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Nonprofit organizations make a significant contribution to each community's society and economic life. It is critical to aid and ensure that these organizations continue to meet their aims and serve their communities. This is accomplished by identifying the obstacles and difficulties that these types of organizations encounter and attempting to find solutions or assistance that will enable them to survive and grow. The fundamental challenge for these organizations is financial sustainability, as they are often not funded and supported by governments and do not engage in profit-generating activities, completely exposing them to activity expenses and economic ups and downs in the marketplace. Nonprofit organizations rely on fundraising activities and donations from the general public, and in order to secure sufficient funding sources, they must plan intelligent promotion and introduction as a marketing attempt to demonstrate what they do and how their objectives can assist communities in resolving social and environmental problems and the ultimate positive impact it will have on the life quality in those communities.

According to the literature review, there is a strong correlation between the use of visual presentation of ideas and the more significant comprehension of those ideas by other people. This study will demonstrate that individuals communicate and respond more favorably with nonprofits that employ some form of visual presentation to communicate their objectives and ideas rather than verbal and textual means to communicate. Finally, incorporating visual presentation in the form of computer graphics such as 3-D Renderings and video Animation into the capital campaigning process significantly increases the likelihood of increased participation from current stakeholders and the general public, resulting in the development and ongoing objectives of those organizations and improved community service.

## EXPLORING COMPUTER VISUALIZATION AS AN EFFECTIVE TOOL

# TO OVERCOME COMMUNICATION BARRIERS

## AMONG NONPROFIT

**STAKEHOLDERS** 

by

Ramin Mahdizadeh Saber

A Thesis

Submitted to the Faculty of The Graduate School at The University of North Carolina at Greensboro in Partial Fulfillment of the Requirements for the Degree Master of Fine Arts

Greensboro

2022

Approved by

Professor Travis Hicks Committee Chair

## **DEDICATION**

Dedicated to my parents, who have always shown me such unconditional love, support, and faith throughout my life.

This is also dedicated to my wife Roshanak, who has been extremely patient and supportive throughout this challenging time.

## APPROVAL PAGE

This thesis written by Ramin Mahdizadeh Saber has been approved by the following committee of the Faculty of the Graduate School at The University of North Carolina at Greensboro.

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#### **CHAPTER I: INTRODUCTION**

### Importance of the Study

In this research, I will be looking into the Nonprofit sector that is actively engaging with the community and trying to find solutions for different social problems affecting people's lives and well-being. I will research why these organizations should exist and why their activities are essential as a part of the society and economy and continue to assume that in order to help them grow and accomplish their missions, they will need to open a more efficient dialogue with other sectors in an attempt to gain more funds and participation. In my study, this dialogue will use computer visualization to generate better explanatory materials of the organization's missions and objectives.

Nonprofit organizations have established a massive ground in the social life in the United States. After decades of activity, it is well-known by now that Nonprofit organizations have been an important sector in providing services and assistance in the fields that are not supported by governments and For-profit organizations (Weerawardena et al., 2010)

Nonprofit organizations are formed with the purpose of delivering public services to the communities in which they operate, act as a link between residents and government officials. (Ciucescu, 2009).

Nonprofit organizations are critical in bringing attention to concerns that may go overlooked by public authorities and assisting them in resolving problems through the use of their human resources, local data, and organizational ability, as well as monitoring their activities. In sectors such as social work or the management of social welfare institutions, nonprofit organizations can provide real answers to community problems more efficiently and at a lower cost than public administrations. (Ciucescu, 2009).

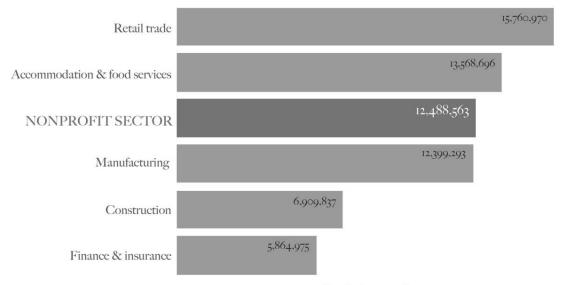
Nonprofit organizations play a great role in the economy of the United States, and they create a high number of job opportunities. According to the report published by Johns Hopkins

University, the Nonprofit sector is the 3rd source of employment in the United States (Figure 1). Also, the employment rate has shown a higher growth in the Nonprofit sector than the forprofit sector between 2007-2017 (Publications | Johns Hopkins Center for Civil Society Studies, n.d.).

Based on the report published by NCCS (Natural Center for Charitable Statistics), the number of Nonprofit organizations has increased by 4.5 percent from 2011 to 2016. Also, the contribution to the United States gross domestic product from the Nonprofit sector has been estimated at 5.6 percent and at the amount of \$1042 trillion (NCCS Data Archive, n.d.).

Figure 1. Employment in Nonprofits vs. Private Sector, 2017

 $https://ccss.jhu.edu/wp-content/uploads/downloads/2020/06/2020-Nonprofit-Employment-Report\_FINAL\_6.2020.pdf$ 

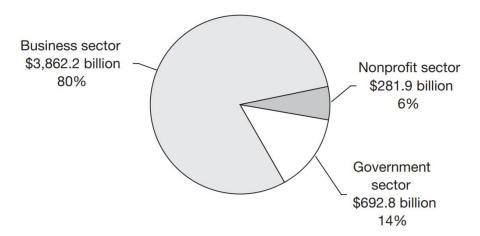


Total private employees

Anheier, 2005 states that employment in the Nonprofit sector accounts for about 8 percent of the whole earnings in the United States, while the For-profit sector covers 80 percent and the government sector 14 percent (Figure 2).

Figure 2. Distribution of Paid Earnings by Sector

https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.452.6420&rep=rep1&type=pdf-P.69



Due to the rapid growth of nonprofit organizations in the business and financial sectors, which results in an increased reliance on flowing funding from a variety of sources, including private donors and fundraising events, one of the most critical challenges facing nonprofit and public interest projects is a lack of necessary funding to initiate and advance their projects. (Pope et al., 2009).

During hard economic times and due to a lack of proper, efficient management policies, many nonprofit organizations run into problems. They do not follow competent financial management guidelines to help them better allocate their funding resources and prioritize activities to accomplish their missions in the best way possible. This issue happens because the donation opportunities have been significantly competitive due to the growing number of Nonprofit organizations (Bottiglieri et al., 2011).

In this fast-growing market of Nonprofit organizations, it has become quite a challenge to obtain the necessary funding and voluntary resources to run the organization's missions. On the other hand, as previously mentioned, when individuals grow more selective and cautious about their donations and participation due to their loss of confidence, it becomes more critical for nonprofit organizations to find ways to be seen and heard compared to their competitors.

(Huang and Ku, 2016). Without sufficient funding, Nonprofit projects have shown a high tendency to pause their activities or even get canceled. According to the data from the NCCS, about 30% of Nonprofit organizations fail to continue after a few years of activity due to a lack of competence in gathering enough resources to use for reaching objectives (Anon, 2019).

Studies show that donors and funders have different types of motivation for helping Nonprofits apart from possible benefits they may get from their participation. However, the one thing they all have in common is that they all want to know where and how their participation is being used, what outcomes it will have if it is going to have a positive impact on the purpose they signed up for, and whether their participation would make a difference somehow (Whillans 2016). On the other hand, many nonprofit organizations have lost public trust and failed to keep their reputation high enough to keep ongoing participation due to a lack of management and proper planning (Huang and Ku 2016). There have also been some examples of financial scandals, such as the American Red Cross and the United Way, that resulted in organizations facing a lot of criticism for incompetent management of the assets and resources, which resulted in huge disappointment in donors and supporters (Bottiglieri, Kroleski, Conway 2011).

One of the important goals Nonprofits should focus on in these competitive situations is establishing a trustworthy name or brand for the organization to build up a positive reputation and collect public trust and ongoing support (Huang and Ku 2016). Nonprofit leaders cannot assume that people should trust their organization and participate, and trust for that organization must be created and earned (Sargeant and Lee, 2002). Nonprofit organizations should try methods and options to gain the trust of different groups in an attempt to increase their participation. According to Sargeant and Lee (2002), "[T]here is some indication here that a relationship does exist between trust and amount donated, comparatively little increases in the former having a marked impact on the latter." This means the higher the trust, the higher the motivation for participation and also the higher amount of donation (Rosen, 2005)

Using and promoting a name or brand can make it possible to increase the organization's good reputation through time and make it remembered as an acceptable and trustworthy organization. Also, this positive relationship between the supporters and the organization will guarantee and secure the amount of revenue earned by the organization (Huang and Ku 2016). Brand imaging will be used for marketing purposes and advertisements on different media systems. Studies have shown that marketing through brand imaging will create public trust in that organization and increase the amount of donation and support for it (Huang and Ku 2016). A consistent visual representation of a Nonprofit organization in the form of brand creation, logos, slogans, and other items related to that brand will generate a kind of clear communication with different groups (Keller, Dato-on, and Shaw 2009)

### Research Objectives

In this critical and competitive time, the primary issue with some Nonprofit projects is that their long-term outcomes and benefits are not well communicated to the public. A large number of non-experts and interested individuals are actively attempting to participate in a variety of nonprofit endeavors that impact social life. They can serve as potential investors if they are fully aware of the organization's clear mission and how it can assist in resolving an existing problem. This could be because organizations are not utilizing necessary efficient presenting methods as an effective marketing approach to convince potential investors and increase their participation. In this study, we will look into computer visualization techniques as one of the most effective ways of communicating a clear vision of a project's mission, future accomplishments, and the positive impact it can have on a social problem or issue in order to build a larger supporting network to ensure nonprofit organizations' continued operation. For this reason, and because there is such a wide variety of Nonprofit organizations, I would like to focus my research on those organizations that must go through some sort of building design, construction, or development phase in order to grow and expand their activities. I would also

like to see if Computer Visualization methods can be used to break down communication barriers among stakeholders in Nonprofit projects.

#### Research Questions

This research is generally aiming to answer some main questions, including:

- 1- Can visual presentation work as leverage to overcome communication barriers among stakeholders in Nonprofit projects?
- 2- How effective can using certain Visual Communication techniques be in filling the gap between Nonprofit organizations and funding opportunities or sources?
- 3- Can the use of Computer graphics presentations help better introduce the objectives and missions of a Nonprofit organization to potential funding sources?

## Research Structure

The research is divided into four chapters. Chapter 1 provides a broad description and historical context for the study, as well as the significance of the study, the purpose of the study, its justification, and the form of the thesis. In the second chapter, you will find a review of the literature on the themes covered throughout this thesis. In Chapter 3, the research methodology used in this study is discussed. And lastly, in Chapter 4, we discuss the results of this study and propose recommendations for further research.

#### CHAPTER II: LITERATURE REVIEW SUMMARY

The literature review will begin by defining and explaining the main piece of the study, which is the Nonprofit sector, how Nonprofit organizations are founded, and how important this piece is performing in different aspects of the country. The study will continue with the struggles Nonprofit organizations are going through in different situations in their lifespan to successfully accomplish their missions and objectives. The possible reasons for that will be discussed and continued by suggesting how a well-planned marketing strategy will help organizations better overcome the barriers on the way and the problems they are facing.

Marketing strategy will be looked into as a method to be used by Nonprofit organizations to use for promotion and enhanced introduction in order to gain public trust and interest and receive more support and participation to successfully secure their ongoing endeavors.

Visual Communication will be discussed as a modern marketing strategy that has been used for decades now in all sorts of business activities, and the visualization generated by computer technology will be presented further and in detail to suggest that using this kind of visualization technique will help facilitate marketing strategies in Nonprofit organizations.

### Not for Profit Sector

## **Foundation**

Not-for-profit organizations are generally formed by a group of people or as a part of a larger community to help with an ongoing social problem or needs within a community. Each Nonprofit organization begins with targeting some kind of objective to solve a social problem or to try to find a solution to help groups of people who need some sort of support.

The sector also includes individuals with values and some activities with the motivation behind them, for example, concerns for people, commitments to others outside their family, respect for others, caring about the community, their heritage, and also the future generations,

and these motivations form different types for this sector including Charity which is a valuable practice in many cultures and religions and Philanthropy as in love for humanity (Anheier, n.d.)

Carroll, 2018 describes nonprofit organizations as tax-exempt organizations established for the public good. Nonprofit organization categories such as humanitarian, educational, scientific, religious or literary may reflect the public interest. Anheier, 2005 argues that many terms can be applied to this sector, and each of these phrases refers to a different element of the sector's social reality. For example, the term Charity emphasizes these organizations' support from private donations. The term Independent sector shows that the sector does not depend on support from the government. The term NGO depicts how these organizations can be developed internationally and out of one government's range. The term not for profit emphasizes the fact that these organizations do not exist primarily to generate profits for their owners. All these terms and many others should come together to define this sector properly. (Anheier, n.d.)

# Nonprofit and For-profit

Anheier, 2005 suggests that even though the Nonprofit and For-profit sectors have quite defined and distinguished borders, but in reality, these borders are blurred and not transparent. Also, organizations migrate from one shape to another, and some of them contain both shapes.

Carroll, 2018 defines some differences between these sectors as Nonprofit organizations cannot pay profits to owners. Nonprofit organizations do not have owners in the conventional meaning of the word. In comparison to for-profit businesses that can produce profits and transfer them to investors, owners, or shareholders, nonprofit organizations cannot distribute any revenue that exceeds costs. Not-for-profit organizations have stakeholders, not investors.; this means that there are no stocks being traded in these organizations, and only people with concerns and common participation. (Carroll, 2018)

Rosnerova, Zuzana, and Dagmar Hraskova. 2020 explore the differences between Nonprofit and For-profit organizations in three basic categories of objective, employee

relationship and motivation elements. This means that in For-profit organizations, the primary motivation is set towards making a profit. However, in nonprofit organizations, employees are driven largely by a desire to serve others and a sense of fulfillment in their work. In For-profits, employees work mainly because of their remuneration, and that is considered the strongest factor in their motivation. But in Nonprofit organizations, mainly employees consist of volunteer workers. The management of Nonprofit organizations carries out activities aimed at motivating its members, which is determined through the organization's mission, where its personnel take pleasure in assisting others and find fulfillment in this action.

Figure 3 shows the basic differences between a Nonprofit organization and a For-profit organization or a business by objective, employee relationship, and motivation elements. The table shows how aiming for personal profit defines For-profit organizations compared to looking for public benefits in Nonprofit organizations. Also, for-profit organizations create motivation in their employees by remuneration, but the passion for helping others still makes motivation in Nonprofit organizations.

(Rosnerova & Hraskova, 2020)

Figure 3. Basic Differences Between For-profit and Nonprofit Organization

BUSI	NESS	NON-PROFIT O	RGANIZATION
Primary goal:	Making Profit	Primary goal:	Provision of Public Benefit Services
<b>Employee Relationship</b>	by Remuneration and Motivation	Employee Relationship	By Motivation
Motivation factor	by Salary	Motivation factor	By Misson of Organization

## **Features of Nonprofit Organizations**

The characteristics of voluntary or nonprofit organizations are as follows. The following are the essential characteristics of a nonprofit organization:

- The organization must always have a social objective that involves public welfare, and It can be incorporated as a corporation, a trust, or a not-for-profit organization. However, regardless of the nature, the organization must have a not-for-profit structure.
- The organization must be free of personal financial interests. The organization's administration cannot be motivated by anyone's self-interest.
- These organizations are exempt from paying any federal taxes but with certain exceptions.
- The final but most essential aspect contributing to the global growth of this organization structure is its distinctive "tax-deductible status." This unique trait makes them more appealing because any donation or gift made to them is tax-free. (Potocan et al., 2017)

#### Nonprofit Management

Rosnerova, Zuzana, and Dagmar Hraskova. 2020. defines management as an important element in today's organizations that guarantees the action of the organization to reach the set objectives and the organization's objectives. Every organization's manager should focus on modern management approaches and strategies to manage their staff and achieve the organization's goals.

As mentioned before, managerial operations in Nonprofit organizations differ from those in commercial firms that seek to make a profit. The interaction with employees in organizations is the most significant difference. The management engages in initiatives to inspire its members by highlighting and reiterating the organization's goals and their importance. Also, since Nonprofit administration and staff are usually all volunteers and managing volunteer forces is different and more complex than managing hired employees who are hired and being paid, then managing in Nonprofit organizations turn out to be more of a challenge than For-profits

(Rosnerova & Hraskova, 2020)

All revenue obtained by a Nonprofit organization's activities must be used to fulfill the organization's mission. Nonprofit executives and managers must always be aware of their mission and guarantee that the organization's operations are carried out in accordance with that mission (Ayyıldız et al., 2017).

# **Financial Sustainability**

All organizations require resources to operate, such as labor, raw materials, space, human resources, and financial resources, among others, and they must compensate for these resources. While For-profit organizations cover most of these expenses by their sales revenue, Not-for-profits do not have any sales revenue to pay for resources. As a result, they must fight to secure funds/grants for operations and to sustain the financial sources necessary for sustainability. (Potocan et al., 2017).

Nonprofit organizations mostly depend on support from donations and fundraising events, and they usually plan to form some kind of activity to bring them income and profit only to be used as supplementary aid for their primary objectives, which will guarantee their ongoing activities. They also receive voluntary services and expertise in different fields, and this helps them cut many expenses they need to undergo with their objectives (Bottiglieri et al., 2011).

The legal definition of Nonprofit organizations states that this type of organization is not allowed to gain profits for distribution among shareholders, and they form to find solutions for a social necessity like health, education, etc. that is not covered by businesses or the government (Weerawardena et al., 2010).

Potocan, Vojko, Mustafa C. Ünğan, and Zlatko Nedelko, eds. 2017 state that there has been formed more relationship between governmental organizations and Nonprofit organizations, and governments have begun working with Nonprofits more and more. Instead of organizing their inside departments to produce services, some local administrations purchase some services from local Nonprofits. Also, many local government administrations have been

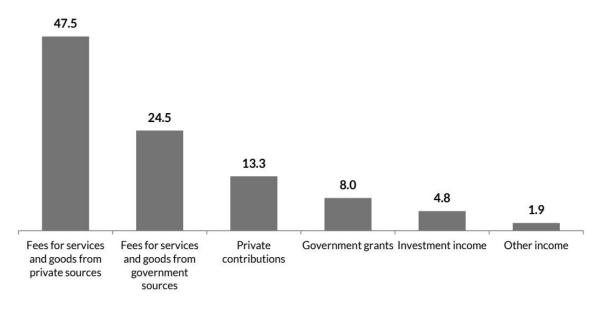
dealing with Nonprofit developments by giving them aid and grants to grow their services and also survive during financial problems. The main three types of collaboration between governments and Nonprofits are as below:

- Partnering: Collaboration can take the form of developing and coordinating new services,
   as well as collaborating on other joint service initiatives such as economic development,
   employment, social events, and social services.
- Purchasing Services: Local governments purchase some public services from outside vendors rather than producing some public services in-house, which in this Case,
   Nonprofit organizations and their services are considered.
- Grants: Governments also provide grants to Nonprofit organizations. In addition to monetary subsidies, many municipal governments assist Nonprofit organizations by providing staff, office space, and equipment (Potocan et al., 2017)

Figure 4 shows Revenue Sources for reporting Nonprofits in 2013:

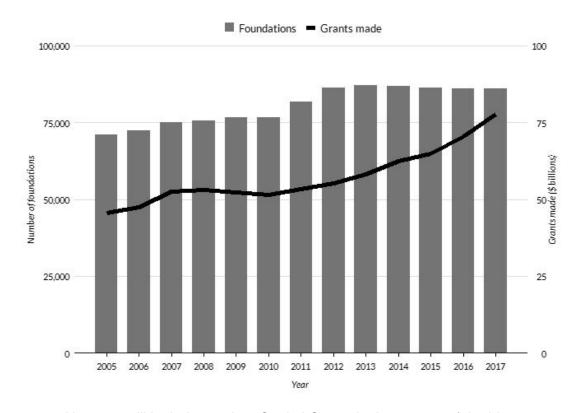
Figure 4. Revenue Sources for Reporting Nonprofits in 2013

https://www.urban.org/sites/default/files/publication/72536/2000497-The-Nonprofit-Sector-in-Brief-2015-Public-Charities-Giving-and-Volunteering.pdf



Walker,2005 puts different types of fundraising campaigns in a few categories defined by the purpose of the fundraised, including Capitals which is usually used for purchasing a new building facility or doing a big renovation to an existing building like furnishing maintenance, upgrading technology, or buying new equipment. The other category is Endowment, which is defined as an investment of the principal of the donated and only using its interest in the organization's planned goals. The other one is Annual, which is used for the ongoing annual expenses of the organization. Another campaign is called Comprehensive, which actually refers to all the funds raised by the organization during a specific time. Mini campaigns are also a series of smaller campaigns that are set together to aim for a goal of achieving funds for a specific purpose (Walker, 2005)

Figure 5. Number of Foundations and Amount of Grants Made by Year, 2005-2017 https://nccs.urban.org/publication/nonprofit-sector-brief-2019#foundations



Next, we will look deeper into Capital Campaigning as one of the biggest sources of adding funds for Nonprofit organizations for major construction or renovations. Walker, 2005

states that capital campaigning provides an opportunity for Nonprofit organizations to share and introduce the main mission and objectives of their organization more broadly with current participants and also potential future participants. Many organizations discover that a capital campaign unites all of their diverse stakeholders as they strive toward a common objective. If this is planned and executed well, a capital campaign can have a great positive impact on a Nonprofit organization that goes even far beyond raising funds (Walker 2005).

# Fundraising and Capital Campaigning

Fundraising is an activity to help Nonprofit organizations gather financial and non-financial support by making and expanding their network of engagement (Rebetak & Bartosova, 2019).

Norton, 2009 explains the many reasons Nonprofits need fundraising events from the beginning of the organization and all through their ongoing activities, including survival, expansion, and development and maintaining and keeping a viable and sustainable status.

Walker, 2005 states that organizations will go through different types of campaigns for fundraising purposes, including Capital Campaigns, Endowment, Annual campaigns, Comprehensive and Mini-campaigns, and the selection of each type depend on the organization's purpose.

Capital campaigning is a series of fundraising work and events for a specific major need or development in the process of an organization's long-term missions, which is not a part of the typical annual expenses. For example, purchasing a property for the organization or adding a building to a center to develop services (Walker, 2005).

Walker, 2005 also takes a deeper look into the word *capital* mentioning that It refers to a one-time expenditure, such as monies spent on physical plant, equipment, or property. The majority of capital campaigns aim to construct or renovate a structure or institution. This means the organization will not set Capital campaigning as a means to raise money for daily activities

or expenses of the organization.

Certain campaigns generate contributions for the construction of a new facility but also include cash for the building's operating needs, such as furniture, landscaping, equipment, displays, and technical support. Capital campaigns can also be used to raise funding for salaries, program support, and ongoing maintenance costs associated with a new building. (Walker 2005).

# Marketing Strategy

Marketing, by definition, is telling people what the organization is, what purpose it follows, and what reasons the public can have to participate in the missions of the organization (Wymer et al., 2015). According to this research, the main objective of marketing is to reach out to the general public in an attempt to gain financial and physical support for the organization (Wymer et al., 2015)

Some argue that the concept of marketing is established to be used for For-profit purposes only and should not be used in the Nonprofit sector without proper updates or modifications (Liao et al., 2001). Additionally, some believe that the marketing for Nonprofit organizations should focus on the problems and issues of the stakeholders or participants and not the profit itself (Liao et al., 2001).

Potocan, Vojko, Mustafa C. Ünğan, and Zlatko Nedelko, eds. 2017 states the goal of financial sustainability for Nonprofits is to build resilience to economic recessions and maintain and expand services throughout their existence. To overcome the obstacles of financial sustainability, it is critical for Nonprofits to design a strategic plan that outlines the organization's objective and develops community support tactics and collaborative partnerships that are closely aligned with this mission. (Potocan et al., 2017)

## The importance of Marketing for Nonprofit Organizations

Marketing is a powerful connective bridge connecting consumers and producers to deliver the greatest possible advantage to each party. As a bonus, to build a robust and long-lasting bridge, you must follow strategic processes such as planning, assessing, organizing, and regulating the construction process. As a result, we can easily conclude that marketing is more than just a promotion or advertisement; marketing is a comprehensive approach for Nonprofit organizations. (Ayyıldız et al., 2017).

The logic that marketing is used for Nonprofit organizations is to start a conversation with the general public or specific audiences in order to increase their interest and motivation for participation by creating a positive image of what the organization does and is trying to accomplish and why the public must participate in it. (Wymer et al., 2015).

Ayyıldız et al., 2017 states that despite the fact that marketing is typically associated with for-profit organizations, due to increased competition, it has become a critical necessity and significant issue for nonprofit organizations as well. The nonprofits realize that marketing approaches and techniques should be used to maintain relationships with their target population and their funders and stakeholders to ensure both functional and financial viability. (Ayyıldız et al., 2017)

### Visual Communication

We all began our lives acquiring the majority of our information visually. We can utilize visualization to tell complex stories using computer technologies. Consider information visualization and the environments in which it occurs. Visualization of data, information, and knowledge is a process that turns them into a form that the human visual system can perceive. (Wojtkowski & Wojtkowski, n.d.)

In the information era, messages with a creative, distinctive, and eye-catching edge offer a higher value in communications. Visual imagery has "pervasive influence in, both positive and

negative senses: they can inform, direct, influence, arouse, confuse and infuriate" (Heskett, 2005, p. 55)

Visual language works as a tool to exceed communication barriers. Ota, 1999 states, "It is clear that creation of a non-verbal global communication medium, which can break through time, space, languages, education, races, cultures, professions, occupations, generations and experiences is a historical demand."

People communicated and stored knowledge in caves and rocks using visual language before developing verbal language. With the rapid advancement of technology and its uneven distribution over the globe, a communication barrier or gap has emerged in the history of mankind, necessitating the development of a more advanced communicating instrument than traditional spoken communication. (Ota, 1999).

## Visual Language and Verbal Language

Ota, 1999 counts some differences between Visual Language and verbal language in characteristics as follows:

Verbal language is individualistic and limited because language, geography, and race determine it. Visual language conquers space because it transcends national boundaries and has a very tiny inscription space. Verbal language is analytical and reasonable. In other words, because it is time-sequential, reading and listening require a specific amount of time. On the other hand, visual language is sensual, thorough, and concurrently intelligible, so you can understand it right away when you look at it. Furthermore, in verbal language, education and study are required for correctly and freely using words and grammar, but visual language does not.

In the case of verbal communication, the recipient of the information will be constrained by the sender's logic. The recipient will not understand the meaning unless the meaning interpretation matches the sender's logic structure. The visual language viewer is free to focus in any way he chooses. He has complete control over what he sees and what he uses. It may

be claimed that the viewer's subjectivity is emphasized the most.

Generally, visual language does not make any judgments. It is non-biased in its transmission. People, in fact, perceive the visual environment around them, give it meaning, and get involved in it as a result of their interests and needs. Visual language allows audiences to perceive the surroundings pictorially rather than linearly. Visible signs contribute to creating the city's face, whereas readable signs, which are primarily constituted of words, provide rational information. This is why Visual Language has more easy-to-memorize quality (Ota, 1999).

Techniques for visualizing data are becoming increasingly crucial for analyzing and exploring massive data collections. A significant advantage of visualization techniques over other data exploration and analysis techniques is that they enable direct engagement with the user, provide quick feedback, and allow for user guidance, which is difficult to achieve with other non-visual approaches. As a result, the practical value of visual data mining approaches continues to grow, and nearly all commercial data mining systems attempt to incorporate visualization (Keim, 2000).

## **Visual Communication and Public Participation**

The authors argue that visualization is critical for effective public engagement because it is the single common language shared by all participants, technical and non-technical.

Visualization serves as a focal point for a community's discussion of design ideas; it guides members through the design process, increases their design awareness, and facilitates improved communication.

# **Visual Communication and Storytelling**

Visual communication has also been greatly used in the storytelling purposes of a product or an activity or a vision of something. Different styles of Visual communication will combine together to visually convey the process of an idea from the beginning stages until the final objectives (Segel & Heer, 2010).

Visual Storytelling has the power to effectively transmit information and data. In this sense, efficiency refers to the ability to deliver large amounts of information in a format that is easily assimilated by the audiences or decision-makers. (Wojtkowski & Wojtkowski, n.d.)

Wojtkowski 27 states that "Visual storytelling, in turn, might be of critical importance in providing intuitive and fast exploration of very large data resources." (Wojtkowski & Wojtkowski, n.d.)

Stories are highly compelling. We have used stories to communicate facts, experiences, ideas, and cultural values throughout history. Since the invention of writing, the printing press, the telegraph, radio, cinema, and the computer, these technologies and cultures have continuously given us new and increasingly sophisticated storytelling methods. The ancient art of Storytelling and its adaptation into cinema and video may now be utilized to deliver a lot of data and information much more quickly and conveniently in an increasingly digitized environment. (Keim, 2000)

Wojtkowski 27, explains that a good visual storytelling should have a few features, including the following:

- How to organize and convey information in such a way that it is both efficient and economical.
- Make a proper decision on what to include and leave out, and allow the intended audiences to fill in the gaps.
- How to convey facts compellingly and enticingly to make them easily comprehensible.

# **Visual Communication and Management**

Because management involves the utilization of complicated information for various tasks that are frequently completed under high time constraints, visualization appears to be an ideal method for dealing with the risks of information overload. Therefore, managers cannot rely just on their own knowledge. They require input from a wide range of expertise. As a result, they

can struggle to integrate information from various sources and apply it to generate an idea, conclusion, or plan. They achieve this by emphasizing the action of visualizing through the images and visuals generated. These visual approaches entail visualizing data, analyses, ideas, and experiences together in order to increase collaborative quality. (Eppler & Bresciani, 2013)

## Computer Visualization

Computer graphics can aid in comprehension, learning, memory, better communication, and inference. Research on graphics has demonstrated that well-planned and appropriately scaled visuals effectively communicate complicated systems. (Tversky et al., 2002)

According to Narayan (2008), computer-aided design is the use of computer systems to aid in the creation, development, evaluation, or improvement of a design or idea. Computer-aided design software can aid in the exploration of design concepts, the visualization of concepts through animations and photorealistic renderings, and the simulation of how a design would operate in the real world. (Ajene & Sylvester, 2014).

Computer-based visualization has a lot of potential for communicating information and involving communities in developing and approving planning ideas. The field of visualization research and practice has advanced to the point where it is now possible to represent alternative planning and engineering scenarios with a high degree of photographic realism, data-driven accuracy, and spatial and temporal interactivity, owing to significant advances in computer technology.(Lewis et al., 2012)

Any form of a collaborative project, including nonprofit projects, requires some kind of shared understanding among project stakeholders so that everyone knows what they're working on and what the project's final outcomes will be. Computer visualization is a tool that can be utilized in various ways to establish this shared knowledge. (Bouchlaghem et al., 2005).

Computer visualization can also assist experts in communicating their ideas in a more straightforward and accessible manner to non-designers or specialists, allowing them to gain a

broader perspective on the activities in which they are involved. Also, computer visualization can bridge the gap between numerous stakeholders. (Bouchlaghem et al., 2005). Heskett, 2005 states: "If one of the purposes of communication design is to create a sense of identity in visual terms, the capacity of new technology to enhance mutual understanding between those who create images and those who receive them offers considerable potential for the future," (P.67)

The map and plan in two-dimensional form have been the norm; however, additions to the third dimension are significant through computer design tools. Communication through visualization is at the heart of the planning system. Other visual media, such as images and statistical presentations via various types of charts, are also used to supplement the way in which such communication occurs (Ajene & Sylvester, 2014).

### Types of Computer Visualization and Their Features

Tversky, 2002 defines the two main types of computer visualization as Static and Animated. Static visualization includes still images that present data and information about a specific subject in the form of single frames or detailed renderings. On the other hand, animated videos use a series of still images called frames to create a timed description of a subject in the form of moving images. This can be used to convey a story or emphasize the importance of a subject to heighten the audience's interest. There has always been some sort of debate over which method is more effective for a particular purpose. (Tversky et al., 2002).

Carefully designed and appropriate static graphics tend to be more effective for presenting complex systems, while animated graphics deliver more information or allow for greater user interaction. Other than expressing complex systems, animations may be more effective to be viewed than comparable static images. (Tversky et al., 2002).

### **Precedent Studies**

This section will examine three organizations with a nonprofit or community-based purpose that incorporated computer graphics into their fundraising and marketing efforts.

## **Criteria for Selecting the Precedent Studies**

The primary criteria for selecting precedent studies are development procedures in the form of architecture and construction projects in the public interest design sector that are either affiliated with or operate as a not-for-profit organization. In other words, the community-engaged design sector's projects are not supported by the government and rely on the assistance and funding of third parties, and they need capital campaigning and fundraising events to obtain the necessary financing.

Additionally, they use a presentation or advertising tool to highlight their ultimate objective and desired outcome. In this example, computer visualization is a more sophisticated method of presenting a project.

#### 1-National Memorial for Peace & Justice

The national lynching memorial is a sacred site for truth-telling and awareness about racial terror and its legacy in the United States. It is situated on a six-acre site atop a ridge with a panoramic view of Montgomery, Alabama. The location was previously occupied by a warehouse that employed black laborers. This museum immerses visitors to slavery, racial terrorism, and the world's largest jail system are all depicted in the sights and sounds displayed in here through the use of interactive technologies, sculpture, videography, and exhibits. The exhibition's compelling graphics and data-rich exhibits offer a one-of-a-kind opportunity to examine America's history of racial injustice and its legacy. (Legacy Museum and National Memorial for Peace and Justice, n.d.)

The designer of this national memorial used 3-D renderings as graphics to convey a clear description of the concepts that inspired the project's main concepts.

Figure 6. 3-D Renderings of the National Memorial Project https://edit.massdesigngroup.org/index.php/work/design/national-memorial-peace-and-justice

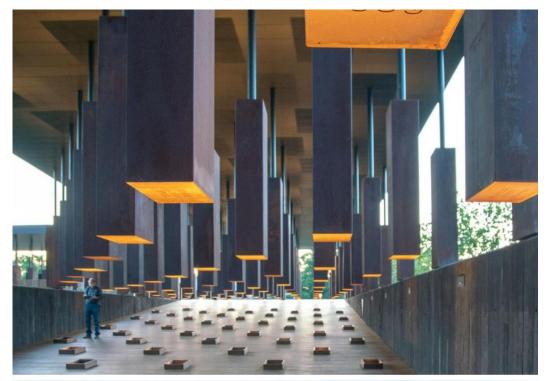
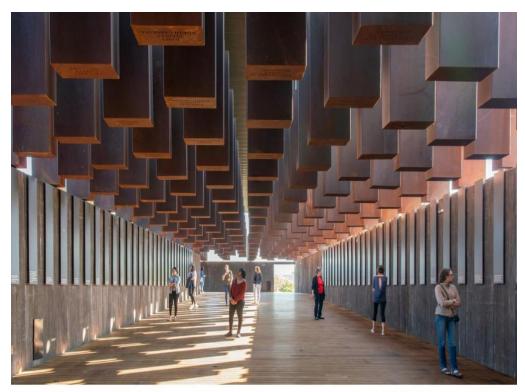




Figure 7. 3-D Renderings of the National Memorial Project https://edit.massdesigngroup.org/index.php/work/design/national-memorial-peace-and-justice





# 2- Doctors Housing, Butaro, Rwanda

This is another community-based project created by MASS Architects. Additionally, it provides critical healthcare to the community and seeks to empower the neighboring communities. Prior to 2007, northern Rwanda's rural Burera district residents lacked access to health care facilities and physicians. The nonprofit Partners in Health and the Rwandan Ministry of Health then began establishing a regional healthcare network and created this center. (The Butaro District Hospital | MASS Design Group, n.d.)

The Mass architects also used 3-D renderings and computer graphics to express the concept for their project designs, in addition to traditional drawings. These visual aids have been extensively used to communicate with various stakeholders who participated in this project.

Figure 8. 3-D Renderings of the Doctors Housing, Butaro, Rwanda https://inhabitat.com/mass-design-groups-butaro-doctor-housing-is-a-sustainable-award-winner-in-rwanda/



# 3- Vertical University, Nepal

The nonprofit organization KTK-BELT Studio, based in rural Nepal, collaborates with local communities to create this vertical university.

This program will educate students about biodiversity and environmental conservation through the use of six "living classrooms" located along a vertical forest corridor spanning from 67 meters above sea level to the summit of an 8,856-meter peak. These six stops encompass Eastern Nepal's five climatic zones.

The study investigates the unique consequences of climate change in each climatic zone. Again, extreme use of Computer graphics in the presentation of this concept has made it much easier to communicate the outcomes of the purpose of this idea to all the stakeholders.

Figure 9. Computer Graphics of the Vertical University, Nepal https://www.archdaily.com/893558/nepals-vertical-university-will-include-6-campuses-in-5-climatic-regions-to-teach-about-climate-change



### CHAPTER III: METHODOLOGY

This study aims to determine if using Computer Visualization in the marketing activities of Nonprofit organizations will help them better interact and communicate with stakeholders and possible participants and consequently increase their fundraising success.

This study will begin with the assumption that the use of Computer Visualization techniques will successfully work as a leverage to overcome communication barriers among stakeholders in Nonprofit Capital campaigning. Through a Qualitative Case study method, we will use a comparative technique to study the result of using computer-based Visualization on three Nonprofit organizations that are at the beginning of their Capital campaigning stage for new building or construction purposes. This methodology provides diverse viewpoints on the topic. Eventually, it leads to a much more understanding of the topic under study, whether the assumption can truly be relied on, and if it can be considered a guideline for Nonprofit organizations' marketing endeavors.

In addition to providing a full description of the techniques used to collect data and evaluate all of the information, this chapter also provides a full overview of the three Nonprofit organizations as case studies that were used in this research. These three projects are carefully selected as studio courses in the Department of Interior Architecture at UNC Greensboro.

## Case Study Method

It is a learning method in which the learner is presented with a specific problem, known as the Case. By combining information from multiple sources, the case study enables the investigation of a real-world topic within a defined framework. (Yin, 2014)

This methodology studies a subject as a Case study and applies a comparative method to determine the impact of multiple methods on the subject under study. The result of this comparative case study would be analyzing and summarizing any recurrent characteristics among the different cases and turning them into guidelines or "best practices" for the use of

visualizations toward the fundraising of nonprofit projects.

This research will be exploratory in nature. Qualitative methodologies, such as case studies, do not have the ability to be generalized. Consequently, they can only provide "suggestions" based on the findings of their tests. They'll never be able to prove anything. As described in Yin's book, case study methodology is used to extend a theory by relying on a number of sources of information throughout the process. While a single experiment may be sufficient, utilizing a large number of Case studies of the same type makes the strategy even more formidable to overcome. (Yin, 2014)

#### Research Procedure

## **Phase I. Case Study Selection**

The first step of the study is defining some criteria to choose proper case study subjects.

Some of the main criteria used are as follows:

- Nonprofit organizations that are planning a major property or building expansion in the near future. Architectural design and computer visualization must be used for this expansion.
- Nonprofit organizations rely on the help of a wider range of the general public and not only some specific groups.
- Nonprofit organizations that are planning to begin their capital campaigning and fundraising events.

The case studies selected for this research were identified in affiliation with the Center of Community-Engaged Design in Greensboro.

#### Phase II. Initial Data Collection

In this phase, three existing Nonprofit organizations have been used to gather some basic information about the current status of the organization and their desired plans for the future. The information was gathered through interviews and discussions with the board of directors, strategy planners, and people with relevant engagement or past experiences with each organization. This information will reflect their points of view on the organization and their

plans for applying changes and amendments to enhance the outcome and result of the organization's missions.

### **Phase III. Development of Design Concept:**

Projects selected in the Nonprofit Sector and the Piedmont Triad of North Carolina will be designed and presented using computer-based Visualization. A variety of modeling software will be used to generate the model of the design subjects in each case study, including 3DsMax, Autocad, and Lumion.

The models developed will be used to create still and animated 3D Renderings with the aid of software like V-ray and Lumion. Finally, the result will be submitted to Adobe Photoshop to add some post-production effects for still renderings and to Adobe Premier to produce final Video clips for playback on Tv screens, mobile cell phones, and online viewing.

### Phase IV. Data Collection

The content created will be delivered to the selected Nonprofit organizations for marketing objectives, including internet publication, television commercials, and other forms of advertising and reaching out to their client segments. Nonprofit management will specifically plan how to use the generated material to showcase all through their media platforms and also on hardcopy marketing materials.

After some time, I will contact the organizations for whom the materials were created and collect information and data via interviews and questionnaires to ascertain how the organization used the produced materials to introduce and communicate with various audiences and customers and how effective they believe this process was in assisting them in expanding participation in the financial and voluntary sectors.

### Phase V. Data Analysis

Data analysis is the process of analyzing information that has been obtained. In this phase, analytical and logical methods are used to analyze data to identify patterns, correlations, and trends to make conclusions. This data analysis is essential for the outcome of the study

because it accelerates and enhances the process of evaluating data. This is called analytical strategy, and as Yin, 2014. P111 states, a strategy will assist you in treating data objectively, generating persuasive analytical conclusions, and excluding alternate interpretations.

Additionally, the technique will assist you in utilizing tools and manipulating them more effectively and efficiently. (Yin, 2014)

### Phase VI. Conclusion

Based on the evidence and data gathered and the analysis performed, we will conclude this research and consequently answer the primary research question.

We will reiterate the thesis objective in this section, review the primary supporting concepts covered throughout the paper, and offer a concluding impression on the central idea.

### Case Studies

### **Case Study I: Peace Haven Farm**

Peacehaven is a communal housing project founded in 2007 on 89 acres of farmland to bring people with various disabilities together and help them achieve a better future.

Figure 10. Peace Haven Community

https://magazine.wfu.edu/2015/01/20/buck-cochran-82-and-friends-working-miracles-at-peacehaven-farm/



Susan Elliott, the community's founder, was the mother of a disabled child. She and a few other members discussed how they wanted to build a farm where individuals with different levels of disabilities could live, participate, learn, and work together. Most of the farm's current employees are parents of special-needs children who wanted to build a place where individuals like their children would be accepted, loved, and appreciated.

It all began with a single house known as Susan's View (Figure 11), followed by a barn (Figure 12), a greenhouse (Figure 14), and other facilities.

There are also plenty of land and gardening areas for the community members and outside volunteers to work on and grow vegetables and other products (Figure 13). As the farm's population and demand grew, it became home for other adults with disabilities and a staff person and interns learning how to care for others. Ideally, new facilities built on the campus will allow Peacehaven to provide a permanent home for adults with even more severe physical disabilities and also, adults with minor disabilities whom can live and manage themselves with even less assistance.

Figure 11. Susan's View Building



Figure 12. The Current Barn



Figure 13. Vegetation Fields



Figure 14. Green House



Figure 15. Inside the Susan's View





Figure 16. Peace Haven Farming Life
https://www.facebook.com/peacehavencommunityfarm





# **Project Objectives**

The objective of this project was to use the specified piece of land as a part of the Peace Haven community and design some community areas and a few different styled residential buildings for the future habitats of the community. In the first stage of this project, one of the buildings was selected to generate a full schematics design of the building, exterior design and interior design, and all the necessary documents. In the following step, some 3-D renderings and visualizations were created, which were then complemented by a video animation that demonstrated the relevance of the project's architectural design and its intended application. A version of this movie and the 3-D Visuals will be used as part of the organization's marketing package to acquire the necessary funds and engage interested volunteers.

### **Property Overview**

Property selected for this purpose is a portion of the present community located at 1458 NC Highway 61, Whitsett, NC 27377. The total land area of the community is around 89 acres.

The site is bordered on one side by Highway 61 and the other by Lake Mackintosh (Figure 17)

Figure 17. Property Limit and Expansion Areas



# **Initial Project Details**

The building design is according to the community's guidelines for a building expansion. As previously stated, this facility is intended for occupants with less severe disabilities who can live and function independently but may require the assistance of a resident assistant for some of their activities.

Figure 18. Building Plans



## FIRST FLOOR



**SECOND FLOOR** 

Figure 19. Building Elevations



# **Project Renderings**

The renderings are created for both the exterior and interior sections of the building. The renderings are intended to represent the sensations created by the project after it is completed and occupied.

Project video Animation can be accessed through this link:

https://rmahdiz.wixsite.com/ramindesign/3d-animations

Figure 20. Overview



Figure 21. Front Facade View



Figure 22. Enclosed Front Yard



Figure 23. Building Patios



Figure 24. Entrance View

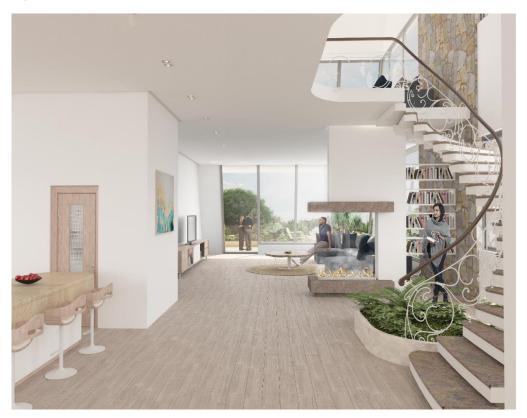


Figure 25. Cozy Living Room



Figure 26. Upper Floor Access



Figure 27. Kitchen and Dining Room View



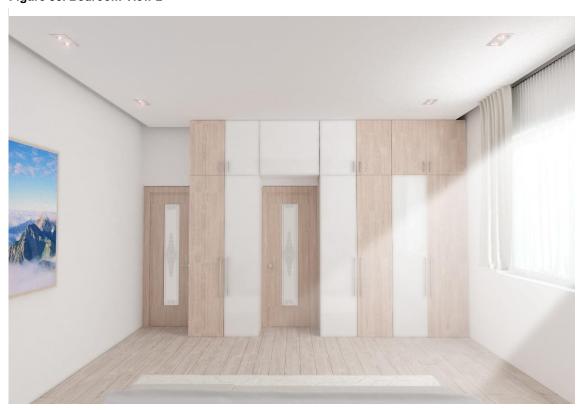
Figure 28. TV Room View



Figure 29. Bedroom View 1



Figure 30. Bedroom View 2



# **Case Study II: Veteran Community-Highpoint**

Figure 31. Veteran Community



Tiny House Community Inc. is a Nonprofit organization dedicated to developing tiny house communities in North Carolina. These communities will comprise three to ten apartments per lot. Residents will be able to rent tiny houses based on their income and current situation.

Tiny House Community collaborates with local nonprofit housing groups to aid in the screening of prospective residents in an effort to provide safe, permanent, and inexpensive homes for persons facing homelessness. The firm is actively creating small home neighborhoods in Greensboro, NC, High Point, NC, and Winston Salem, NC.

### **Project Objectives**

Three plots of land are donated to the Tiny House Community Inc. to turn into an affordable housing development for veterans. In addition, an existing ancient structure on the property will be renovated and used as an office building to assist Veterans and their families. The community will include the main office building and four tiny residences of 384 square feet

each, which will be placed on two pieces of land. The other two lots will have two bigger buildings on them, and they may be sold to private individuals in the future.

In the first stage of this project, the schematics of the four lots are designed to reflect the organization's necessities according to their initial ideas. Schematics and details of the buildings are already prepared, and the design of the buildings and the materials and construction details are planned. In the following step, some 3-D renderings and visualizations were created, which were then complemented by a video animation that demonstrated the relevance of the project's architectural design and its intended application. A version of this movie and the 3-D Visuals will be used as part of the organization's marketing package to acquire the necessary funds and engage interested volunteers for the entire project. It will also be used as a communication tool among all the management, construction, and maintenance groups that will be involved in the project.

### **Property Overview**

Property selected for this purpose is a donated empty piece of land comprised of four smaller lots combined into one located at Smith St, High Point, NC 27260. The total land area of the project is 29870 sqft. The site is attached to Smith street on one side and to the neighborhood on three sides. The property is well-located at the center of the High Point city and has a good access to major locations within the city.





Figure 33. Panorama View of the Site



Figure 34. Property Picture



Figure 35. Old Building in the Property



## **Site Plan Development**

The site plan is developed in line with the client's specifications and information. Six smaller affordable houses with a maximum square footage of 384 sqft were requested to be scattered over the property with appropriate room for a yard or garden. Additionally, two larger buildings were included in the construction, each measuring 1200 square feet and designed to house a family of more than two persons. These two bigger properties need direct street access and sufficient parking for at least two automobiles (Figure 36).

Figure 36. Approved Site Plan



# **Project Renderings**

The renderings were developed to show the site plan in its entirety from various viewpoints, as well as some walkthrough representations of key places and points of entry to various areas of the project. Project video Animation can be accessed through this link: http://rmahdiz.wixsite.com/ramindesign/3d-animations

Figure 37. Site Overview



Figure 38. Project View



Figure 39. Inside the Community in Daylight



Figure 40. Inside the Community at Night





Figure 42. Monument View



## Case Study III: Amadi Way Project

Figure 43. The Amadi Way Center



Amadi Way organization began with the founder's honest desire to make a significant contribution to the Greensboro community by providing educational supplies to students in need. Later on, this expanded into further charitable services for this community. (Amadi Way Project | Anything Is Possible, n.d.)

## **Project Objectives**

This project will create a community center in Greensboro's Glenwood neighborhood as part of the Amadi Way non-profit organization's efforts to assist the community in need, particularly the younger generation who lack access to essential equipment. This center is a multi-purpose facility. Once completed, the building and surrounding property will benefit the neighborhood by functioning as a dynamic hub with activities and mixed-use space for locals.

In the first stage of this project, the schematics of the center have been designed by the students of the Center for Community-Engaged Design, and the general idea of the building has been set according to the organization's initial ideas and visions. Schematics and details of the buildings are already prepared. Following that, several 3-D drawings and visualizations were

made, which were then completed by a video animation demonstrating the architectural design of the project, its intended use, and its positioning in the neighborhood. A version of this movie and the 3-D Visuals will be used as part of the organization's marketing package to acquire the necessary funds and engage interested volunteers for the entire project. The video is also uploaded on the organization's website at this address:" https://amadiwayproject.com"

# **Property Overview**

This magnificent structure will be constructed in the Glenwood neighborhood on 4.5 acres of land, complementing Perry Street. Through community involvement activities and events, the building's numerous uses will strengthen the area, linking our future generation and people.

Figure 44. Amadi Way Center Site Location www.google.com/maps



Figure 45. View of the Perry Street and the Site of the Project.

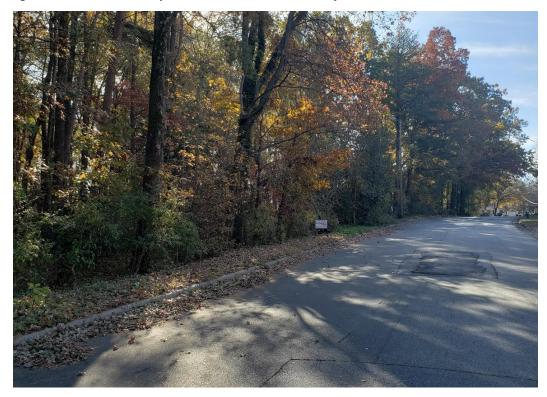


Figure 46. Inside the Property www.google.com/maps



## **Site Plan Development**

The site plan is developed in line with the client's specifications and information. The building will be accompanied by enough parking space for 40 cars, one open space but an enclosed kids playground that will have separate access to the center inside the building. A dog park, a multi-purpose playground, and some walking and jogging trails to be used by the neighborhood. The purpose of this development is to integrate not just the main center but also the entire project with the surrounding neighborhood and to encourage members of the surrounding community to make use of the facilities available both inside and outside (Figure 47).

Figure 47. Site Plan Development



# **Project Renderings**

The renderings of the project are generated in a way to present the key areas and activities within the center and its site plan.

Project video Animation can be accessed through this link:

https://rmahdiz.wixsite.com/ramindesign/3d-animations

Figure 48. Approach to the Building via Perry Street





Figure 49. Building View



Figure 50. Building Entrance



Figure 51. The Dog Park



Figure 52. Multi-purpose Playground



### Data Collection

Data collection is generally accomplished in two parallel stages and two different study groups. This process will help us to obtain a more comprehensive range of information.

The first group is people with some kind of direct interaction with nonprofit organizations.

Upon completing each Case study, we will forward the generated design and documents to the organization's planners for beginning marketing and fundraising activities.

During this time period, we allowed for sufficient planning and implementation time for each organization's Capital Campaigns and other marketing activities, allowing them to gain a better understanding of the effectiveness and significance of the visual marketing package, and in turn, to provide us with more concrete and formidable data. This stage establishes a study group that is intimately familiar with each Case and its associated activities. This study group consists of individuals who have aided or been engaged in any of the cases under study. They can be stakeholders, contributors, volunteers, or anybody present throughout the organization's missions or goals and have sufficient knowledge of its essence and ongoing tasks.

The other study group is composed of individuals from a variety of educational backgrounds in order to eliminate the possibility of bias in the research. The reason for selecting this form of the study group is to gain the perspective of educated and intellectual individuals who have a working knowledge of qualitative and comparative research.

For this study group, the main respondents were invited mainly from the following two groups:

- Individuals having academic degrees in subjects other than design or aesthetics.
- Individuals holding academic degrees in design or aesthetic disciplines such as architecture, graphic design, or art.

Interviews will be conducted with the first group to determine how the organization used the produced materials to introduce and communicate with various audiences and customers and how effective they believe this process was in assisting them in expanding participation in

the financial and voluntary sectors. And this information will be compiled and supplemented by a questionnaire that is aimed to concentrate the respondents' emphasis on the study's major issues and areas.

The following questions are used in the questionnaire for the first study group: the stakeholders or participants in nonprofit activities or people targeted and contacted by a nonprofit organization as potential participants. The same questions are revised to form a second questionnaire for the other study group somehow to gather their opinion on this topic as imaginative participants:

- 1- Did the video add to your understanding of the project's purpose and objectives compared to the textual description?
- 2- Did the Video presentation make you more interested in knowing and learning about the project's purpose than the textual description?
- 3- Did the Video presentation create more interest in you to engage in the project's goals?
- 4- Suppose you are a person who engages in charities and makes donations. Does using a visual presentation such as a Video Animation help you decide better if you want to donate to a specific Capital Campaign?
- 5- Considering the two methods used above as an introduction to a project, how much do you prefer to use a Video presentation compared to the Written description?

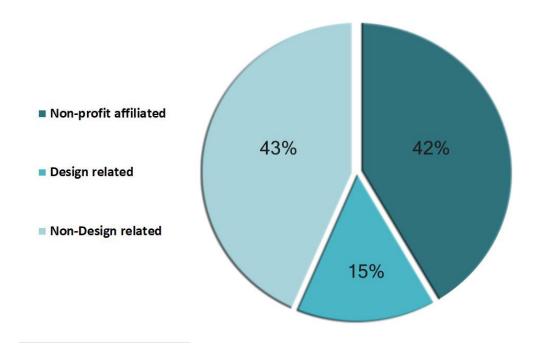
### Data Analysis

Data analysis is the process of analyzing information that has been obtained and gathered through interviews and questionnaires with study groups. In this stage, the data and information gathered through interviews have been summarized and collected by a questionnaire, and the result has been extracted as an excel file and analyzed in a computer software. The software assists us in better organizing, retrieving, and presenting our data in a more effective and coherent manner. Also, it will convert the data to a tangible format that may

be used as a foundation for drawing conclusions.

About 53 individuals participated in this study, and as Figure 53 shows, about 42 percent of the participants are somehow affiliated with a nonprofit organization. About 43 percent are non-affiliated but academic individuals with education other than design, and finally, 15 percent of individuals are non-affiliated but with academic education in some kind of design school.

Figure 53. Participant Percentage



A high number of respondents reside in North Carolina, and the majority of them were reached through email, with a few being questioned in person. The questionnaire was created and shared with the participants on Google Forms.

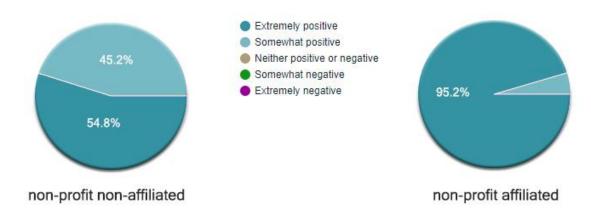
For the questionnaire, the main key questions on which the interview protocol concentrated were the ones that were most heavily investigated in the first place. The following are the questions that were asked and the response to any of them:

1-Did the video add to your understanding of the project's purpose and objectives compared to the textual description?

As you can see in Figure 54, all of the respondents reacted above positively and highly

positively to this question. This implies that when they compared the two descriptive approaches used for the Case studies, they concluded that the visual method, which included some 3D renderings and finally a video animation, boosted their degree of comprehension of the organization and its objectives. The diagram also suggests that participants affiliated with a nonprofit activity responded more positively to this idea.

Figure 54. Participants' Response to Q1



2- Did the Video presentation make you more interested in knowing and learning about the project's purpose than the textual description?

As you can see in Figure 55, about 80 percent of the respondents reacted extremely positively, and the rest somewhat positively to this inquiry. This means that the visual engagement or the video animation created a kind of enthusiasm in participants to follow and get more informed about the organization's path and future. This kind of interest in following the organization increases the chances for possible future engagement.

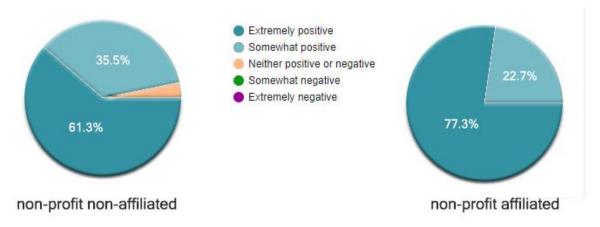
Figure 55. Participants' Response to Q2



3- Did the Video presentation create more interest in engaging in the project's goals?

As you can see in Figure 56, around 61percent of the respondents reacted highly positively, and about 35percent responded somewhat positively to this question. This suggests that after viewing the organization's visual description, in this case, the video animation, people had a greater desire to participate in the organization's activities. In other words, the video animation increased the participants' level of passion and enthusiasm to get actively engaged in the organization's objectives. The diagram also suggests that participants affiliated with a nonprofit activity responded more positively to this idea.

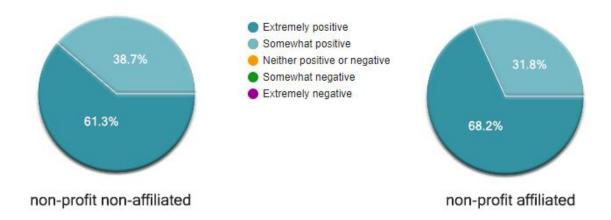
Figure 56. Participants' Response to Q3



4- Suppose you are a person who engages in charities and makes donations. Does using a visual presentation such as a Video Animation help you decide better if you want to donate to a specific Capital Campaign?

As you can see in Figure 57, all of the respondents reacted above positively and highly positively to this question. This indicates that using a visual description or storytelling tool, such as a Video Animation, can assist participants in making a more informed and timely decision. Additionally, participants stated in interviews that viewing the video animation aided them in making a more solid decision to participate.

Figure 57. Participants' Response to Q4



5- Considering the two methods used above as an introduction to a project, how much do you prefer to use a Video presentation compared to the Written description?

As you can see in Figure 58, above 85 percent of the respondents in both groups reacted highly positively and somehow positively to this question. This indicates that after watching the organization's visual description, in this case, the video animation, individuals preferred to learn about a subject through visual communication or presentation rather than by reading about it. Additionally, the graphic indicates that less than 10% of participants had no preference for the technique used to collect data. When this group of participants was interviewed, they stated that they already have sufficient knowledge about the organization through family or friends when they are ready to join in nonprofit activity.

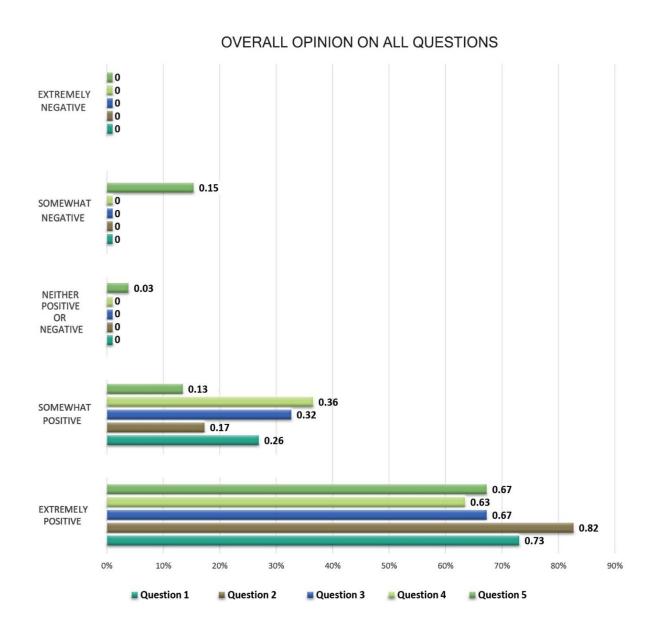
Figure 58. Participants' Response to Q5



## Overall Analysis

As you can see in Figure 59, which displays all the interview questions in one chart, the accumulation of responses to all the interview questions in the Extremely Positive area is around 60 percent and above. And the median for responses in the Somehow Positive area is around 22 percent.

Figure 59. Overall Analysis



#### **CHAPTER IV: CONCLUSION**

This research was conducted to determine people's viewpoints on the use of computer visualization as a supplement to nonprofit organizations' marketing and capital campaigning endeavors. The literature review demonstrates the substantial correlation between visual communication and better comprehension of a particular topic. It has sufficient materials to indicate how the use of visual communication strategies may dramatically boost an individual's knowledge and, ultimately, engagement in a particular subject.

Precedent studies displayed how effectively past nonprofit projects have been using Visual communication in favor of their Capital Campaigning endeavors. Almost all of the organizations that are somehow engaged in some kind of new building construction or major development have been using a kind of Computer visualization method to better present this process to stakeholders or communicate with different associated parties.

With careful selection of the three Case study projects and applying a Video animation specifically tailored for each of them, I created some kind of storytelling presentation for the organization to use in all their marketing plans. This also presented me with an excellent chance to establish a comparison point between verbal project marketing and graphic presentation of the same project. Following that, I was able to collect information from participants through interviews and phone calls and through the use of a questionnaire centered on the major research objectives and questions. The data collected were put into groups. After being analyzed, the result in all groups mainly presented in the range of Highly positive to positive responses to the effectiveness of employing Computer visualization compared to using a traditional verbal and written description of a project.

#### Research Limitations

This study did go through some difficulties. The biggest issue was that it took place during the covid-19 pandemic. This imposed some constraints on conducting face-to-face interviews with individuals. Additionally, the epidemic pushed back the timeframe for the Case study projects to begin capital campaigns and other fundraising activities. Due to the shortness of time between activities and the appearance of effects, it was more difficult to interview and ascertain participants' perspectives on how employing visual communication aided the organization's fundraising performance.

Apart from pandemic situations, the typical timeframe for nonprofit organizations to demonstrate outcomes from capital campaigns is significantly longer than one or two years, which did not fit our timeframe for this research. Each of the three case studies involved some aspect of building construction and development. Due to the high cost of initiating such projects, capital campaigns and fundraising activities typically take a longer time to reach a reasonable point; this makes it difficult to draw definite conclusions in a short amount of time, including the topic under study in this research.

#### Future Research

It would be amazing if this study could be redone after allowing the Case study projects additional time to complete their scheduled activities. Given sufficient time, this would significantly enhance the likelihood of obtaining more robust evidence on the effects of using computer graphics in nonprofit marketing and fundraising activities.

This study suggests that these types of strategies will generate more passion and interest in participation among stakeholders or prospective investors of nonprofit organizations. Thus, this study can serve as a model or a jumping-off point for further research into more advanced strategies for supporting nonprofit organizations with their marketing and fundraising activities.

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## APPENDICES A: DETAILS OF THE DATA COLLECTION METHODS



In this questionnaire, we want to explore the effectiveness of using Computer 3-D Visualization and Animation as an add-on to the written or oral description in the favor of Non-profit organizations. For this study, we have been working on a Case Study which is a Non-profit organization called The Amadi Way.

The Amadi Way organization acts as a sincere desire to make a meaningful contribution to the Greensboro community by providing school supplies to children in need as well as many other services. The organization is in the stage of Capital Campaigning in an attempt to raise necessary funds to build and equip a community center for its purposes.

# Research purpose:

The project will be presented and described in 2 methods of Written and Video, and after that, you will be asked a few questions about the differences in the level of understanding each method provided you.

- In the first method, a more traditional approach is used, and you will read a few sentences describing why the organization is considering building a community center. This method is usually used in the form of newspaper articles, brochures, or news on the Tv.
- In the second method, everything about the project is presented in a Video Animation, while a voiceover will aid you through the different parts of the project and the importance of each section.

Occupation:		
Age range:		
16-30		
30-45		
45-60		
60 and	above	
Date:		

#### Method 1: Textual description of the project

Amadi Way Project Community Center:

The organization is planning to build a community center in the Perry street. This community center is a multi-purpose structure planned for the Glennwood Community. Once built, the building and surrounding land will enhance the community and provide a vibrant hub serving the residents through programs and mixed-use space. Designed as a multi-purpose building, the center will provide space for a variety of events and programs. Onsite child drop-off supports the demands of busy parents while providing the children with an enriched learning experience. Programs designed to develop young athletes, senior enrichment, and life skills offer community growth opportunities. State of the art event center provides modular meeting spaces to accommodate both small and larger groups. A hidden stage transforms the space into a venue hosting intimate live performances. Life event celebrations like weddings and graduations are made much more memorable in this unique space.

Unique to Greensboro, a rooftop culinary garden provides fresh herbs for the delicious meals prepared in the onsite commercial kitchen. Walking trails and activity space acts as a connecting point for active community members and their furry companions.

The organization hopes to construct a multi-purpose community center that will allow them to bring together members of the community and grow their non-profit activities to reach more students and persons in need.

Thank you

### Method 2: Video description of the project

In this section you will see a video presentation of the same project describing the purpose and objectives of the center.

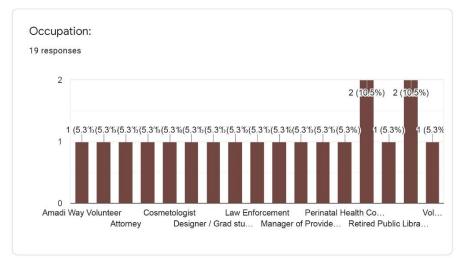
Please watch the video carefully and proceed to the questions section:

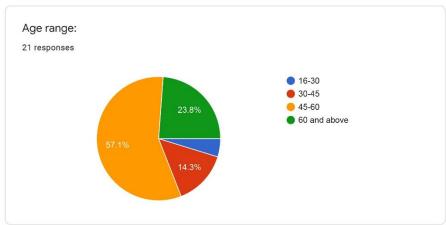
Please click on Youtube link to watch full-screen, Thank you



http://youtube.com/watch?v=xN7weXHrcq4

# Study Group 1 - Demographics



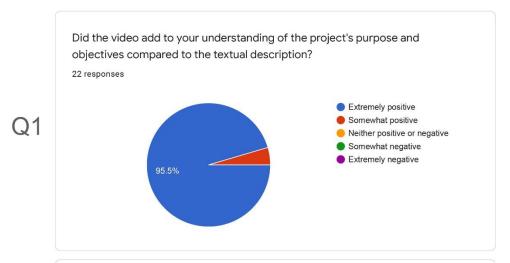


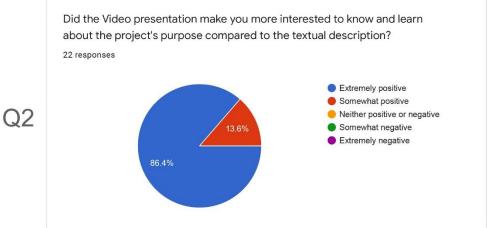


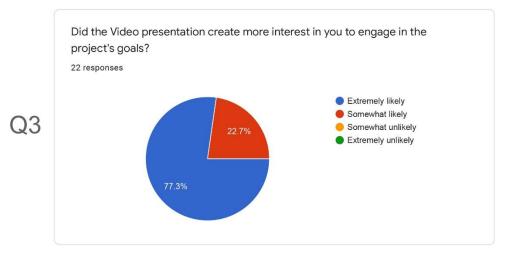
# **Research Questions**

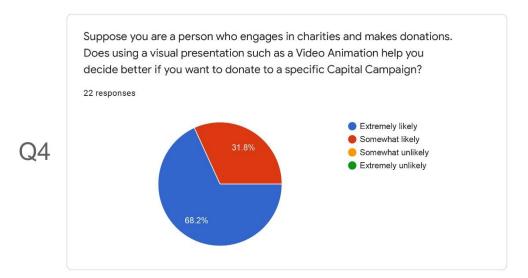
Question 1.	Did the video add to your understanding of the project's purpose and objectives compared to the textual description? *
	Extremely positive
	Somewhat positive
	Neither positive or negative
	Somewhat negative
	Extremely negative
Question 2.	Did the Video presentation make you more interested to know and learn about the project's purpose compared to the textual description? *
	Extremely positive
	Somewhat positive
	Neither positive or negative
	Somewhat negative
	Extremely negative
Question 3.	Did the Video presentation create more interest in you to engage in the project's goals? *
	Extremely likely
	Somewhat likely
	Neither positive or negative
	Somewhat unlikely
	Extremely unlikely
Question 4.	Suppose you are a person who engages in charities and makes donations. Does using a visual presentation such as a Video Animation help you decide better if you want to donate to a specific Capital Campaign? *
	Extremely likely
	Somewhat likely
	Neither positive or negative
	Somewhat unlikely
	Extremely unlikely
Question 5.	Considering the two methods used above as an introduction to a project, how much do you prefer to use a Video presentation compared to the Written description? *
	Extremely
	Much
	No change
	Low
	Extremely Low

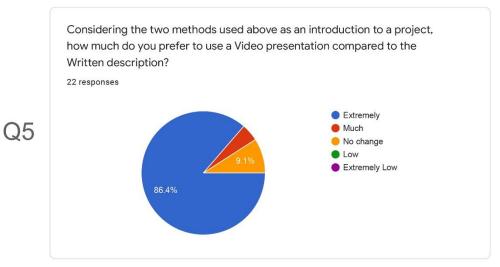
## **Responses**



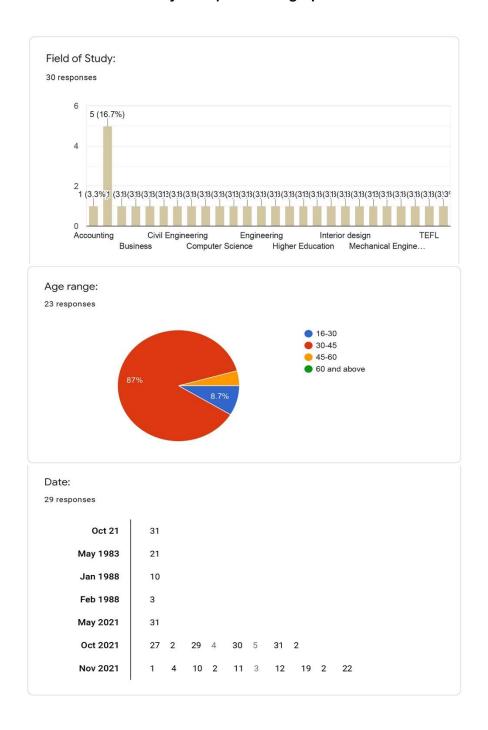








# Study Group 2 - Demographics



# **Responses**

