and solutions must be aligned with the strategic goals and fundamental principles of the organization, avoiding expenses unnecessary. This facilitates clear and consistent communication and supports.

An NPO can learn how to perform a data audit to see if it is doing this process well. The data audit [5] is a set of 7 steps that must be followed in this order:

1. Understand the data needs of the organization - establish which data sets are important to the organization and how and when they will be used.
2. Plan the audit – establish the scope of the exercise, including the departments and type of data sets the organization want to review.
3. Identify data sets – create a list of all data sets and filter, the ones the organization want to audit.
4. Sort Data Sets – sort data sets by function, department, or source.
5. Study how data sets are managed – analyze how data sets are managed, key stakeholders, and whether data governance rules are established and enforced.
6. Categorize results – categorize all organizational results in a single document, identifying what is being done well, not so well, and not at all.
7. Make best practice recommendations – make final recommendations overall and for each data set identified in Stage 3.

The rules are set, and some frameworks exist. However, if the organization has no prior data auditing experience, it may face technical issues. The organization may consider hiring an outside agency to do the work for the entity.

Also, one of the most valuable tools in running an NPO is SWOT analysis. In this process, factors are identified in four areas: strengths, weaknesses, opportunities, and threats. The first two factors are internal. The last two are external to the organization. In general, SWOT is carried out by the organization to study their internal strengths and weaknesses, but it is also helpful to analyze competitors. A small business will greatly benefit from a well-executed SWOT analysis.

A SWOT analysis for a NPO (also known as a non-governmental organization, NGO, or public charity) is like an analysis for a for-profit organization. According to Greechie [6], the analysis of a NPO does not have any investor or investment return to consider, but factors such as fundraising,

volunteer staff, and goodwill which in a commercial enterprise is not the case.

The SWOT is also used to develop a company's marketing strategy. A small NPO should use it to plan financial development (fundraising) as well.

Every organization should aspire to become a data-driven organization and have good data practices. Upon completion of this work, the PANI NPO is expected to be able to have its own data culture and:

- Assess their organization's data capacity.
- Document their organization's data and data sources to represent your data landscape.
- Define the basic Key Performance Indicators (KPI) for their organization.
- List common biases that can occur during the data life cycle and possible ways to reduce such biases.
- List the steps in the data analysis process.
- Determine the resources needed for data collection.
- Describe the key elements of organizational culture needed to be data-driven.
- Identify best practices for data cleansing and management.
- List the basic tools for data analysis.
- Define the main elements of a measurement plan.
- Recognize that storytelling is an effective method of showing impact through data.
- Describe the steps necessary to protect their data.

NPOs must have a driving vision of a good data culture so that they can generate awareness of data use. Senior management should serve as a role model; leadership is the basis of any data culture, innovation, or organizational transformation model. It includes a plan that articulates the activities, roles, and responsibilities of the data users and the data team [7]. Data visualization is like an asset of the organization and a tool for all team members. The participants are in the center [8]. An adjustment in the organizational culture is a gradual process that requires changes in policies, procedures, habits, attitudes, and resources.

A data culture model is suggested with four pillars to make data analysis a competitive advantage [9]. The pillars are developing data analysis as a distinctive capability of the organization; involving the entire organization in data analysis, having the board of directors fully involved, and having a long-term strategy. According to Brown [10], it is necessary to: develop knowledge or data literacy; disrupt or disrupt organizational culture (pause to review and strengthen; use technology; understand what "data-driven" means; integrate data as part of operations and make the organization "data-fair" which is the same as that is easy to find or determine, accessible, compatible (interoperable), and reusable.

Brown mentions that it is important to be agents of change with the transformative technology solutions and the skills the organization needs to improve lives globally and locally so that NPOs can improve its effectiveness and make the most of its technology.

According to NSW Government [11] information must be consciously planned to meet the requirements of the organization or company and meet the needs of its governance. Information design must enable the organization to properly meet those requirements and needs.

A good strategy to prepare and analyze the data culture of an entity can be the use of Excel and Power Bi, among others.

METHODOLOGY

First, a survey was prepared to be submitted to different NPOs to know how the situation regarding Data Culture in NPOs is. Surveys were sent by email, and they were also prepared in Google Forms to be administered digitally (https://docs.google.com/forms/d/e/1FAIpQLSfG3DUq87X6Zhg2tnzP5HHOtzmTr0CJ2pwopeuEkGdjap8L-Q/viewform?usp=sf_link). The Excel program was also used to analyze the data from an NPO selected for this study. The entity known as the

Naranjito Adolescent Program, Inc. (PANI), located in Naranjito, was selected.

It was verified what type of data the PANI entity needs and how it records it. The researcher investigated what use the organization gives to data, to establish an efficient system that helps the entity in its data culture. One of the projects was used on a pilot basis. The United Way of PR, a subsidizing agency, was also selected, so the project data reported by the social worker and psychologist in the entity were recorded and then analyzed. Microsoft Excel was used for this record because it is the industry-leading spreadsheet software program, a powerful data visualization and analysis tool.

RESULTS AND DISCUSSION

38 non-profit entities from Puerto Rico were surveyed, where the majority are from the San Juan Region with 31.6%, 10.5% are from the Bayamón Region, as well as 10.5% are from Mayagüez Region. 86.8% of the entities that participated in the study are considered to have a small infrastructure.

From the results presented in the survey, it can be seen in Figure 1 that most of the services provided by these entities are Educational (18.4%), Psychosocial (15.8%), Community Services 13.2%, and Food Services (10.5%). 68.4% of the entities participating in the study know about the concept of Data Culture, but there are 36.8% that have not developed this concept in their entities.

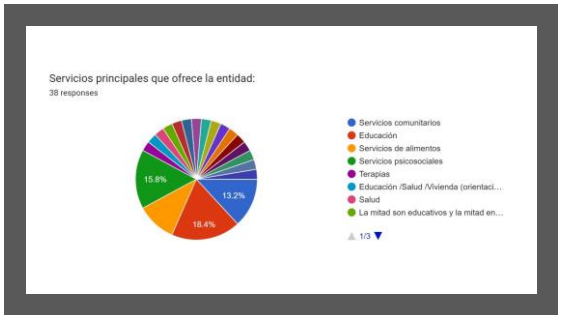

Figure 1
Type of Dominant Services in Entities

Most of the entities surveyed collect data quantitatively. The predominant collection frequencies were 44.7% monthly, 21.1% daily, 10.5 quarterly, and 7.9% annually. 34.2% of the data was obtained from the evaluation that they carry out with their participants and 23.7% from forms that they prepare for these purposes. The study reflected that they use a wide variety of data collection strategies, but 13.2% use Survey Sparrow, followed by Survey Monkey. It is reflected that 94.7% analyze them and that only 57.9% are used by the NPO Board of Directors.

Figure 2 shows that the main instrument used by the entities was the paper questionnaire (52.6%), followed by interviews (15.8%). 47.4% of the entities do not have a reference database and 52.6% do not have specialized personnel prepared for this task. This is due to the limitations of funds that the entities receive and not all of them can afford this resource, which plays a very important role in them.

Figure 2
Type of Instrument Used to Collect Data

The staff of the entities that use the data most frequently is very diverse, but the Administrative Assistant (15.8%) was the one that mainly uses the data.

It was found that 57.9% use technology to obtain the data.

Most of the participating entities updated their systems monthly (44.7%), followed by 18.4% that do it weekly. Most of them stored the data on their computers (43.2%), followed by 21.6% in the cloud, and 13.5% on the server. To keep up to date in the field of data collection, 31.6% participated in seminars and 18.4% remained in continuing education. 84.2% of the participants make sure their collected data is valid. Most of the entities participating in the study agree that the data helps them raise funds (68.4%) and present significant statistics to present proposals to funding agencies.

36.8% of the entities answered that data is very important for administrative decision-making, 23.7% for project planning, and 18.4% for access to external funds.

From the statistical reports registered by PANI's psychosocial personnel, it was found that all services are not identified by gender. They included various services in their data record sheets, but what this monthly report reflected is the number of services provided. Neither does it reflect the criteria of age or the origin of the community where the participant lives. It can be observed in which of the months the psychosocial staff provided more services to vulnerable communities.

Other data that could be viewed using the Excel program were the number of activities carried out (see Figure 3) and people impacted by category (see Figure 4).

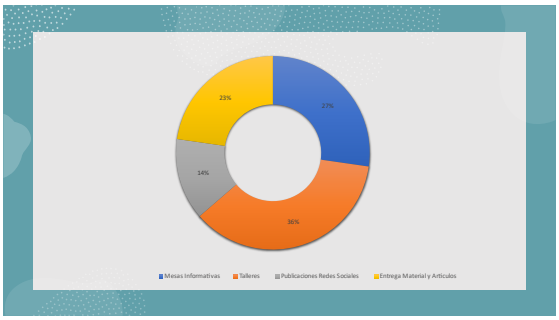

Figure 3
Number of Activities Carried Out by Category

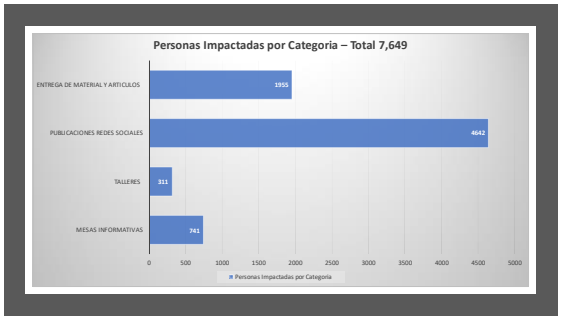

Figure 4
Number of People Impacted by Category

With the Excel tool, it was possible to graphically visualize the services offered by each psychosocial staff. In this entity studied, it was also possible to work with the evaluation of the parents regarding the services provided and the changes in the participants after receiving the services (see Figure 5).

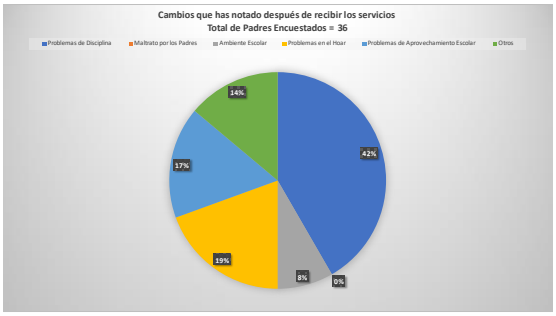

Figure 5
Data on the Changes Observed in the Clients Served

Within the prevention services offered by telephone from July 2021 to June 2022 to children and adolescents, it was found that 62% were female and 38% male, as shown in Figure 6.

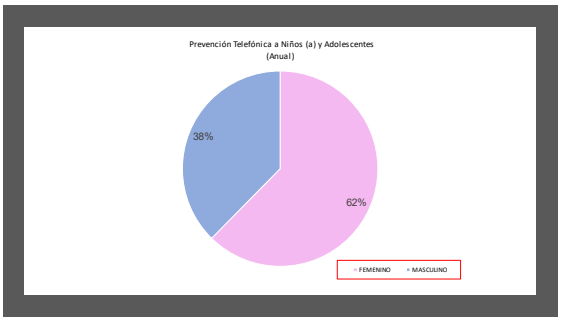

Figure 6
Remote Prevention Services

CONCLUSIONS

After analyzing the results of the administered survey and working with the data from one of the projects of the PANI entity, it is inferred that if an organization wants to become a resilient organization based on data to improve decision-making, it needs an investment in appropriate technology to have an effective data culture. After discussing the results with the director of the entity, they have clarified the concept of data culture and want to be more innovative in this field, for the benefit of all the vulnerable communities they impact.

It is concluded that having a Data Culture maximizes the potential of an NPO's data and helps it to improve the metrics to be able to value, take

advantage of, and promote the use of data to make sound administrative decision-making. Although a high percentage of the entities participating in the study mentioned that they are aware of the concept of data culture, most of them do not fully work on it to really obtain benefits for their entity. The PANI entity has decided to make the most of the value of its data, so it will continue to generate a solid data culture.

After this study, it is recommended that a matrix (dashboard) be established, where all the data from each of the projects is collected to prepare relevant and significant reports. Entities can start with these reports, and they should include descriptive statistics and graphical analysis. NPOs must align and prioritize data in decision-making and encourage teamwork to achieve better results. The entire team must be oriented and literate on this topic.

Future Works

The Power Bi strategy can be used to see its efficiency in the analysis of data culture in the same entity that this investigation was done.

Acknowledgments

I sincerely thank the executive director of PANI for allowing me to carry out this study in the organization.

REFERENCES

[1] J. C. Wayman, J. B. Jimerson, & V. Cho, "Organizational considerations in establishing the Data-Informed District," *School Effectiveness and School Improvement*, Vol. 23, No. 2, pp. 159-178, 2012. Available: https://doi.org/10.1080/09243453.2011.652124. [Accessed: September 3, 2022].

[2] Tableau Software, "What is a Data Culture?", *Tableau Software, LLC, A Salesforce Company*, 2022. Available: https://www.tableau.com/why-tableau/data-culture. [Accessed: September 3, 2022].

[3] BARC Imprint, "Creating a data-driven culture," BARC Imprint, 2020. Available: https://bi-survey.com/data-driven-culture. [Accessed: September 4, 2022].

[4] A. Hartman, "Customer Solutions at Datatelligent Connect2Help," *Marian University*, 2021. Available: www.linkedin.com › in › ann-hartman-2a445939. [Accessed: September 10, 2022].

[5] S. Dey, Defining a data strategy: An essential component of your digital transformation journey, *DXC Technology Company*, 2018. Available: https://dxc.com/content/dam/dxc/projects/dxc-com/us/pdfs/services/analytics-and-engineering/data-and-analytics/Defining%20a%20data%20strategy.pdf. [Accessed: September 10, 2022].

[6] S. Greechie, SWOT Analysis of a Nonprofit Organization, *Boston Business Journal*, 2003. Available: www.bizjournals.com. [Accessed: September 4, 2022].

[7] N. Gerzon and S. Guckkkkenburg, "Toolkit for a workshop on building a culture of data use," WestED and Institute of Education Sciences. National Center for Education Evaluation and Regional Assistance. *US Department of Education*, 2015. Available: ies.ed.gov. [Accessed: September 3, 2022].

[8] R. Fernández Campos, "Los datos, la ética y la responsabilidad," *Big Data Magazine*, 1-3-2019. Available: https://bigdatamagazine.es/los-datos-la-etica-y-la-responsabilidad. [Accedido: 4-sept-2022].

[9] H. Kortelainen, "Stages of Data Analytics Maturity," *Harvard Business Review*, 2007. Available: https://www.researchgate.net/figure/STAGES-OF-DATA-ANALYTICS-MATURITY-ADAPTED-FROM-DAVENPORT-HARRIS-2007-GARTNER-2012_fig1_325285755 [Accessed: September 11, 2022].

[10] S. Brown, "How to build a data–driven company," *MIT Management Sloan School*, Sept 24, 2020. Available: https://mitsloan.mit.edu/ideas-made-to-matter/how-to-build-a-data-driven-company. [Accessed: September 10, 2022].

[11] NSW Government, "NSW Data Governance Toolkit," NSW Government, Customer Service, April 23, 2020. Available: https://data.nsw.gov.au/sites/default/files/2020-04/NSW%20Data%20Governance%20Toolkit%20(DRAFT)%20.pdf. [Accessed: September 3, 2022].