

TRADITIONAL CRAFT HERITAGE OF FASHION AND E-COMMERCE



Prof. Agnijit Tarafdar

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CHAPTER 1

GRASS ART: FROM TRADITIONAL CRAFTS TO CONTEMPORARY INNOVATIONS

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ABSTRACT:

Grass art, also known as land art or earthworks, is a distinctive form of artistic expression that utilizes natural materials, particularly grass and soil, to create temporary or permanent installations in outdoor spaces. This form of environmental art emphasizes a harmonious relationship between the artwork and its surroundings, blurring the boundaries between nature and artistic creation. The evolution of grass art extends beyond tradition, embracing modern trends and responding to the imperative of sustainability. The exploration of grass-based crafts reveals a profound connection between local communities and their natural surroundings, showcasing the resilience and adaptability inherent in human craftsmanship. The integration of grass into diverse fields, including bioethanol production and sustainable products like grass-fed milk, reflects a growing awareness of environmental considerations and the quest for eco-friendly solutions. Grass art takes on new dimensions, responding to environmental concerns and evolving consumer preferences. From the production of bioethanol and sustainable grass-fed milk to scientific studies on grass stomata and defending in grasses, the multifaceted contributions of grass in both scientific and artistic realms come to the forefront. It finds that Contemporary designs in grass art not only revive traditional techniques but also contribute to sustainable economic development, exemplifying the fusion of traditional wisdom with modern trends. As environmental sustainability becomes an increasingly critical concern, the use of grass in artistic endeavors is likely to gain traction, providing eco-friendly alternatives to conventional materials. The integration of technology and design in grass art offers exciting possibilities for creating contemporary, functional, and aesthetically appealing products.

KEYWORDS:

Artistic, Art, Crafts, Cultural, Golden Grass, Plant.

1. INTRODUCTION

The scientific name for the golden grass is *Syngonanthus nitens*, Ruhland. It is a kind of wild reed that grows across the nation but is given various names depending on where it is found. The sikki grass, also called kainch, is found in the Odisha area, most especially in the riverfront villages in the districts of Jagatsinghpur and Kendrapara. This wild grass grows up to six feet tall and changes color from light green to mild yellow to golden yellow as it dries after the rain. Brazil and other African nations are the birthplaces of the Golden Plant Craft, a craft closely linked to this plant.

The silica found in golden grass strengthens cell walls, protects against environmental stress, improves the absorption of water and minerals, and serves as an extra line of defense against powdery mildew and other fungal infections. This special quality enables talented weavers to produce a wide range of items. Basket weaving is an old art form in India, similar to pottery production. At first, roving food gatherers braided reeds into baskets. Basketry evolved throughout time for both utilitarian and ceremonial uses due to a variety of materials and cultural influences. In India, twigs, bamboo, cane, and other natural grasses are used to make baskets. Punjab is well known for its sturdy, spirally woven baskets, which are made by stitching together several types of grass with wild grass serving as the base. Paddle baskets made by Gop are renowned for their elaborate patterns. Orissa has a long history of using moonj, or monsoon grass, to make baskets [1], [2]. Some communities are particularly well-known for their mastery of this specific skill. Bihar has a strong association with golden sikki grass because of the state's enormous development of raw materials and highly talented

craftsmen. Tribal women demonstrate their weaving abilities even in the Palghar District, using date palm and their lavhalya reeds. Essentially, the unique character of this skill comes from the blend of local names with certain types of grass. This ancient skill is based on grass, which is both ubiquitous and adaptable. It serves as a bridge between communities and regions since it is woven with a common history of competence [3], [4].

Handicrafts made from *S. nitens* were first produced in Jalapão, more precisely in the Afro-Brazilian neighborhood of Mumbuca, which is part of the Mateiros municipality. Native Americans from the Xerente ethnic group traveled through the area in the 1930s and taught the locals how to create. The indigenous tribes in Brazil used golden grass to make wearables for the 12th Games of Indigenous Peoples. Because of its strength and longevity, the grass was used in India during British rule to make military ropes. In the beginning, garments, bodysuits, decorations, and containers were among the items manufactured from golden grass. Many factors and traits have contributed to the longevity of the Golden Grass Craft heritage throughout the years. The skill is significant to culture since its items are often presented as presents, especially to women, during ceremonial occasions like weddings. Women in Gorakhpur coil enormous maunis, which are circular baskets with exquisite designs, very meticulously. When the bride leaves her house, she walks down a road made of these arranged in a row, carrying some of the baskets that are laden with presents, grains, and candies. Uttarakhandi baskets are known for their bold shapes and artistic depictions of people and animals. Traditionally, the Uduseke baskets were used to store food and valuables. They also fulfilled the function of the groom's traditional wedding present to the bride's family. This act reflected the new wife's vow to protect her husband's and his family's secrets going forward, as well as signifying her purity. Usually, the bride kept these baskets in her chamber. It was during the aftermath of the genocide that weaving organizations from both ethnic backgrounds worked together to create what became known as "Peace baskets." These baskets' lids represented the innocence of the ladies who made them [5], [6]. Figure 1 depicts the Uduseke baskets native to Africa used to store food grains.



Figure 1: Illustrates the Uduseke baskets native to Africa used to store food grains.

The present study is about grass art from traditional crafts to contemporary innovations. The remainder of the paper is structured following section 1 describing Grass Art continues to flounder and grass artisans continue to struggle. It provides avenues to create contemporary

designs using grass art. Section 2 represented the review of literature in the context of analyzing Napier grass using a fermentation procedure to produce bioethanol. The discussion and summary of the study are presented in sections 3 and 4.

2. LITERATURE REVIEW

D. Zhang *et al.* [7] the unique graminoid structure seen in grass stomata is analyzed genetically and mechanistically in that work, which also looks at developmental novelties in stomatal cell lineage start, the recruitment of subsidiary cells (SCs), and stomatal morphogenesis. Essential cellular pores for respiration on leaves called stomata open and shut dynamically to help absorb carbon dioxide from photosynthetic processes and control water loss via transpiration. The 'graminoid' kind of stomatal morphology is a distinctive feature of Poaceae family grasses, which are characterized by two guard cells that resemble dumbbells and two lateral subsidiary cells (SCs) on each side. Rapid stomatal motions linked to this specific shape provide more water-efficient gas exchange in adaptation to changing environmental circumstances. This article also describes the functional consequences of the graminoid, four-celled stomatal shape. This work synthesizes data on the major variables affecting grass stomatal opening and shutting and explores possible processes regulating cell-type-specific control of turgor and osmotic potential. Light of a changing climate, a detailed examination of the superior grass stomata's performance has the potential to determine methods to improve the resistance of agriculturally important plants to water stress.

T. I. Odintsova *et al.* [8] present knowledge of defined defensins obtained from both cultivated and carefully selected wild-growing grasses is summarized in that study. Defensin isolation or synthesis by heterologous expression for every species is part of the thorough analysis. Peptide structure, biological activity, structure–function correlations, and corresponding gene expression data are among the topics included in the analysis. The Poaceae family of grasses is one of the biggest groups of flowering plants. It includes species of significant commercial value and thrives in a variety of climate zones on every continent. The grasses' exceptional capacity to adapt to harsh climatic circumstances points to the existence of robust resistance mechanisms that include the synthesis of antimicrobial peptides (AMPs). The review also discusses the possible roles of defensin-like sequences found in the genomes of all known grass species based on an *in silico* study of these sequences. These collected observations not only provide a basis for comprehending the mechanism of action of grass defensins, but also highlight the extraordinary capacity of grasses to adapt to environmental stressors. They also provide a viable path for the identification of powerful compounds with useful uses in agriculture and medicine.

G. Peira *et al.* [9] examine how consumers see grass-fed milk to determine if a sustainable production strategy can successfully adapt to changing consumer preferences. 750 Italian members of the International Association of Slow Food made up the research sample. It reduced quantitative data using Principal Component Analysis (PCA) into "dimensions," which, when combined, provided input for multivariate statistics (HCA, MCA) to clarify and characterize customer profiles. Our results support a trend toward changing milk consumption habits, showing that consumers are more likely to place a premium on traceability, quality, and local supply chains. Additionally, there is a noticeable inclination among customers to pay a premium for milk that is produced using grass. It serves as a first examination of the market and provides a framework for creating a chain model for the production, distribution, and consumption of grass-fed milk. Grass-fed milk is a product that meets the requirements of society and individuals for sustainable production, matching market demands and encouraging higher-value entrepreneurial endeavors.

Q. Huang *et al.* [10] developed and carried out a randomized controlled experiment to investigate the healing capacity of different kinds of grass and trees. 89 individuals underwent a 5-minute arithmetic exam using noise and distraction to induce stress. The participants were randomized at random to one of three virtual reality environments: a courtyard with grass, a courtyard with trees, or a courtyard without any vegetation. It recorded participants' skin conductance levels (SCLs) and evaluated their positive and negative affect ratings before and after a 10-minute VR immersion session. The presence of grass had the largest influence on positive affect, according to the findings of a repeated-measures analysis of variance performed using a general linear model. In comparison to the concrete-only setting, skin conductance levels were noticeably lower in the grass and tree environments throughout the second part of the VR session. These results support Ulrich's theory, which postulates that emotional reactions to surroundings are regulated by innate and evolutionarily derived elements. Our research offers the first useful proof for landscape design tactics meant to optimize the healing potential of cities.

G. T. Kowalik *et al.* [11] using both golden step and golden angle ordering, established a Golden Ratio Stack of Spiral (GRASS) sequence in this experiment. The project aimed to demonstrate the versatility of recreating GRASS acquisitions as time-resolved and cardiac-gated angiograms. In a computer model, the picture quality of three traditional Stack of Spirals (SoS) scans was compared with time-resolved along with cardiac-gated reconstruction of the GRASS sequence. Furthermore, the GRASS sequence was compared to traditional breath-hold angiography (BH-MRA) in ten patients concerning picture quality and vessel measures, and comparisons were also made with cine images. For GRASS, the cardiac-gated computational approach outperformed the regular and golden-angle combined regular-step SoS techniques in terms of picture quality. GRASS performed better than ordinary SoS acquisitions and showed picture quality that was on par with the golden angle with a regular step approach in the time-resolved model.

K. Adepoju and S. Adelabu [12] In this study, the researchers utilized the Maxent prediction model to estimate the likelihood of veldt fires occurring in South Africa's Golden Gate Highland National Park (GGHNP) between 2011 and 2014. Climate variables, non-climatic influences, and historical fire data were all taken into account in the study. The results show that the park's eastern and southwest areas, especially the grass-dominated intermediate altitude area and the northeast-facing slopes without moderate precipitation, had the highest fire danger. The model's performance was most influenced by rainfall, with temperature and height coming in second and third. For the validation sample, the prediction model showed excellent accuracy, with average AUC along with correlation values of 0.926 and 0.74, respectively. The research emphasizes how important topography and climate variables are in determining the frequency of fires, and it suggests that wind-driven fires affect the park more than convective, fuel-related fires. These findings contribute to more efficient fire risk management procedures by providing insightful information for improving the quantitative evaluation.

The above study examination of the superior grass stomata's performance has the potential to determine methods to improve the resistance of agriculturally important plants to water stress. The examination of the market provides a framework for creating a chain model for the production, distribution, and consumption of grass-fed milk. In this study, the author discusses tribals with their lifestyle and technique of weaving sikki.

3. DISCUSSION

Nature creates a tapestry of life that is revealed in an amazing journey, ranging from the modest blades of grass to the majestic majesty of towering trees. The change from the stark grandeur

of towering plants to the simple elegance of grass reflects the cycles of majesty, growth, and resilience seen in the natural world. Despite their apparent insignificance, all grass blades are essential to this evolution and the greater symphony of life. As these grassy carpets expand, they make way for the majesty of towering trees that stretch upward, forming a magnificent canopy that is a symbol of the inherent beauty and tenacity of the natural world. Nature reveals its complex patterns on this trip from grass to grandeur, serving as a constant reminder of the interdependence and orderly development that define the planet's living fabric [13], [14].

3.1. Tribals & their Lifestyle:

The Warli tribes who inhabit this area are very creative and skillful craftspeople who have been adorning their environment with handcrafted ornaments for many years. Some make baskets and tokris out of the wild reeds from their fields, while some use traditional Warli paintings to adorn their walls. To make hats and provide relief from the extreme heat, herders gather reeds to weave while their grazing livestock are being transported. This community's women are very hardworking and aspirational, helping their husbands with farming in addition to producing works of art. These women continue to work hard despite cultural conventions that often limit their participation in jobs that earn money they spend the late hours of the day weaving grass after attending to domestic duties during the day. Indigenous tribes are an important part of the various fabric of human society because of their rich cultural history and distinctive way of life. Given that many tribal people live in isolated, natural areas and have a strong connection with the land and its resources, their way of life is often closely entwined with the natural world. Their cultures have always been built on a strong feeling of family and communal life, with social connections and shared obligations serving as the cornerstones. Traditionally, tribe members follow traditions, ceremonies, and handicrafts that have been handed down through the years. Many tribal cultures depend on subsistence farming, hunting, and gathering, which reflects their peaceful and sustainable relationship with the environment. Tribal societies exhibit enormous cultural variety, with each tribe showing unique languages, art styles, music, and dance. Their spiritual beliefs, mythology, and folklore all add to a rich oral legacy that captures the spirit of their group identity. The preservation of tribal lifestyles is challenged by industrialization and outside influences. Their traditional traditions are often impacted by rapid urbanization, land use changes, and socioeconomic transformations, which jeopardize the delicate balance between their cultural legacy and the changing world [15], [16].

3.1. Golden Grass of Kendrapara- Odhisha:

Especially among women, the use of Sikki grass, sometimes called Golden Grass, in Northern Bihar's crafting traditions more especially, in the Mithila region represents a significant part of the community's cultural legacy. The Sikki grass craft has been practiced for ages, however, its precise origins are unknown. The technique was originally used for home and wedding trousseau reasons, but in the last several decades, its commercial use has grown in popularity. It is appropriately called Golden Grass because of its magnificent golden color. Unlike Bihar, where munj grass is often used as a core material, Orissa only uses Sikki grass, which is why it is still known as Golden Grass. The popularity of this ancient skill in Bihar has declined as a result of the digitalization of life and the growth of nearby enterprises. Still, Sikki craft is practiced in several places, like as Madhubani, Darbhanga, and Sitamarhi. Maintaining a careful balance between traditional methods and modern modifications is crucial for the revival of this ancient form. After decades of producing utilitarian goods, Maithil women today take consumer preferences into account and produce a wide range of receptacles, boxes (Pauti), trays (Mauni), and even contemporary goods like smartphone covers. While traditional god masks are still made, some Sikki artists are experimenting with goods that don't need coiling with munj [17], [18]. Figure 2 depicts the Pauti used to keep jewellery.



Figure 2: Illustrates the Pauti used to keep jewellery.

3.2. *The technique of Weaving Sikki:*

In North Bihar, sikki grass grows abundantly in the damp, marshy areas around rivers and ponds, especially during periods of high rainfall. This golden grass is usually picked by Harijans in the rainy season. They then dry it and sell it, often by the foot, at the Haats or local marketplaces. Khar and munj, another kind of grass, are essential components used in the production of Sikki grass products. Since munj is widely available and reasonably priced, its main function is to give Sikki items their initial strength and form. Various women craftsmen in various regions use the knot stitch known as Ganthi, which is created when munj, which is originally coiled, is covered with Sikki grass. Additional raw materials that are easily found in local shops include colors for dyeing Sikki grass. Water, which is used to moisten the Sikki grass and increase its elasticity as it is wrapped around the munj, is the most precious raw resource, nevertheless. Sikki grass is first chopped at the root and then allowed to dry for a few days to make it usable [19], [20]. Figure 3 depicts the process of sikki grass for making crafts.

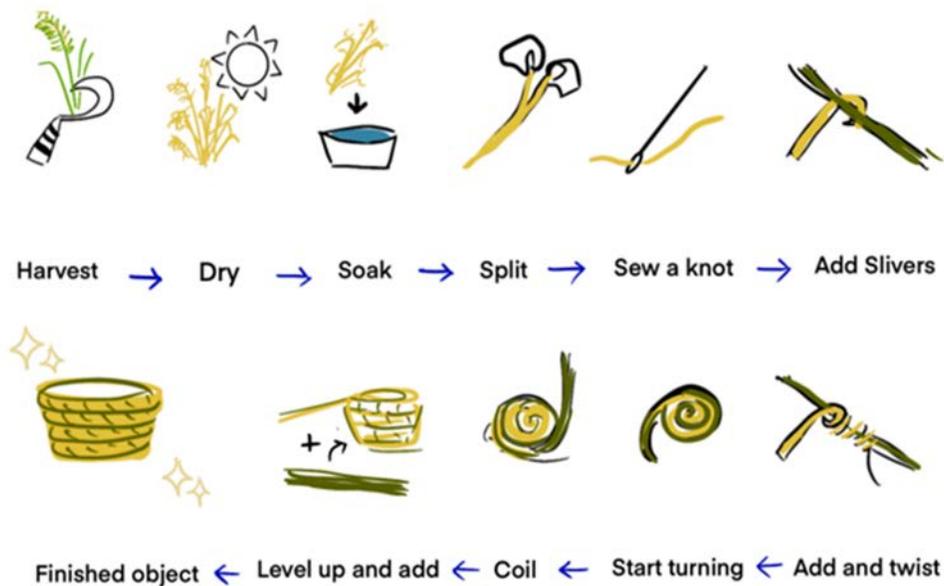


Figure 3: Illustrates the process of Sikki Grass for making crafts.

Since the blooming part of the sikki stem is not used for crafting, it is thrown away, and the rest is cut and shaved with a knife or teeth. Sakki is often known as Golden Grass because of its magnificent golden hue. Its inherent golden tint is enhanced by coloring it in a variety of hues, including deep blue, purple, pink, red, yellow, and green. Boiling sikki in various colors

is the coloring procedure. Sakki is soaked in water before being used, which makes it more pliable and makes coiling around the munj easier. Munj or khar, a different kind of grass, is used to create the main form, giving the sikki result further strength and structural support. Munj is widely available in the Mithila area of Bihar and is usually used for coiling.

3.3. Various types of Grass used for Craft:

The various types of grass used for craft are categorized as:

3.3.1. Rattan:

The word "rattan" describes a family of long-stemmed vines, or lianas, that resemble the wide variety of trees and shrubs that may be found in the natural world. Many rattan species coexist in different habitats and are characterized by similar features like long, thin stems. Most of these plants grow in a vine-like fashion, although others have a shrubby, palm-like growth pattern. Another characteristic that sets most rattans apart from bamboo is their solid stems; while they have a similar look, bamboo develops in a hollow way. The wood known as rattan resembles reeds and is a member of the climbing palm family, namely the genera *Daemonorops* and *Calamus*. Its wood is ductile, and its stems are noticeably long-lasting. Because of these special qualities, rattan may be used for a wide range of purposes. For example, it can be used to construct furniture by cutting sections and to make baskets by using the stems.

3.3.2. Water Hyacinth:

The water hyacinth is a perennial aquatic plant that floats freely and has wide, thick, glossy, ovate leaves that may reach up to one meter (3 feet) above the water's surface. The fibers from the plant are used to make a variety of goods, including paper, trays, baskets, coasters, and mats. The aquatic plant is widely distributed in the northeast, with Meghalaya and Guwahati being important locations where craftspeople make a living by creating products made from water hyacinth. Notably, leaf plates also referred to as pattal or dunna have been introduced recently in Germany. These plates are completely compostable and biodegradable since they are composed of palm, natural, and areca leaves. Figure 4 depicts the Eco-friendly cycle of Sal leaf plates.

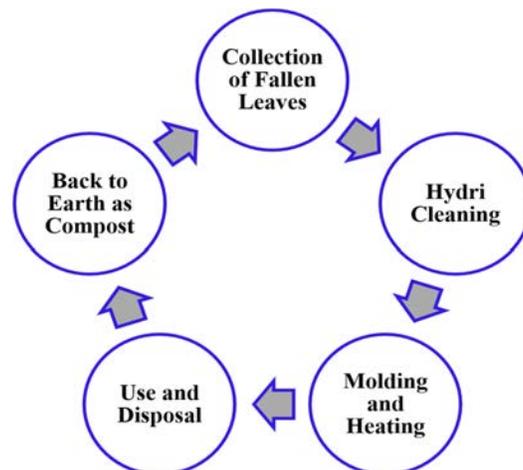


Figure 4: Illustrates the Eco-friendly cycle of Sal leaf plates.

3.3.3. Sabai grass:

Sabai grass farming is widely used in areas of China and Nepal, as well as in Indian states like West Bengal and Orissa. Particularly in the Mayurbhanj area of Orissa, the cultivation of Sabai

grass has had a profoundly positive effect on the lives of tribal and financially marginalized populations. Chinese alpine rush, or sabai grass, is a perennial plant. Because Sabai has less lignin than other grasses, its structural and tensile components are diminished, making it stand out as a soft grass.

3.3.4. *Bamboo:*

The woody, hollow, round, straight, and sometimes jointed stems define bamboo. On the other hand, the thin and flexible bamboo main stem is referred to as a cane. The stalks, or 'culms,' vary greatly in height, from a few centimeters to forty meters, and in diameter, from one millimeter to thirty centimeters. Bamboo handicrafts are among the earliest crafts ever discovered by humans, and they are extensively produced in many parts of India. For ages, the people of Manipur have been deeply involved in the enormous cane and bamboo crafts, producing a wide range of handcrafted goods with unique patterns and designs for a variety of uses. Bamboo crafts are especially well-known in the Northeastern parts of India.

3.3.5. *Palms:*

Palms grow in a variety of ways, from shrubs and climbers to stemless, tree-like plants. In several places in India, palm leaf crafts are practiced and produce environmentally beneficial goods. The trade of making palm leaf baskets was brought to Haryana by women from the Multani-speaking Audh group. Furthermore, palm straws are essential to the production of Panama hats made by hand in Ecuador, especially by artisans from Cuenca and Montecristi. Because of its substantial 19th-century export from Ecuador to Panama, "Panama hats" got their moniker. The elaborate process of making the hats, which are constructed from palm straws, includes sowing, cutting, bleaching, boiling, dividing, and weaving on a wooden framework that resembles a tripod.

3.3.6. *Moonj:*

Sarpat is a natural plant that grows along riverbanks and is harvested once a year for a month after the wet season. Moonj is the outer covering of this grass, which grows in dry areas and along riverbanks in India. Because this layer is thick and sturdy, it must be carefully peeled and knotted. For the last 60 to 70 years, working with Moonj has become an art form. Hailed as the "Unique Treasure of Prayagraj," this craft is an important source of income for the locals and a monument to their extraordinary artistry.

4. CONCLUSION

From ancient crafts to cutting-edge innovations, the realm of grass art offers a complex tapestry of creative creativity, environmental sustainability, and cultural legacy. Investigating grass-based crafts demonstrates the close relationship between indigenous people and their natural environment. Examples of this include the elaborate Sikki grass weaving in Northern Bihar and the Golden Grass of Kendrapara in Odisha.

These age-old customs, which have been carried down through the centuries, demonstrate the flexibility and resiliency of human workmanship in addition to helping to preserve cultural identity.

The development of grass art has taken on new aspects as we move into the contemporary day, embracing innovation and adapting to shifting customer demands. The use of grass in a variety of ways, such as the manufacture of bioethanol or the development of sustainable goods like grass-fed milk, demonstrates a rising understanding of environmental issues and the need for environmentally acceptable solutions. The many uses of grass in science and the arts are further

shown by research on grass stomata, defensins in grasses, and even the psychological advantages of grassy settings. the need to preserve the fragile equilibrium between development and tradition.

Grass art emphasizes the common history of proficiency in dealing with this universal and versatile material, acting as a bridge across cultures throughout time and distance. Grass art is still thriving today, revealing the connections between human creativity, nature, and old tribal traditions as well as cutting-edge scientific research.

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CHAPTER 2

KALA KAANCH: BRIDGING ART, DESIGN, AND SCIENCE IN GLASS TABLEWARE INSPIRED BY INDIAN CULTURE

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ABSTRACT:

Kala Kaanch (Art glass) is a line of glass tableware inspired by Indian culture, combining art, design, and science. Painters and their creations. The collection illustrates how fluidity transitions from two to three dimensions. It depicts Indian artists' creations from three distinct artistic eras abstract art, modernism, and expressionism, and represents the advancement of Indian art during the 1900s. Through the use of glass, it presents rural India in a contemporary setting. It makes the relationship between Indian art and culture apparent. Paintings are improved with art glass, also known as kala kanch which adds brightness, depth, and texture. Layer by layer artists use it to control light reflections. Art Glass, often known as "kala kanch," gives a unique dimension of color and light to paintings. Artists can achieve depth and brilliance by using layers of transparent paints. Potentials for the future include diving further into this medium, pushing the boundaries of art, and promoting a dynamic and ever-changing field of art. Its potential for the future rests in developing methods to encourage artistic expression via innovation and growing its influence in contemporary art by challenging restrictions and generating new creative ideas.

KEYWORDS:

Art Movement, Black Glass, Metal Ion, Soda Ash.

1. INTRODUCTION

In Mesopotamia, glass blowing as a craft was found around 4,000 years ago. The discovery and beginning might be linked to the landing of a party of Phoenician sailors on the shore. When they utilized the natron to power their cooking equipment while they prepared the food, they noticed how the sand from the beach under the fire melted, poured as a liquid, and ultimately cooled. Thus, it has been known for years that beach sand may be used to make glass. The technique of dealing with glass must have developed over time as a consequence of trials using an alkali made up of powdered quartz pebbles or an alloy of silica sand. Glass was eventually created as a substance [1], [2]. Glassmakers utilized oxides with additional compounds to impart color to the glass. Royal blue and turquoise blue were popular glass colors adding copper and cobalt oxide, and these parts continue to be utilized today. Through this technique, the glass craftsmen tried to replicate the appearance and texture of semi-precious stones, which at the time were extremely valuable such as turquoise and lapis lazuli, among others [3], [4].

On clay tablets as early as 3,300 years ago, there were written instructions to make glass in Mesopotamia. The process of creating glass evolved throughout time. They made use of mud furnaces thousands of years ago. A whole town would be needed to finish the glass-working process, where everyone would have something particular to complete. The essential materials that are being used today are included in the original glass-making formula. This is sand, the main component of glass. This is soda ash, an alkali flux that aids the process of bringing down the sand's point of melting. One possible use for the slow copper compound is as a glass colorant. The following is a partial translation of text found on an ancient clay tablet kept in the British Museum, which describes the process of producing glass. When laying the foundation for a kiln to produce glass, you wait for a fortunate day within a lucky month before commencing work on the kiln. Following the completion of the kiln's construction, no strangers or outsiders are allowed to enter the structure; an unclean individual is not even allowed to

walk in front of the [5], [6] includes placing Kubu-images there, Before the Kubu-images, you customarily make libation offerings. The sacrifice of a sheep in front of the Kubu images on the day you want to put the glass in [7], [8].

Many glass working devices are situated within arm's reach of the gaffer, who typically works on or near the gaffer's bench. Glass can be shaped into the desired shape using a wide range of tools. Given its basic design. A lengthy metal tube is blown with air to gather molten glass. Various pipe sizes are used for various types of materials. A device with a blade used for cutting the glass's side wall, Sheers come in two primary kinds' straight and diamond. They are used to cut and restrict the glass while it is still flexible. The glass is carefully grabbed and transferred from the pipe to the pontil with large tweezers. From fauvism to romanticism to modernism, there has been an abundance of art trends throughout the [7], [9]. Three main art movements served as inspiration for the selection of modernism, abstract art, and expressionism. Afterward, these movements led to the study of artists and their creations, from which the pieces were developed with inspiration. Ten Indian painters were chosen based on these three art movements five male and five female artists whose creations were produced over these three periods of art history, had a common topic, and had many shared traits [10], [11].

- ✓ Expressionism: The art movement known as expressionism provided motivation. Even so, the expression. Although it may be used for any kind of art, expressionism is most often associated with 20th-century work. It is a kind of art wherein the creator bends reality to convey their deepest feelings or feelings. Vincent Van Gogh is credited with starting this movement, which subsequently gave rise to a significant stream of contemporary art that included painters.

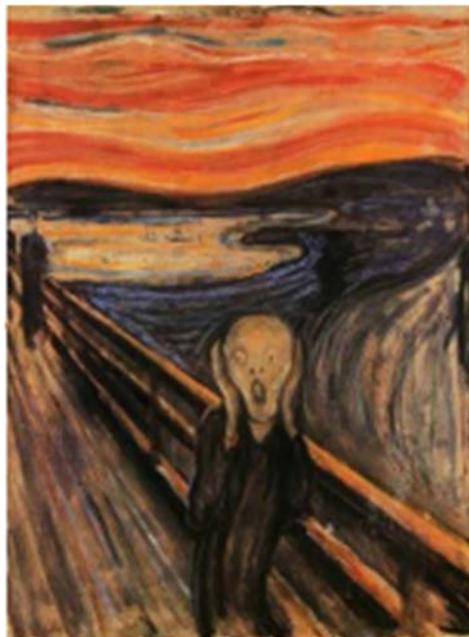


Figure 1: Illustrate the expressionism of the art movement.

- ✓ Abstract Art: Art that refuses to attempt an accurate representation of a visual object is called abstract art. Instead, it generates an impression by the use of forms, colors, and gestural markings. It was first introduced in the 1800s. Abstract means the act of eliminating something from someone else. When used about art, this expression might imply that the piece of art is based on a product.

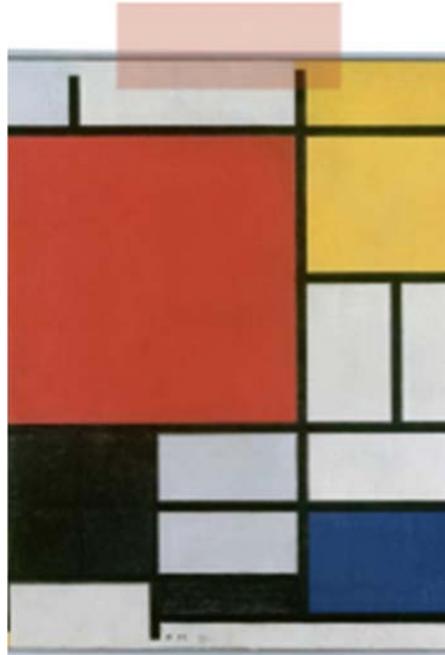


Figure 2: Illustrate the Abstract Art in the art movement.

- ✓ Modernism: It is a term given to an international trend in society and culture that began in the early 20th century and tried to achieve. A new connection with the knowledge and values that govern modern industrial life. Although the term "modernity" encompasses a wide range of artistic movements, there are a few key concepts that unite modernist art, such as the denial of custom and conventional principles, inventiveness as well as testing with forms, colors, and shapes with an emphasis on materials, procedures, and techniques.



Figure 3: Illustrate the Modernism in art movement.

2. LITERATURE REVIEW

Conte *et al.* [12] discussed the different manufacture of glass methods utilized during the Iron Age for manufacturing black glass in Slovakia and Italy. The results of an analysis of 75 black glass beads from Chotin (Slovakia) and Bologna, Cumae, and Pozzuoli (Italy), which date to

the 9th and 5th centuries BC, are presented in this paper. Major, minor, and trace element analyses, together with Sr and Nd isotope analyses carried out on a few Bologna pieces, have shown that Dark Age glass was made using two distinct processes. Iron may be discovered in Slovakia (wood ash glass, likely made in Europe) and Italy (natron glass, perhaps produced in Egypt). Because black sand was voluntarily chosen for the glass batches, a significant amount of iron (about 12% FeO) was found in both instances, which is how the glass appears black.

Jeleń *et al.* [13] discussed the manufacturing of black glass requires the thermodynamic development of the silsesquioxane cascades. Silsesquioxane is pyrolyzed stepwise in an oxygen-free atmosphere to generate silicon oxycarbons or black glasses. A substance having an amorphous silica structure, black glass is made up of some C4-ions instead of certain O2-ions. The mechanical, thermal, and chemical characteristics are enhanced as a result of this exchange, which also causes a local rise in bond density. This invention opens up new uses for silicon oxycarbide glass, including connections in solid oxide fuel cells and protective coatings.

Yin *et al.* [14] discussed that Dark glass is harmed by laser both before and after surface treatment since it includes impurity-SiO₂ film during ultra-clean manufacture. Inertial confinement fusion (ICF) requires ultraclean manufacturing as a critical technology to provide clean, sustainable energy, however, laser damage pollutants present a risk. Jeopardizes the creation of ultra-clean goods. Here, we examine the degree of damage to dark glass in fusion-type laser systems caused by high-fluence laser beams. The findings demonstrate that the damage parameters, such as the laser-induced damage threshold (list), shape, and depth, are significantly dependent on the laser pulse length at 355 nm both before and after surface treatment with the SiO₂ layer. According to simulations, the list of SiO₂ layers over transparent black glass has improved to 14. 1 J/cm², compared to 10. 2 J/cm² for typical black glass. Impurities will contaminate the laser system and accelerate the thin film's degradation. SiO₂ membrane with impurities has a list of only 3. 6 J/cm².

Nyczyk-Malinowska *et al.* [15] discussed the production and analysis of the antioxidant black glass coating (SiCO), which is produced by hydrolyzing polysiloxane. Pyrolysis of polysiloxane precursors at 900 °C produced two SiCO coatings that were applied to austenitic stainless steel of the AISI 301 type. Polymethylvinylsiloxane (V3) and polymethylhydrosiloxane (PMHS) were hydrosilylated with 1,3,5,7-tetramethyl-1,3,5,7-tetravinylcyclotetrasiloxane (D4H) and 2,4,6,8-tetramethylcyclotetrasiloxane (D4H) respectively to get these precursors. Utilizing IR spectroscopy, researchers have examined polymer coatings and coating after pyrolysis to assess the degree of transition to ceramic layers after pyrolysis and to determine the efficacy of the hydrosilylation process.

Wei Si [16] discussed the creation and characteristics of ceramics made of black glass by a crystallization reaction with residual glass. Fluoromica, gehlenite, and enstatite are used as catalysts for the reactive crystallization of waste glass powder and handmade black powder, which is used to create black glass ceramics at 900°C. X-ray diffraction and scanning electron microscopy were used to evaluate the samples' crystal structure and shape as well as to ascertain their mechanical and physical characteristics. The findings indicate that adding various crystallization promoters to black glass ceramic does not alter its phase structure; nevertheless, the precipitated crystal's binding strength with the glass varies, resulting in distinct material qualities. distinct sample mechanics and physics.

Wang *et al.* [17] discussed that multifunctional black bioactive glasses are prepared through a material-free synthesis process for tumor treatment and tissue regeneration. It is very difficult to regenerate tissue in complicated diseases such as tumor sites, bacterial infections, and hypovascular locations. Therefore, it is crucial to produce bioactive implantable materials with

multifunctional qualities like promoting angiogenesis, inhibiting bacterial growth, and destroying tumors. This study's black CaO-SiO₂-TiO₂ (CST) glass was created via a vessel-free melting technique, which prevented heterogeneous nucleation and allowed for the quick formation of glass upon cooling. With this method, trivalent titanium (Ti³⁺) may be formed without the need for a reducing agent or reducing environment. Because of its exceptional photothermal and photocatalytic properties, black CST glass was shown to have a high inhibitory impact on both bacteria and tumors in this investigation. Surprisingly, the combination of Si ions and the photothermal action in these glasses promotes blood vessel creation and speeds up the healing process of chronic wounds. As a result, this glass system could be a viable multipurpose material for complicated lesions' tissue regeneration.

Cagno *et al.* [18] discussed the composing information from a wide variety of Roman black glass. During the Roman Empire, black glass jewelry and dinnerware were common. Numerous specimens from diverse archaeological sites in Europe, North Africa, and the Middle East have had their compositions altered during the time under investigation (1st–5th century AD) as a result of changes in raw material utilization and glass manufacturing methods. To achieve the glass's shiny exterior, more than 400 Roman glass samples mostly shards of strongly colored glass were mechanically ground, flawless, and inserted into an acrylic resin throughout this endeavor.

Guggari *et al.* [19] discussed the Mechanical and thermal properties of vinyl ester hybrid composites supplemented using glass and carbon black. The objective of this study was to use experimental techniques to investigate the mechanical and thermal characteristics of vinyl ester/glass composites that had varying amounts of carbon black reinforcement. The glass's transition temperature, decomposition temperature, hardness, flexural strength, and thermo gravimetric analysis (TGA) were all analyzed using a differential scanning thermometer, X-ray diffraction, tensile machine, and bending machine, in that sequence. Studying surface fractures is done using microscopy with scanning electrons. As the percentage of black carbon increased, the decomposition temperature first reduced and subsequently climbed. The quantity of carbon black in the combination raises the glass transition temperature, while the mixture's weight percentage falls above 500 degrees Celsius.

S. Cetinkaya Colak [20] discussed the black glass is made and studied as an absorbent material of silicate glass that has been infiltrated with transitional metal particles. A 60% SiO₂-20% Na₂O-18% CaO-2% Al₂O₃ glass structure was constructed, and 20 weight percent CoO was added to this base glass to create black glass by the melt quenching process with V₂O₅ and CuO doped into the structure, the effects of transition metal ions on the thermal, optical, and physical characteristics of black glass were studied.

The glass has a density that varies from 2.59 g cm⁻³ to 2.89 g cm⁻³. The glass transition temperature (T_g) value rises with an increase in the doping rate of transition metal ions, while the melting temperature (T_m) does not exhibit this smooth trend. All glasses' thermal stability and glass-forming capacity values were also determined. The glass's absorption spectra were recorded at wavelengths ranging from 200 to 1100 nm. The Mott and Davis model was used to get the optical band gap energy values.

Liu *et al.* [21] discussed the impact of the amount of dye on black glass's capacity to absorb light. Compound dyes were created and added to black sodium borosilicate matrix glasses, changing the dye concentration to include transition metal ions. Spectrophotometry is used to transform glass samples into glass plates of a certain thickness. A Fourier transform infrared spectrometer and a UV–visible spectrophotometer was used to analyze the samples. Based on experimental data, various criteria apply to different ranges of the glass sample's absorbance

under light based on the amount of each kind of dye present. Another method used to make black sodium borosilicate aluminum matrix glass was partial Al_2O_3 replacement. The findings of the spectrum test with B_2O_3 showed that, upon replacement, the absorption of light might be increased.

3. DISCUSSION

Glass is a translucent, solid substance that is created by melting a combination of raw, natural ingredients, such as limestone, soda ash, and sand with very high temperatures to create glass, a new material. Glass has a liquid or molten structure at extremely high temperatures, but a solid structure at room temperature. Glassmaking techniques have changed throughout time, moving from low-tech handiwork to sophisticated industrial procedures in the present day. Many place's heritage of culture has been shaped by glass. When one thinks about glass, images of stained glass in cathedrals, the Mirrors Gallery at Versailles, or glass masterpieces from Murano, Italy come to memory.

3.1 Working of glass which is used in painting:

The most often used kind of glass is soda lime glass, which is composed of silica sand, soda ash, limestone, dolomite, and other materials. The precise composition of glass may change to suit the needs of certain applications of recycled glass. For the color, additional compounds like iron oxides are used. Glass can still be formed from a wide range of chemical compositions, but no one method works for all of them. The different glass-making formulae have an impact on the glass's mechanical, electrical, chemical, optical, and thermal properties. Although the precise composition of glass can vary depending on the needs of a specific use, soda lime glassware consists of silica sand, soda ash, limestone, rock dolomite, and recycled glass. Glass may, however, be formed from a wide range of chemical compositions, there's no one technique that is effective for all of the compounds. The different glass-making formulae have an impact on the glass's mechanical, chemical, electrical, optical, and thermal properties.

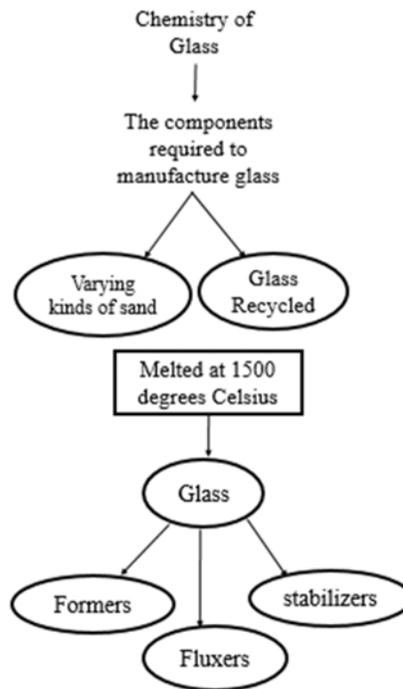


Figure 4: Illustrate the working of glass

3.2 Variety of Glass:

The substance glass has enormous promise and is used in many different sectors. It is an essential aspect of architecture and buildings, plays a significant part in transportation, and has numerous uses in the fields of research, medicine, and the manufacturing of food and beverages. It is a limitless substance that can be used indefinitely in high-tech applications in conjunction with other materials, and its uses continue to expand. The characteristics of glass allow for significant advancements in optics, telecommunications, medical research, and space exploration. Since it is such a flexible material, there are numerous types with limitless possibilities.

Glass is a material that may be used in a variety of ways, depending on the purpose. The most popular kind of glass, soda-lime, is used for containers and windows. Borosilicate glass is often used in scientific equipment because it can tolerate high temperatures. Heat-treated tempered glass, which is often used in automobile windows increases strength and safety. Windshields made of laminated glass employ layers for safety for energy efficiency, and low-emissivity glass regulates heat flow in windows. The reflective coating is applied to mirrored glass for both aesthetic and practical reasons. Because each kind of glass has distinct qualities, it may be used for a wide range of commercial, domestic, and scientific applications.

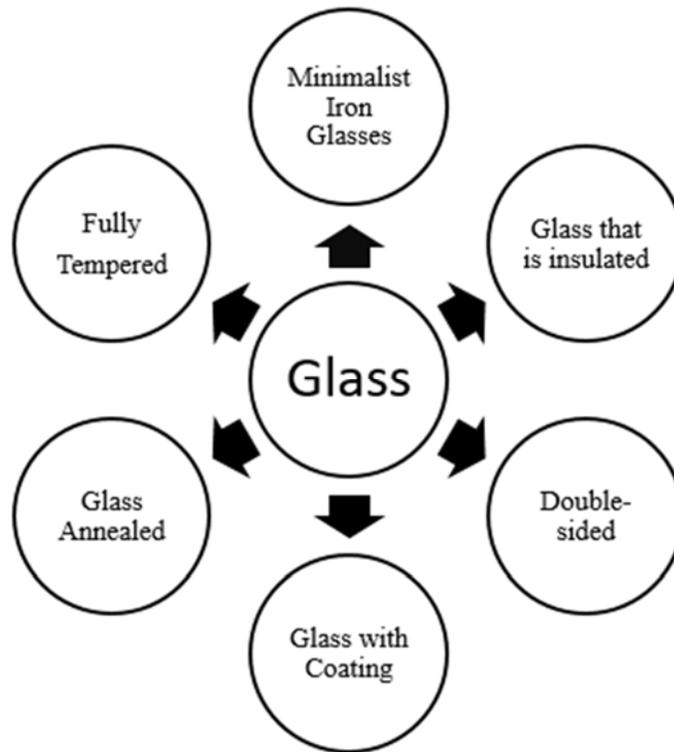


Figure 5: Illustrate the scope of glass.

3.3 Basic Glassworking Techniques: The art of working with glass is very advanced and involves some ancient methods that have developed over many years. These methods are crucial for producing a piece appropriately.

3.3.1 Gathering:

Since collecting is a crucial stage in the glass working process, it is considered one of the most significant procedures. Gathering is the act of taking molten glass away from one of the large

glass furnace's pipes. There are some different ways to collect, and the little adjustments you make to the method have a big impact on the glass's form, size, and quality. Another name for gathering is a dip up. The pipe must continue to revolve even while collecting. While working with glass, the pipe must always be kept turning. Glass may be gathered in two ways: the group gathers and the dip gathers. In the "dip coat," the rod is essentially submerged on the glass's surface before being rotated and removed. This kind of gathering calls for covering as much glass as you can. The rod is inserted into the glass and first rotated gently. And as you go further within, you want to push the pipe forward quicker.

3.3.2 Papering:

Another basic method for shaping glass is called papering. This particular gadget was created in the 1920s, making it the most recent invention. Papering is a relatively simple and readily available tool. The newspaper molding tool is present in almost every studio. Additionally, it enables intimate contact between the gaffer and the glass piece. Nonetheless, there are a few considerations to make while papering. Because heated glass attaches to anything hot rather than anything cold, the newspaper must be thoroughly moist. If it isn't, the burning paper will simply stick to the glass piece that is being worked on and leave a residue behind. A glass object that tends to become very hot must only be shaped in one way. It is preferable to wait for the piece to cool somewhat before starting to shape the neck region with the newspaper.

3.3.3 Necking:

Sit on the bench and use it as a shaping tool in various positions. It is mostly utilized by passing it between the tool's blades while holding it by the top. The jack will remove the heat from your item in a similar manner as the marver, but more slowly. Placing the jacks' tips on the glass portion that has to be molded is the first step in using them. Then, gently and gradually start expanding and applying pressure. As a tool, the jacks need to come into regular touch with beeswax to stay well-lubricated throughout use. Paddles which are wooden pieces that assist cover the gaffer's hand from the extreme heat being radiated from the glass piece, are used to protect the gaffer's hand while working on the jacks. Something else to remember while using jacks is that the pipe's complete shifts matter. Since the pipe is rotating quickly and at a high speed, the jack is positioned in the middle, and the shaping will be more precise, rapid, and symmetrical.

3.3.5 Cane Pulling:

One of the old methods of blowing glass is cane pulling. Although it is not an easy task, pulling canes is a very basic operation. This idea originates from Italy and Italian methods of working with glass. Pulling a length of heated glass on a punty up to fifty feet long and extending it across a room is the main technique involved in cane pulling. This results in the creation of a thin glass rod known as a cane, which is then divided into many smaller pieces. Generally speaking, a cane is a piece of glass that is the same thickness as a pencil. To effectively draw the cane over the necessary length, it is crucial to take into account that the glass temperature is uniform and just right. The primary color class, which is the first layer, is covered by the second layer. After that, a third gather is applied over the first two to produce a lovely, thick covering of glass.

4. CONCLUSION

This endeavor has been very useful and successful throughout. The study had the opportunity to study and experience this uncommon art form in glassblowing. Through practical application, they gained significant knowledge about this matter. It was very special since it allowed me to try new things and fail a lot. The study describes the learning about interior

design and lighting. The ability to spend the previous few months in the design sector and learn about its many facets, such as mass manufacturing, customization, and the various types of clients it serves, was the main lesson learned from this experience. Every day was such a unique experience that the last few months as a whole allowed me to learn via a variety of channels and have equipped me with the information that, in my opinion, the design business is all about the customer, industry know-how, and material expertise. Finally, it offered the opportunity to experiment with and produce a line of glass goods under creative guidance.

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CHAPTER 3

ECLIPSE: REDESIGNING OF SMARTWATCH FOR THE MILLENNIAL ERA'S HEALTH AND STYLE

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ABSTRACT:

Gaze-S, a study with OriGen SmartTech as a part of product designer, by working on different models of smartwatches, which will further launch in the market. The project revolves around different types of smartwatches. The purpose of the project was to provide fashionable, durable, and more importantly, affordable smartwatches and audio products to millennials and everyone to introduce the brand among millennials in the technological niche and attract wide traffic for its products. Origen SmartTech, in partnership with product designers, undertook an extensive study that is outlined in "Eclipse Redesigning Smartwatch Design for the Millennial Era's Health and Style". More an emphasis on developing cutting-edge smartwatches, the initiative seeks to provide millennials with stylish, long-lasting, and reasonably-priced wearables. The story looks at how smartwatches have changed over time, how their market has expanded, and how their distinctive design phase prioritized usability and practicality. Presented as a case study, the Eclipse smartwatch catches the eye of tech-savvy millennials looking for a fusion of modern and traditional design elements with its analog design. The work ends with a future in which smartwatches like Eclipse become indispensable in everyday life, fusing fashion and health monitoring for an increasingly proficient technology population.

KEYWORDS:

Eclipse, Smartwatch, Technology, Health.

1. INTRODUCTION

Everyday activities have grown increasingly dependent on computers and mobile technology, and as components for wearable technology become cheaper, smarter, and smaller, wearable devices themselves are also growing smarter, smaller, and smarter. The term "wearable technology" refers to devices that can collect and process environmental data while being worn on one's skin. People may trace almost everything about themselves because of this, including their routines and, in the case of females, their reproductive cycles, to their patterns of activity and sleep. Due to the plethora of options that smart wearables provide for monitoring different variables, personal informatics a collection of technologies that assist users in gathering and considering personal information is the primary application for these devices [1], [2].

The smartwatch and earbuds sector focuses on exploring and producing smart technologies, or gadgets with a stylish appearance but unique features such as computer chips, sensors, or speech recognition to assist consumers. A smartwatch is a wristwatch that is digitized and has functions other than telling the time. These days, smartwatches are essentially wearable computers that can do basic tasks like gaming, translation, and calculation. A lot of individuals run mobile applications on a mobile operating system. Certain models, known as watch phones, can make and receive calls and have all the features of a mobile [3], [4] is valued in modern culture, and the younger generation is self-centered. Individuals make lifestyle decisions and item choices based on what best fits their interests and [5], [6] in light of these developments, wearables with intelligence are becoming more and more popular as a means of personal expression that transcends function and serves as a daily companion. Origen Smart tech provides the person with the autonomy to explore and maintain monitoring vital signs, among many more [7], [8].

A smartwatch is a wearable gadget that combines innovative computer capabilities with conventional wristwatch functions. It typically works together with a smartphone and functions as an addition to a user's digital life [9]. Many functions are accessible on smartwatches, such as heart rate tracking, fitness tracking, call and message alerts, and app access. They enable smooth interaction between people and their gadgets since they are equipped with speech recognition and touchscreens. In some variants, NFC for contactless payments and GPS for navigation are even included. Smartwatches are adaptable companions in the contemporary connected world because they allow users to customize watch faces and designs, and appeal to both tech devotees and fashion-conscious individuals [10], [11]

The first smartwatches appeared in the early 1970s. When it was first released in 1972, the Hamilton Pulsar was among the first digital watches. This is the first instance in history where a computer has been reduced to the size of a wristwatch. Though certain digital watches with calculators and unit converters have been available for decades, tech firms didn't start releasing watches with these types of functions until the 2010s. The characteristics similar to those of a smartphone. Although Apple, Samsung, Sony, and other big names in the consumer electronics sector offer wristwatches, the contemporary wristwatch was first created by a small business. In 2013, Pebble defied the record for the most funding on Kicks tarter when it unveiled its watch and sold more than a million units. Developments in silicon reduction in size opened up the opportunity for new kinds of smartwatches with specific applications at the same time.



Figure 1: Illustrate the gravity and eclipse along with Mars one was launched in May to June 2022.

The first smartwatches emerged in the early 1970s. Since it first went on sale in 1972, Hamilton's Pulsar was among the first digital watches. For the first time in recorded history, a computer has shrunk down to the size of a wristwatch. Though certain digital watches with calculators and unit converters have been available for decades, tech firms didn't start releasing watches with these features until the 2010s. The characteristics are similar to those of a smartphone. Although big companies in the consumer industry like Apple, Samsung, and Sony offer smart watches, today's smartwatch was first developed by a small business. In 2013, Pebble defied the record for the most funding on Kickstarter when it unveiled its watch and shipped more than a million units. New kinds of smartwatches with particular functionalities were made possible at the same time by advances in semiconductor shrinking.



Figure 2: Illustrate the first digital watch was the Hamilton Pulsar P1, introduced in 1970.

2. LITERATURE REVIEW

Adam Pothitos [12] discussed the announcement of the Evolution of smartwatches. Currently, the most well-known Wearables on the market are smartwatches. Yet smartwatches have a long history dating back many decades.

Paul Lamkin [13] discussed the history of smartwatch. Items that made the Apple Watch feasible. Even though the Apple Watch is now the best-selling timepiece ever, the Cupertino Company is relatively new to the wearables market.

Ding [14] discussed the usability of smartwatches to detect atrial fibrillation in the elderly after a stroke. Atrial fibrillation (AF) may be detected using smartwatches, but little is known about how helpful these devices are to older persons who are at risk for AF. methods: we employed a mixed methods study design with data from the ongoing pulse watch study, a randomized clinical trial (nct03761394) evaluating the efficacy of a Samsung/android smartwatch app versus standard care using an ideal solo ecg system patch monitor for the detection of atrial fibrillation (AF) in older stroke survivors. Participants must have had an ischemic stroke, be at least 50 years old, and not be seriously contraindicated from anticoagulation therapy if af is found to be eligible for pulsewatch.

Zenker *et al.* [15] discussed the creation and use of a smartwatch usability framework. The emergence of the laptop class offered new methods for interacting with machines. Particularly in the spotlight these days, smartwatches are thought of as computer gadgets that are worn on many wrists all the time. User-friendliness is an essential component of success, particularly for new technologies. Even though usability is a well-established discipline with a rich history of study, using more modern usability analysis techniques is challenging due to the special qualities of wristwatch apps. As a result, we examine current usability analysis methods, explaining and modifying suitable strategies following the demands imposed by the unique features of smartwatches.

Lee *et al.* [16] discussed that Vibration may be utilized on smartwatches for user authentication. Recent years have seen a significant increase in the usage of smartwatches, and new apps are continually being created to enhance user comfort and health. Furthermore, the most recent

smartwatches are made to function without a coupled smartphone, which means that the wristwatch must independently verify the user. Currently, devices authenticate users by requiring them to input a pattern or personal identification number (PIN), but these approaches are not very secure and require unpleasant user engagement. Especially pertinent to wristwatch technology, unique sensors that can measure biometric information or user interactions are needed for even biometric-based authentication of users. In this paper, we provide a practical technique for authenticating users on smartwatches that removes the need for additional components. *W et al.* [17] discussed measuring 6-minute walk distance in individuals with pulmonary hypertension using smartwatches. The 6-minute walk test (6MWT) is an inexpensive, easy-to-use method of assessing exercise capacity. 6MWT findings in pulmonary hypertension (PH) serve as a main endpoint in clinical studies by indicating the severity of the condition and the likelihood of adverse events. Traditionally, medical practitioners carry out 6MWT. A smartwatch can assist with 6MWT and walking distance measurements. Method(s): This research included asymptomatic volunteers and PH patients who were presenting for normal follow-up exams. Before starting their 50-meter walk on a level, straight route, everyone in the study was instructed to put on a smartwatch.

Rabaa et al. [18] discussed the empirical investigation of the intention to keep wearing smartwatches. The purpose of this research was to look at the factors that influence people's desire to continue using smartwatches, which are among the most widely used wearable technology. To fully capture the distinct context of ongoing wristwatch usage, the research expands the Expectation Confirmation Model (ECM) by adding additional factors (i.e., constructs), including health, cognitive aesthetics, habits, and social effects. Partial least squares structural equation modeling (PLS-SEM) is used to assess the hypotheses using data gathered from 287 actual smartwatch users. The findings indicate that although the social effect is negligible, performance expectations, satisfaction, health, aesthetics, and cognitive habits all strongly affect sustained smartwatch usage. The research model used in this study accounts for 65.7% of the variation in the intention to keep wearing smartwatches.

González-Cañete et al. [19] discussed the feasibility study for a wearable fall detection system that uses smartwatches. Research on innovative wearable remote monitoring systems for the elderly has shown a significant deal of interest due to the usage of smartwatches in automated fall detection systems (FDS). In contrast to other methods for addressing the fall detection issue, smartwatch-based FDS may profit from the network interface, sensors, cheap cost, simplicity of use, and broad acceptance that these devices provide. The wrist is often not the best place to accurately depict the dynamics of the human body during a fall, nevertheless, the scientific literature has shown that since the arm is free to move and because of several activities Everyday activities often include falling. Forceful hand gestures might easily be mistaken for a fall. As mentioned in the literature, multipoint measurements and sensor fusion are required to find a solid and trustworthy technique for mobile FDS.

Siepmann et al. [20] discussed the comprehension of the importance of emotional variables in addition to fitness and health issues. The most widely used wearable technology is the smartwatch, which is increasingly being studied empirically. Understanding the elements that influence long-term use has taken precedence over disclosing the aspects that influence smartwatch adoption in recent years. Current studies on continuous intention to use smartwatches are severely weak, despite their usefulness for reaching health and fitness objectives, tracking health, and improving personal fitness. Similar to putting fitness and health-related matters off. This research closes this gap by examining the effects of fitness and health as well as favorable and unfavorable emotional aspects that motivate or dissuade users of smartwatches from using them consistently. It does this by drawing on the self-determination

theory. Milad Dehghani [21] discussed the examination of the variables that influence actual users' intentions to keep using their smartwatches. Smart wearable technology is becoming more and more prevalent in daily products and is aimed at many industries. One of the most common kinds of wearable technology is the smartwatch. The current research makes an effort to comprehend the variables influencing customers' ongoing desire to utilize smartwatches. Specifically, network research was done and customer reviews of smartwatches on Amazon were examined. Eight important variables influence a person's inclination to keep using a smartwatch. A few of them (assistive technology, health, and supplementary items) were left out of earlier technology adoption models, indicating the need for updates to present models in this area. Area of technology adoption and the plan to stick with wearables.

3. DISCUSSION

Even though we regularly carry our cell phones with us, the study has shown that they are not truly on us. This distinguishes the smartwatch's operation and user experience. Each mode may be synchronized with the user's smartphone, as is the case with most fitness watches and smartwatches. This facilitates the transmission of activities, timetables, updates, and timeframes to supported and synchronized items, such as smartwatches.

3.1 What can a smartwatch do shown below:

3.1.1 Helps you receive your notifications: smartwatches help you keep track of your important activities and events. These notifications differ according to whether or not the smartwatch is synced with your smartphone or not. For a smartwatch that is synced with a smartphone, the smartwatch will mirror the smartphone in terms of notifications it displays. For other smartwatches, they might only show smart watch-only notifications, that is, notifications that only a wearable can provide.

3.1.2 Features many helpful apps: Another thing a smartwatch does is that it comes with many helpful apps. In truth, how good and useful a smartwatch turns out to be, is heavily dependent on the quality of apps it supports. Different app ecosystems revolve around either Apple or Google. A smartwatch with a single designated function, such as a diving or hiking watch, may or may not support additional apps outside those linked to that function. That's to be expected, and it's understandable. General-purpose smartwatches, on the other hand, usually come with important apps depending on their OS.

3.1.3 Helps to Manage Media: Smartwatches that are synced to smartphones, can also help to manage media playback. So, it gets easy to change tracks or reduce or increase volume on the watch while listening to music on the phone with AirPods.

3.1.4 Reply messages by Voice: Since smartphones support voice dictation, it gets easier for the user to respond to texts and emails by voice. This is not only cool, it is also super convenient.

3.1.5 Operate GPS: With most smartwatches, you get GPS which means you can easily track the location as well as receive location-specific alerts.

3.1.6 Great battery life: Most of the latest smartwatches have pretty good battery life and can carry you through the day with regular use. This battery life naturally varies from watch to watch.

3.2 Smartwatch Market Growth:

With the rapid rise in internet connectivity and digitalization, there is an increase in demand for wireless devices. Measuring and monitoring physical activities, sensing the surroundings, actual data collecting, and networking are some of the primary applications that are expected

to meet the major needs of customers in smart wireless devices. The incorporation of AI has aided the advancement and quick development of healthcare. Smartwatches with AI enable smart diagnostics and clinicians to keep track of their patients' health. Furthermore, the market is growing due to increased development in techniques to build smart technologies for greater support in medical and fitness. Steps taken, calories burned, distance traveled, and other fitness activities can be simply monitored and tracked daily. The smartwatch may be simply connected to a device via Bluetooth or wireless networking. This also supports the athlete or client in planning their daily activities. As a result, the growing growth of wireless gadgets is supporting the worldwide smartwatch market's growth.

Smartwatches are considered to be luxury wearable devices. Smartwatch consists of complex circuit configurations due to the integration of various devices including sensors, displays, and others into a small compact device. The device possesses several semiconductor equipment of very small size with a core diameter of 10 micrometers. The control ICs are of a few hundred nanometers, so designers face problems in coupling different components into a single device. The accuracy needed for the design and development along with the raw material, requires a high set of expertise as well as high initial cost. Therefore, the high price of these smart devices majorly hampers the market growth to a certain extent globally.

3.3 Market Outlook for Smartwatches until 2027:

With a predicted value of \$20.64 billion in 2019 and a compound annual growth rate (CAGR) of 19.6% from 2020 to 2027, the worldwide smartwatch industry is expected to reach \$96.31 billion. Smartwatches are designed to do things like connect to the internet, run apps, and more, either independently or in conjunction with a smartphone using smartphone applications, place calls, send text or video messages, verify caller ID, and get stock and weather updates.



Figure 2: Illustrate the Market Outlook for Smartwatches until 2027.

An estimate of the smartwatch market indicates that Apple sold 31 million smartwatches in 2019, which is predicted to be 50% higher than the total number of watches made in Switzerland. Since 2018, the number of Apple smartwatch shipments has climbed by 36%. To

bring lightweight and durability to its forthcoming product and influence the smartwatch market share internationally, the business also plans to employ titanium and ceramic for its next generation smartwatch and watches 6 operating system. Market Outlook for Smartwatches to 2027. The need for wireless fitness and sports devices, the growth in consumer health consciousness, and the technical developments made by market participants in their smartwatches are all anticipated to have some influence on the size of the smartwatch market. However, issues with poor battery life and the high initial cost of the technology prevent the market from growing as much as it might. Furthermore, it is anticipated that the worldwide smartwatch market will develop profitably due to the increased focus that different sectors are placing on connected devices and the rising desire for a connected environment.

3.4 Perceptual Map:

Shows how the 11 brands of smartwatches compare in terms of both cost and quality. According to the perceptual map on the left, the brands Sony, Samsung, and Apple are at the top of the quadrant. This indicates that people believe them to be the most expensive and superior smartwatches available. As a result, they face rather significant competition in the smartwatch industry. Boat and Noise are thought to be reasonably priced and of good quality, Conversely, LG and Motorola are reasonably priced and have higher quality, whereas Oppo, Huawei, MI, Realme, and Huawei are thought to be the most inexpensive but bad quality manufacturers.

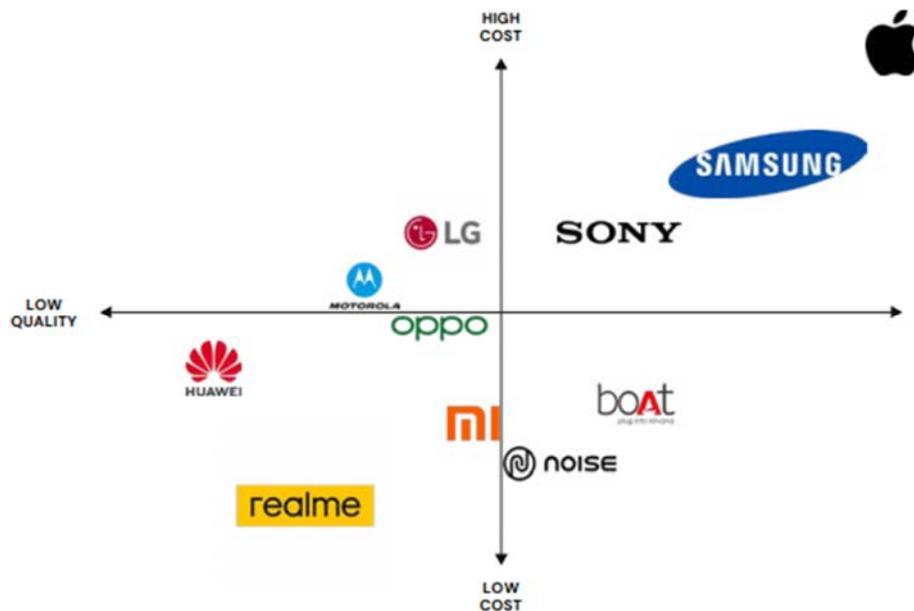


Figure 3: illustrates the position of the 11 brands of smart watches based on price and quality.

3.5 Phase of Design in Smart Watch:

A smart watch's design process prioritizes functionality and user experience. This covers defining the user interface, functionality, and design. Iterative prototyping facilitates improvement and guarantees that technology and style are seamlessly integrated.

3.5.1 ECLIPSE:

The Designed in India for India Eclipse faithfully fulfills the watch's essential function of telling the time to users, while presenting a new and enhanced health measurement function. Eclipse can measure not only ECG (electrocardiogram) and blood oxygen saturation, but also

Female Fitness by understanding the body on a deeper level using the smartwatch to track the cycle, track the ovulation, and get reminders and more with this device, users may maintain a healthy lifestyle on their own. Many underestimate the barometer, but you need to know and understand atmospheric pressure. And for some, it is very important, because it is directly related to health. Just like An even pulse is very important. Now it can be super conveniently tracked always. When you work, when you exercise, and even when you sleep, they are always available on the main screen, in front of your eyes. Track, study, live. Convenient & simple. Need to keep track of your battery percentage cause to function everything has to be charged.



Figure 4: illustrates the analog design of the Eclipse smartwatch.

The Eclipse smartwatch is designed for those who want the best features of a regular smartwatch while having a look that's much more like a regular analog piece of wristwear. The analogy design allows those true-blue analogy timepiece lovers to accept technology without surrendering their favorite timepieces, giving them a smartwatch that just feels clean and sophisticated, and focuses on the good stuff with a convenient analogy on the body that is designed to make it easier to read the time. The reason why it stands out is because it's modern and elegant and it's classy because of its color theme and the font makes it emerge from the design.

4. CONCLUSION

The initiative aimed to provide everyone, especially millennials, access to stylish, long-lasting, and most crucially, "affordable" smart watches, audio goods, and accessories. Additionally, it to market the brand to millennials in the technology sector and draw large customer traffic to its merchandise. The work completed so far indicates a great deal of promise for the design and development of smartwatches based on the specifications. Users may choose a smartwatch based on their preferred look and functional requirements since many models cater to distinct user profiles. The evolution of smartwatches has started, and in the next years, growth and development will be greatly influenced by reaction and adaptability. Since the market for smartwatches is realistic. Many of them display phone alerts, but that can be all they do apart from putting you in close contact with the outside world. These days, smartwatches can keep an eye on everything immediately, including blood pressure and heart rate. Although there are many different kinds of smartwatches available, most of them feature. The same capacities. The acceptability and adoption of smartwatches have not been the subject of much more study.

Because of their small screens and inability to access a lot of data, smartwatches lack the functionality and power of smartphones, so you still need your phone. The market will expand with sound research, solutions to the challenges faced by present users, and the development of new technologies. After that, the fun starts. This will be of enormous use to countless people who require constant care. From children to the elderly. Imagine not having to worry about your child because she wears a watch that will keep an eye on her and alert you if anything goes wrong. Imagine being able to get dressed and go to a seminar with nothing but your watch because that is all you will require. The smart watch's future has only just begun.

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CHAPTER 4

LOOPIFY: REDESIGNED SUSTAINABLE SUCCESS IN E-COMMERCE

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ABSTRACT:

Loopify, a cutting-edge web platform renowned for its seamless integration of loop-based music creation and collaboration, recently underwent a stunning redesign that has redefined user experience. The revamped website boasts a sleek and intuitive interface, carefully crafted to enhance user engagement and streamline the music production process. The main aim is to increase their conversion rate through a complete redesign of their website. The study investigates Loopify's comprehensive redesign, which involved the integration of cutting-edge technologies, personalized user experiences, and a commitment to environmental sustainability. By leveraging data analytics Loopify optimized its platform to enhance user satisfaction, streamline operations, and foster brand loyalty. The incorporation of sustainable practices, such as eco-friendly packaging and carbon-neutral shipping options, not only reduced the platform's ecological footprint but also resonated with environmentally conscious consumers. The implementation of a robust cybersecurity infrastructure to safeguard user data and ensure a secure online shopping environment. Loopify's iterative approach to design and development, grounded in user feedback and market trends, played a pivotal role in its sustained growth and resilience in the competitive e-commerce landscape. The findings of this survey study offer valuable insights for e-commerce businesses seeking to adapt and thrive in a rapidly evolving market. Loopify's success story serves as a blueprint for achieving sustainable success by embracing innovation, prioritizing customer satisfaction, and adopting environmentally responsible practices. As the e-commerce industry continues to evolve, the lessons learned from Loopify's journey provide a roadmap for companies aiming to remain agile, customer-centric, and ecologically conscious in the pursuit of long-term prosperity.

KEYWORDS:

Loopify, Plastic, Shopping, Stakeholders, Website.

1. INTRODUCTION

The founding principle of Loopify was to make the world a cleaner, greener, and happier place for everyone. The platform emphasizes the value of making wise decisions without compromising quality to give users a feeling of success. Loopify is a marketplace that specializes in offering sustainable items that are 100% plastic-free and appropriate for festivals, events, gift-giving, and everyday use. Being the biggest all-plastic shop in India, Loopify is committed to showing that adopting a more environmentally friendly lifestyle is possible without sacrificing elegance and it perfectly captures their dedication. Intending to eradicate plastic waste in India by 2030, Loopify makes sure that all of its stakeholders are informed about its user base and product offerings. Stakeholders are asked to specify Loopify's main goal and the audience it currently targets [1], [2]. They are also asked about possible extensions to their intended market. It is important to comprehend the intended user experience, and stakeholders are asked what feelings they would want users to have when they come and purchase on the platform. The redesign process is guided by this insight, which also aligns it with the expectations of the stakeholders. Stakeholders are invited to list the website's critical functions and non-negotiable design elements to further refine the makeover. It is recommended that stakeholders do a comparative study to differentiate Loopify from other e-commerce platforms. To ensure that the revamped platform successfully expresses its collective vision, stakeholders finally identify the brand traits they intend the website to communicate. This all-encompassing strategy seeks to confirm stakeholder alignment and ensures that their intended brand identity and user experience are captured in the redesign [3], [4].

Ninety percent of Loopify's sales come from corporate orders, and the company serves two main user segments Business to Business (B2B) and Business to Consumer (B2C). The website primarily targets women between the ages of 26 and 40, focusing on tech-savvy millennials who have a strong interest in environmental concerns. The majority of the clientele is from the SSCA socioeconomic level and lives in Tier 1 cities. Loopify's main goal is to make the world a better place by improving it and making it more attractive to environmentally aware consumers who value sustainability and can look beyond their immediate needs [5], [6]. Loopify is dedicated to promoting a plastic-free lifestyle, thus in addition to removing plastic from its packaging, it makes sure all of its goods are plastic-free. The brand's primary goal is complete transparency, which enables customers to follow a product's lifespan from production to use to disposal. Loopify's motto, "100% Joy, 0% Plastic," reflects the company's intention to make people feel good as they buy [7], [8]. With a focus on premium, exclusive, and one-of-a-kind gift hampers, Loopify is a giving expert who emphasizes the need to take even tiny steps toward environmental responsibility. Loopify challenges the notion that sustainable goods sacrifice aesthetics by positioning itself as a premium sustainable brand and being the biggest zero-plastic product platform in India. The visual appearance of the website is very important, with a focus on enhanced user flows and simple navigation from the homepage to the checkout process [9], [10]. Loopify strives for simplicity and clarity in its design, seeing its online presence as a mirror of the globe. However, there are several issues with the existing website design, such as words that consumers can find confusing, redundant material, and inconsistent wording. Possible problems include missing or inconsistent product listings, technical glitches, and unclear statements about Loopify's zero plastic policy. Loopify's objective goes beyond transactional functions to include informing consumers about the company's purpose and environmental effect, fulfilling the need for thorough information on the site. To make Loopify stand out as a transparent and unique brand, these design and communication issues must be resolved [11], [12].

The present research is about Loopify redesigning for sustainable success in e-commerce. The rest of the paper is organized into several sections 1 describes redesign prioritizes clarity by streamlining terminology and addressing inconsistencies, ensuring that users easily comprehend Loopify's sustainability initiatives. Section 2 represented the review of literature in the context. The methodology presented in section 3 aims to enhance user experience and align with the brand's commitment to sustainability and transparency. The result discussion is presented in section 4 to show that Loopify's website redesign aspires to reflect the brand's ethos, making it a standout destination for eco-conscious consumers. The summary of this research is presented in section 5.

2. LITERATURE REVIEW

J. Mueller, S. Asada, and L. Tomarchio [13] research gathered participant ideas for design for the planning site using a map-based e-participation tool. Incorporating user input from the research campaign website and the tool's interface, as well as the designer's proficiency with user interfaces (UI), the website and tool interface were redesigned. The difficulties faced while putting e-participatory urban planning projects into practice are explored, and the discoveries that are offered are based on information from a participatory case study that was carried out in Singapore. General principles for performing engagement studies and creating participatory design tool interfaces suited for non-expert users were developed as a result of this iterative approach. One important finding emphasizes the need to provide non-expert users with succinct information, and that the user interface (UI) should be habit-fitting and focus on getting the user to finish the research.

R. I. Rokhmawati *et al.* [14] research aims to improve the user interface and experience in line with the company's current website redesign phase, which is being carried out using the SCRUM methodology. The study uses the UX (user experience) technique specifically, Perspective-based Inspection to keep in sync with the company's procedures. This method fits in well with the SCRUM workflow. The selected design approach entails using color adjustments to increase brand recognition from the viewpoint of the consumer. Furthermore, UX Honeycomb characteristics are used to classify consumer information. After that, system needs are investigated using the Small Up Front Analysis (SUFA), which results in the development of a conceptual design that takes the ecological, interaction, and emotional viewpoints into account. The Department of Health and Human Services (HHS) criteria are then included in the high-fidelity prototype along with the development of a user narrative. The firm publishes the modified findings online when these steps are finished. In the end, this research greatly improves the user experience by emphasizing the qualities of find ability, utility, and usability.

A. C. Chang *et al.* [15] research utilizes the use of online customer evaluations as a corpus for business information, which helps businesses rethink their goods so they better suit customer needs and differentiate them from competitors. Once certain websites with reviews have been located, review text is collected using a web crawler. Many e-commerce platforms include social networks and customer feedback features that make it possible to build large datasets and analyze how customers feel about making purchases online. Products within a specific domain are compared using a methodical methodology that incorporates perceptual mapping, cluster analysis, and computer-supported text mining. By providing light on both favorable and unfavorable consumer impressions of post-purchase experiences, the research benefits phone makers. The functions, features, and pricing positions of customer-preferred items provide valuable strategic knowledge that directs product development and helps differentiate products in the market.

M. H. Nguyen *et al.* [16] research describe how patients and industry stakeholders participated in a co-design approach to systematically redesign an already-existing hospital website. Improving usability for elderly colorectal cancer (CRC) patients was the main objective. The makeover was implemented in three stages, starting with a thorough assessment of the design and information that was already there. Based on these observations, a website prototype was created and then evaluated before any final tweaks were made. The research team used a combination of qualitative and quantitative empirical investigations, expert information from pertinent stakeholders, and existing literature to gather insights for the redesign process. The website was redeveloped using the information received and debated in interdisciplinary consensus sessions. The prototype website's usability for older CRC patients was disclosed by the phase 3 qualitative assessment, despite the original website's low rating. The research finishes with a useful road map for cooperatively rethinking and improving current e-health technologies to make them appropriate and functional in healthcare settings.

M. Benaida *et al.* [17] purpose of research is to examine significant usability problems on Saudi university websites and compare them with websites from British universities from the viewpoint of Saudi students. The main purpose is to allow students to navigate Saudi Arabian university websites without difficulty and accomplish their objectives quickly and easily. Utilizing two evaluation techniques user testing and thinking aloud proved to be quite successful in gathering information from participants. Based on university rankings, sixty students were equally divided into three groups and asked to assess two sets of university websites: one from Saudi Arabia and the other from the UK. To find usability issues, the System Usability Scaling (SUS) questionnaire was used in the evaluation. Concurrently, the thinking-aloud technique was used to get participant comments. Significant usability difficulties were

found at Saudi universities at all levels, with recurrent concerns including consistency, integration, confidence, and satisfaction. Less common problems were website usability, design principles, and student comfort. According to the research, Saudi institutions may improve and rework their websites by using the insights gained from the disparate quality in the two locations.

I. Puspitasari and D. I. Cahyani [18] goal of that project is to improve user experience and information dissemination reliability on the official Surabaya Health Department (SHD) website. SHD is in charge of implementing health-related policies and providing public health services as a state organization in Surabaya, Indonesia. Even though these activities are carried out via an official website, the existing website was mostly built with the department's perspective and internal consensus, with insufficient involvement from users and stakeholders. The objectives of the website were unsuccessful because this subjective approach failed to meet the essentials. Following the user-centered design (UCD) approach, the development process produces a prototype of the revised SHD website, user requirements, and a user task analysis. Heuristic assessments of the updated and original web pages show a significant increase in user experience. In the rebuilt SHD website, the UCD method makes it easier to identify users and their needs more thoroughly. This includes taking special needs like color blindness and dyslexia into account. The above study shows the HHS criteria are then included in the high-fidelity prototype along with the development of a user narrative. The firm publishes the modified findings online when these steps are finished. In this research, the development of redesign Loopify website and questionnaires survey based on the user age.

3. METHODOLOGY

3.1. *Sample size:*

One-on-one interviews were used as the main research technique for this study; sessions lasted between forty and fifty minutes. A range of questions covering a wide range of subjects were posed to the participants, including their inclinations for shopping, how they compare online and offline shopping, how they usually gift things, the procedures they use for gifting, their opinions of e-commerce sites, benchmark websites, and e-commerce platforms, and their familiarity with Loopify, including their experiences making purchases on the platform. After the section on the questionnaire, users tested the functionality of the Loopify website as it now stands. During the testing, they were given instructions to follow various user flows, which included activities like making a specific product purchase, browsing the homepage, and actively looking for particular sites on the website.

3.2. *Research design:*

The goal of this study is to investigate the user journey in detail as it relates to buying a product from Loopify. Our team will also take a close look at secondary user journeys, which include looking around the site, getting in touch with Loopify, looking at gifting possibilities, and finding Loopify via other channels. The goal is to learn more about Loopify's advantages as well as disadvantages. The goal of the user research is to identify hidden pain points and positive elements that consumers may not express overtly by using observational methods. The survey also seeks to understand why people choose Loopify as their online retailer. In light of Loopify's notable status as the biggest plastic-free retailer in India, this study specifically explores how sustainability affects customer choices while using Loopify.

3.3. *Instrument:*

The target audience for Loopify is mostly composed of persons between the ages of 26 and 40 who have a strong commitment to environmental conscience and discretionary cash. By reaching out to a wider audience, Loopify hopes to draw in users from the 18 to 25 and 41 to

60 age groups. Though they often lack spare means, the younger generation (18 to 25) is motivated to help the environment and is ecologically concerned. Conversely, the elderly population (aged 41 to 60) has discretionary income and a similar concern for the environment, indicating a readiness to spend more money on the environment even in the face of financial constraints.

What are the user's initial impressions of the proposed Loopify website redesign?

How would the user rate the overall visual appeal of the new design?

Do users find the navigation on the redesigned website intuitive?

Were users able to easily locate the information they were looking for?

How likely are users to recommend the Loopify website to others based on the proposed redesign?

How many users are not aware of Loopify?

How many users about Loopify have?

At what age of frequent Loopify Users?

How many users shopped once and never shopped again from Loopify?

3.4. Data Collection:

In all, 16 individuals participated in the user research and interviews. They were questioned about their preferences in each mode and provided insights into their offline and online buying patterns throughout the sessions. In addition, the participants shared their thoughts on sustainability, including their present environmental initiatives and their desire to take more action. The difficulties of embracing a sustainable lifestyle were also addressed. After these talks, attendees used their favorite desktop or mobile e-commerce platform to visit Loopify. They perused the webpage and offered comments on every area. They then discussed their thoughts on product pages, product cards, and listings. The participants were tasked with purchasing after becoming acquainted with the website. While some were ordered to purchase a certain item, others were allowed to choose whatever goods they wanted. The purpose of this exercise was to find any obstacles or problems that users could run across while using the website's present user flows. Table 1 depicts the table between the target audiences aware or not of Loopify with user age.

Table 1: Illustrates the table between target audience for aware or not about the Loopify with user age.

S.NO.	Question	Age		
		18-25	26-40	41-60
1	Not aware of Loopify	3	2	4
2	Aware about Loopify	1	1	0
3	Frequent Loopify user	0	1	1
4	Shopped once and never shopped again from Loopify	0	2	0

The interviews conducted for user research yielded insightful information on how users behave and think while using an e-commerce platform. Every user activity was carefully reviewed and added to the user insights that were obtained. Examining these trends led to a better grasp of user flows and a deeper understanding of user behavior. Consequently, this provided a more lucid comprehension of Loopify consumers' inclinations and pinpointed the elements that encourage users to choose Loopify for their purchasing requirements. Table 2 depicts the Loopify redesign of our website to enhance user experience in the way of positive, negative, and neutral.

Table 2: Illustrates the Loopify redesign of our website to enhance user experience in the way of positive, negative, and neutral.

S.NO.	Question on Loopify is considering a redesign of our website to enhance user experience	Positive (percentage)	Negative (percentage)	Neutral (percentage)
1	What are the user's initial impressions of the proposed Loopify website redesign?	30	40	30
2	How would the user rate the overall visual appeal of the new design?	20	70	10
3	Do users find the navigation on the redesigned website intuitive?	23	66	11
4	Were users able to easily locate the information they were looking for?	28	49	13
5	How likely are users to recommend the Loopify website to others based on the proposed redesign?	27	52	21

3.5. Data analysis:

Though Loopify is India's biggest zero-plastic e-commerce platform, just 9 out of 16 people knew about it. The majority of users were unaware of Loopify; just one person found out about it via social media, while the rest found out via word-of-mouth. Loopify's conversion rates for other sorts of transactions are noticeably low, despite its popularity for business-to-business and corporate orders. On the other hand, Nykaa and Amazon are now the two most widely used e-commerce platforms among consumers. Customers like Amazon because of its low prices, ease of use, quick shipping, and extra features like Amazon Prime. The platform's extensive product selection for both everyday usage and special occasions adds to its popularity. On the

other hand, Nykaa is well-liked for its wide selection of goods, which includes anything from clothes to beauty brushes, and meets a variety of fashion demands. Users were almost equally divided in their preferences between online and physical purchasing. Users provided a balanced assessment of their buying experiences by expressing both good and negative elements of each method of purchase. Figure 1 depicts the pie chart on heard or not Loopify is for shopping

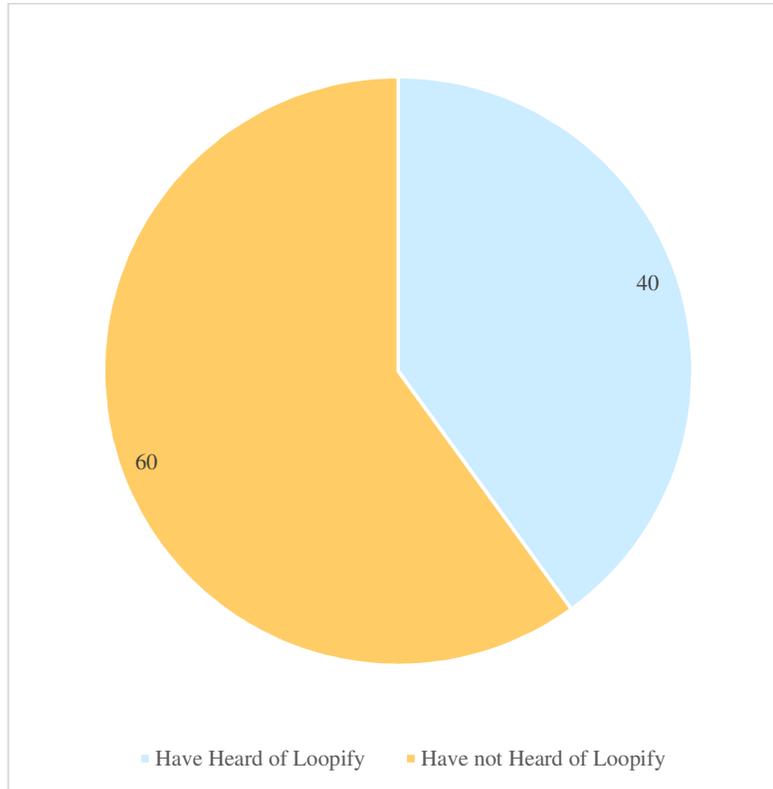


Figure 1: Illustrates the pie chart on heard or not Loopify is for shopping

4. RESULTS AND DISCUSSION

One of the challenges that people have while buying online is the inability to physically verify the product's quality before making a purchase. Online shopping, however, provides customers with unmatched convenience by enabling them to purchase whenever and wherever they choose, even from the comfort of their own homes. More goods are available and in a wider selection on the web platform. Because mobile shopping is so accessible and convenient, a lot of consumers prefer it. The difficulty to precisely gauge product sizes and the uncertainty of obtaining the precise goods requested are disadvantages, however. In contrast to the simplicity of discovering everything on one website, offline shopping is seen to be time-consuming because it requires customers to go to shops and often visit many places in search of the ideal product. For those who live close to a mall, going to the actual shop is the better choice. Before making a purchase, consumers may physically handle, smell, and feel things when they browse offline. Loopify is still relatively unknown to the general public. When asked about how to find new products, people often go to social media sites, especially Facebook and Instagram. Word-of-mouth marketing is still the most reliable way to find new businesses since it allows consumers to learn about the quality of the product via recommendations from people they know. When buying products from unknown companies, consumers usually depend on suggestions and evaluations from friends and acquaintances. Figure 2 depicts the user online, offline, and both shopping.

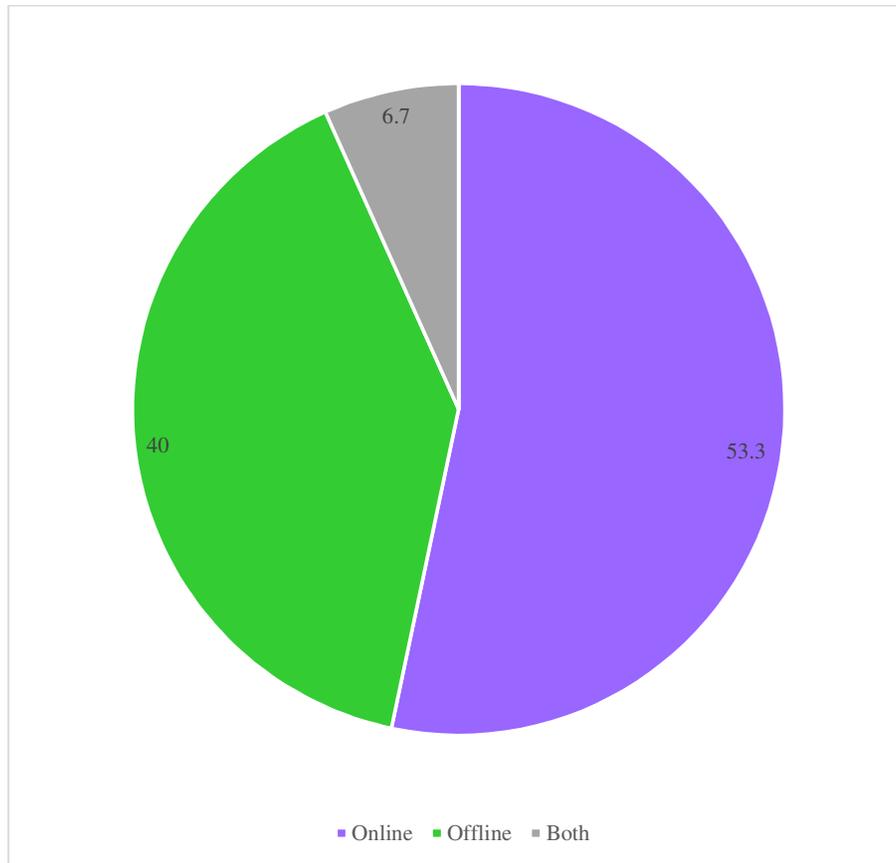


Figure 2: Illustrates the user online, offline, and both shopping.

When it comes to buying presents, Amazon is the most popular choice among customers because of its wide range of product categories and quick delivery. Users may choose companies like The Body Shop and Miniso in addition to Amazon. Small, inexpensive presents with inherent value, such as skincare products, cosmetics, and fragrances, are often preferred by users. Ferns and Petals is a well-liked site for flower presents. Users are using Instagram more and more to show support for small companies because they value the handcrafted and distinctive qualities of the items, which make them suitable for a variety of situations. Gift-giving occurs most often on birthdays and anniversaries. Users also give gifts to others based on accomplishments or personal ties. Every respondent to the study was aware of the meaning of "sustainability" and its effects on the environment. Although some people thought sustainability was expensive, many made simple, inexpensive lifestyle adjustments to reduce their influence on the environment. Reducing non-essential purchases, according to some users, helps with environmental initiatives. Bamboo toothbrushes were a common sustainable practice among users, however not all of them persisted in using them. Users showed a dedication to product reuse, especially concerning emergency water bottles and single-use plastic goods from takeout. There was a broad conscious attempt to stay away from single-use plastics like bottles and bags. Simple changes were made by users, such as switching from plastic to steel and copper tiffin's and bottles. They actively looked for goods that didn't come in plastic packaging and showed interest in environmentally friendly transportation; some of them even indicated interest in buying electric vehicles. Many sustainable firms were well-known to the users, such as Amazon, Brown Living, and Ada by Leesha, Loopify, Adrish, Better India, and small businesses on Instagram. Figure 3 depicts the graph between common occasions and the number of users shopping through the Amazon app.

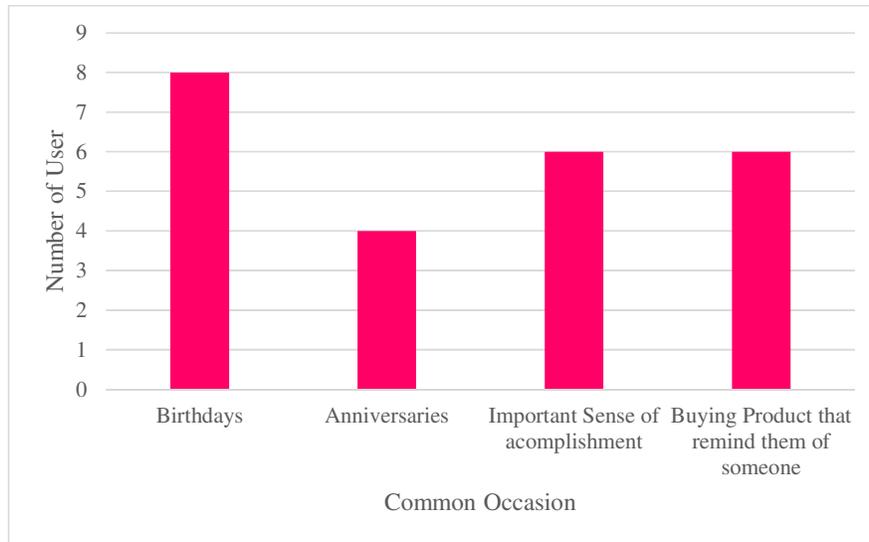


Figure 3: Illustrates the graph between common occasions and the number of users for shopping through the Amazon app.

5. CONCLUSION

It is admirable that Loopify's guiding idea is to encourage a plastic-free lifestyle that will lead to a cleaner, greener, and happier planet. The platform's tagline, "100% Joy, 0% Plastic," emphasizes its dedication to transparency and establishes it as a frontrunner in the sustainable e-commerce industry. The study delineated Loopify's principal objective of eliminating plastic waste in India by 2030 and pinpointed its main target audiences as B2B and B2C, with a particular emphasis on eco-aware women between the ages of 26 and 40. The bulk of Loopify's customers are from Tier 1 cities and the SSCA socioeconomic group, highlighting the platform's attraction to a technologically literate group with a keen interest in environmental issues. The suggested redesign plan seeks to solve current problems with the platform's communication and design by using a user-centered approach and input from stakeholders. Providing a clearer and intuitive experience entails improving user flows, eliminating inconsistencies, and simplifying language. The focus on clarity and simplicity is consistent with Loopify's mission to be a mirror of a cleaner world. Insights into user attitudes and actions are provided in the findings and discussion area. Although Loopify is the biggest e-commerce site in India that does not utilize plastic, very few prospective consumers are aware of it. Along with the significance of sustainability in shaping customer decisions, the difficulties associated with internet buying were emphasized, including the inability to personally examine items. The redesigned Loopify platform is an important step in building a platform that not only distributes items but also sends a strong message of sustainability, transparency, and positive change. Loopify wants to have a significant effect on environmental conservation.

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CHAPTER 5

INCLUSIVE EDUCATION FOR CHILDREN WITH LEARNING DISABILITIES IN INDIA

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ABSTRACT:

Inclusive Education strives to provide equal opportunities for all children, encompassing those with special needs and those without, fostering integrated development through mainstream schooling. Despite India's legislative framework supporting inclusive education since the mid-1950s, implementation challenges persist. Learning disabilities (LDs), including dyslexia, dysgraphia, and dyscalculia, impact a person's ability to acquire knowledge. Early detection and personalized interventions, such as tailored teaching methods and assistive technologies, are crucial for managing LDs. The support of parents, educators, and medical experts is essential, emphasizing diverse teaching approaches and cultivating a positive learning atmosphere. As neurodiversity awareness grows, initiatives promoting inclusive learning and employment settings advance. The umbrella term "learning disabilities" covers dyslexia, dysgraphia, dyscalculia, and more, affecting language, reading, writing, and math skills. LD prevalence among school-aged children is 10-15%, necessitating early intervention for enhanced skills. The current scenario of LD in India faces challenges, including linguistic diversity, lack of awareness, insufficient special educators, and non-standardized assessment methods. Interventions involve special education, counseling, assistive technologies, and classroom adjustments. While there is progress in assistive tools for driving and diagnostic technologies, the development of assistive technologies for remedial education of LD children remains limited in recent years.

KEYWORDS:

Education, Learning Disabilities, Dyslexia, Dysgraphia.

1. INTRODUCTION

Inclusive Education is an approach to teaching that includes everyone, catering to all groups of children under the same roof and providing them with the same opportunities. Inclusive Education aims at integrated development of children with special needs and normal children through mainstream schooling. In India we have laws to provide equal education opportunities to all and the concept of inclusive education has been in India since the mid-1950s. However, schools in India have not been successful in implementing it into our educational system. Regular schools in India do not have the facility to cater to the various [1], [2]. A group of illnesses known as learning impairments impact a person's capacity to properly gather, process, comprehend, and share knowledge. Despite average to above-average intellect and sufficient learning opportunities, these disorders may affect a variety of cognitive functions linked to learning, including reading, writing, arithmetic, and problem-solving. Dyslexia is a widespread learning disorder that impacts language processing and reading. People who have dyslexia may have trouble spelling, word recognition, and decoding. Another learning impairment that impairs writing abilities is dysgraphia, which results in problems with spelling, handwriting, and putting ideas down on paper. Dyscalculia is a math-related learning impairment characterized by difficulties with computation and conceptual thinking [3], [4].

Affected executive functioning, memory, and attention may be caused by additional learning difficulties. Learning problems are often linked to Attention Deficit Hyperactivity disease (ADHD), a neurodevelopmental disease. It entails difficulties with hyperactivity, impulse control, and sustained concentration. Learning difficulties connected to memory may affect one's capacity to effectively store, retrieve, and arrange [5], [6]. Learning difficulties are not a reflection of inadequacy in intellect or effort; rather, they are neurological in origin. Although

learning difficulties can have a lifetime effect, with the right support and treatments, people may acquire coping mechanisms to get over obstacles and achieve in school and other areas of life. If learning difficulties are to be properly managed, early detection and management are essential. Evaluation by psychologists, educational specialists, or other experts may assist in identifying particular learning challenges and serve as a roadmap for the creation of customized therapies. Personalized teaching, adapted curricula, the use of assistive technology, and accommodations like extended test times or altered homework are examples of common tactics [7], [8].

The support of parents, educators, and medical experts is crucial for those with learning difficulties. Essential techniques include using various teaching methods, offering clear directions, and fostering an inclusive and supportive learning atmosphere. Furthermore, encouraging a positive outlook and highlighting strengths may help people with learning difficulties feel more confident and good about themselves. It's critical to recognize the variety of learning difficulties and the potential for particular struggles. As our knowledge of neurodiversity expands, initiatives to support inclusive learning settings and employment contexts also advance, enabling people with learning difficulties to thrive while making significant contributions to [9], [10]. Learning disabilities is an umbrella term which covers children with dyslexia, dysgraphia, dyscalculia or dyspraxia. It refers to an inability to understand or use language in spoken or written manner. Children with this disability often struggle with reading, writing, spelling, mathematical problems and/or graphs. This disability is often mistaken to be caused due to a lack of IQ. Children with learning disabilities only have trouble expressing themselves and usually have normal or above normal IQs. About 10 -15% of school aged children have learning disabilities.

1.1 Types of Learning disabilities:

There are a variety of learning disabilities, including dyslexia (difficulties with reading), dysgraphia (difficulties with writing), dyscalculia (difficulties with arithmetic) and ADHD (difficulties with attention and impulse management). For people to succeed academically and in life, these neurological disorders may impact how they receive, process, and communicate information. Consequently, they may call for specialized therapies and assistance.

1.1.1 Dyslexia – This is a condition that affects the child's understanding of words and letters. They struggle with phonetics, speaking, reading and writing. It accounts for almost 85% of all students with suffer this learning disability.

1.1.2 Dysgraphia - Children with dysgraphia have problems with perception of space and time. They often replace capital letters for smaller letters. They also lack fine motor skills.

1.1.3 Dyscalculia - It is characterised by difficulty in solving maths problems. Children with this disability struggle with coping numbers, problem solving, organising pages and understanding basic mathematical operations.



Figure 1: Illustrate the types of Learning disabilities.

Learning problems cannot be cured, a child's skills may be greatly enhanced by early discovery. Psychologists adhere to different evaluation protocols, including educators with specific needs. They may be roughly divided into two groups: evaluations with a fast procedure and those with a protracted process. Short process assessments, sometimes known as psycho-educational tests, are brief assignment papers designed to gauge a child's performance relative to the general population in a variety of domains, such as reading, writing, and problem-solving.

Parental permission, teacher, student, and parent interviews, examination of student workbooks, and psycho-educational testing are all part of the lengthy process evaluations. These examinations are carried out in India by a few government facilities as well as a few renowned NGOs and organizations. There are very few or no testing centers across the nation, and there are only two such government institutions in Mumbai KEM Hospital in Kurla and Sion Public Hospital. Most diagnostic tests are only available in English. Standardized dyslexia tests are available in three Indian regional languages (Hindi, Kannada, and Marathi) and are being expanded to Tamil, Bengali, and Telugu by an institution named DALI. The exact cause of learning disabilities are still unknown, doctors think that it may be due to genetic or physical brain injuries during the pregnancy period. Although there is no cure for the specific learning disabilities, the difficulties caused by them in the areas of reading, writing, spelling, etc., can be managed through early interventive methods.

2. LITERATURE REVIEW

Christine [11] discussed the learning Difficulties Learning disabilities are neurologically based impedances in learning and/or handling that particularly interfere with higher-level cognitive aptitudes. Learning incapacities can altogether affect scholarly advance and accomplishment at any or all ages. Learning incapacity may be a common category composed of numerous sorts of incapacities in seven zones. These ranges incorporate: open dialect, expressive dialect, fundamental perusing aptitudes, perusing comprehension, composed expression, science calculation and scientific thinking. The terms “specific perusing disability” and “specific dialect impairment” have been utilized to recognize impedances within the specific areas of perusing and talked dialect, separately. Handling speed could be a cognitive capacity characterized as the time it takes to do a mental assignment. Shortages in preparing speed have been related with dialect and learning clutters.

Caton *et al.* [12] discussed the youth with learning difficulties, internet safety and online radicalization. Many individuals who have learning difficulties find enjoyment in accessing social networks on their mobile phones and the Internet on a daily basis. It's critical to practice internet safety. In order to teach what kids, teens, parents, and educators believe about internet safety, extremism, and online extremism, this study employs focus groups and interviews. Extremism is the result of having dangerously strong opinions about religion or the law. Radicalization is the act of endorsing radicalism in risky ways. Online harassment may be used to persuade people to embrace extremism. Although parents are worried about the threats, young people claim to know a lot about internet safety.

Zulkifli *et al.* [13] discussed the Challenges and essentials for children with learning disabilities in teaching and learning the Quran. The same time and chances to study the Quran as other groups are available to those with disabilities since they have equal access to education. Teaching the Quran to children with unique learning needs has a number of challenges, however, particularly with relation to the degree of preparation, competency, and understanding of Islamic education among instructors. The Quran is taught by special education instructors using educational resources. Thus, the purpose of this research is to determine the obstacles, the need of creating a model for learning and teaching the Quran, the components of such a

model, and the learning model that should be created for kids with learning difficulties. A case study strategy was used in conjunction with qualitative methodologies.

Cox *et al.* [14] discussed the encourage the provision of quality prenatal care to parents who have cognitive impairments. The experience of motherhood for parents with learning impairments is often subpar and devoid of Reasonable adaptations in care, despite standards designed to improve both general maternity care and the care of parents with cognitive disabilities. The purpose of this project is to provide tools to assist staff in providing quality maternity care for parents who have learning challenges, working with important stakeholders. A mixed-methods, two phase research. Those in attendance to gather opinions on best practices and provide data to Development Resources, 16 important stakeholders parents of children with learning impairments and their unofficial supporters and caregivers were surveyed. These stakeholders included health and social care experts.

Ramsey *et al.* [15] discussed the qualitative meta-analysis of the experiences of English-language health and social care services for individuals with learning disabilities, their families, and caregivers revealed systemic disparities in wellbeing for individuals with learning disabilities. Failures in the treatment of individuals with learning impairments have been brought up time and time again, and they continue to be a global issue as seen by differences in early death brought on by subpar and dangerous care. This has to be addressed immediately. The purpose of the research was to investigate any possible patient safety concerns brought up by individuals with learning impairments, their caregivers, and their families, as well as to comprehend the care experiences of these individuals. Techniques: Using an integrative and exploratory method, reflective thematic analysis was used to integrate data from two sources that explored lived experiences of caring for individuals with learning difficulties. This includes 377 experiences that were made public via the Care Opinion feedback portal, as well as two focus groups with a total of 13 individuals with learning difficulties and support personnel.

Saied Bishara [16] discussed the Students with learning impairments' humor, enthusiasm, and math proficiency. The relationship between humor, motivation, and arithmetic ability in kids with learning difficulties was investigated in this research. Three instruments were used in this study's 80 sixth-grade learning-disabled students enrolled in integrated classes in a general education school: a motivation questionnaire, an achievement test in mathematics, and a questionnaire about using humor in math instruction. According to this research, adding humor into math instruction increased the arithmetic proficiency and motivation of kids with learning impairments.

Rachmawati *et al.* [17] discussed the analysis of blended learning strategies used in inclusive primary schools for kids with learning difficulties. Special education students include a large number of students attending public schools, as do children with special needs. Due to the improved circumstances after the COVID-19 epidemic, education is now moving from online to in-person learning. One of the other techniques used throughout the shift is blended learning. Thus, the purpose of this research was to use qualitative description to investigate teachers' experiences in adopting blended learning for students with disabilities in Indonesia. Interviews with a principal, two students with learning difficulties and their parents, and a teacher were used to gather data.

Güven *et al.* [18] discussed the Students with learning impairments and their mathematical language in relation to length. Language is necessary for mathematics. Studying the mathematical language is a component of studying math. Disorders pertaining to hearing, thinking, speaking, writing, and reading that are seen during the process of comprehending or

using spoken or written language are referred to as learning impairments. The current research sought to shed light on how pupils who had learning difficulties understood and used mathematical language in relation to the idea of length. This investigation was carried out as a case study.

Children with learning difficulties in the fourth and fifth grades served as the study participants. Balıkcı *et al.* [19] discussed the early indicators in young children of certain learning impairments. Preschoolers cannot have particular learning problems diagnosed since a full evaluation of their academic capabilities cannot be completed throughout childhood. Children must be of school age to have their academic capabilities assessed, and kindergarten is not the appropriate age to start treatments. Preschool is when some learning problems in children may also be seen, however. In order to identify children who may be at risk for certain learning difficulties and to intervene early, preschool instructors must identify the youngsters. To distinguish between children who are usually developing and those who are at risk for certain learning difficulties, preschool instructors must be knowledgeable about the early indicators of these problems. Simon *et al.* [20] discussed the history of the British Journal of Learning Disabilities.

The British Journal of Learning Disabilities, formerly known as Apex, the Journal of the Institute of Subnormal Psychiatry, was established in 1973. This article looks back at its 50-year history. Language and terminology changes are monitored, and assessments are contextualized within the broader framework of political and social growth. The evaluation trip is divided into three broad phases: the hospital phase, the community care transition, and the post-detoxification phase. Throughout its early years, the journal did not always oppose the establishment, and each of its phases was introduced gradually rather than immediately.

3. DISCUSSION

Children who suffer with physical, cognitive, or developmental issues have specific learning demands. To guarantee their maximum development and involvement, these requirements could include specialized instructional strategies, support services, and accommodations. It takes a caring and customized approach to support their success in several areas of life and to promote their well-being.



Figure 2: illustrate the special need issue in children.

3.1 Children with Special Needs:

Children with special needs into regular schools has proven to improve learning for all children. They bring in diversity, new strengths, promote acceptance and giving. A more challenging and open environment helps children with special needs learn faster, grow in confidence and helps them build stronger neural connections. Today India is the home to over 2.6 million children with special needs.

However, only 61 percent of people with disabilities are literate, and fewer still would have had the opportunity to study in a truly inclusive school.

According to the Indian government, children with special needs are classify under 13 categories is show below:

3.1.1. Learning disabilities: This refers to a condition that affects a child's ability to read, write, speak, listen and/or reason.

3.1.2. Autism spectrum disorder: It is a brain development disorder that impacts a child's cognitive, social, physical and emotional health.

3.1.3. Emotional disturbance: Children facing behavioural issues that affect their education fall under this category. It covers a vast variety of behavioural issues or mental illness including bipolar, schizophrenia, OCD, etc.

3.1.4. Language or speech impairment: Children that have trouble pronouncing words and/or understanding words.

3.1.5. Visual Impairment, including blindness: Children with partical or complete blindness fall under this category.

3.1.6. Hearing impairment - Includes children that are hard of hearing but not deaf children. They have slight hearing loss in one or both of their ears but it changes over time.

3.1.7. Orthopaedic impairment - This includes children that lack functionality or ability in their limbs.

3.1.8. Intellectual Disability: A child that has certain limitations with cognitive functioning (such as learning, problem solving and judgement) and adaptive functioning (activities of daily life such as communicating and independent living).

3.1.9. Other health impairments: Children that face issues related to attention, strength or energy levels which are not a result of any of the above mentioned categories are covered here. For example children with ADHD.

3.1.10. Deafness: Children that cannot hear most or all sounds fall under this category.

3.1.11. Deaf-blindness: Children that suffer from both partical or complete blindness and deafness are given a separate section here because they need much more care and help.

3.1.12. Traumatic brain Injury: Children that have suffered from traumatic brain injuries that have impaired their physical or mental abilities.

3.1.13. Multiple Disabilities: Children who have one or more than one of the above mentioned disabilities fall under this umbrella.

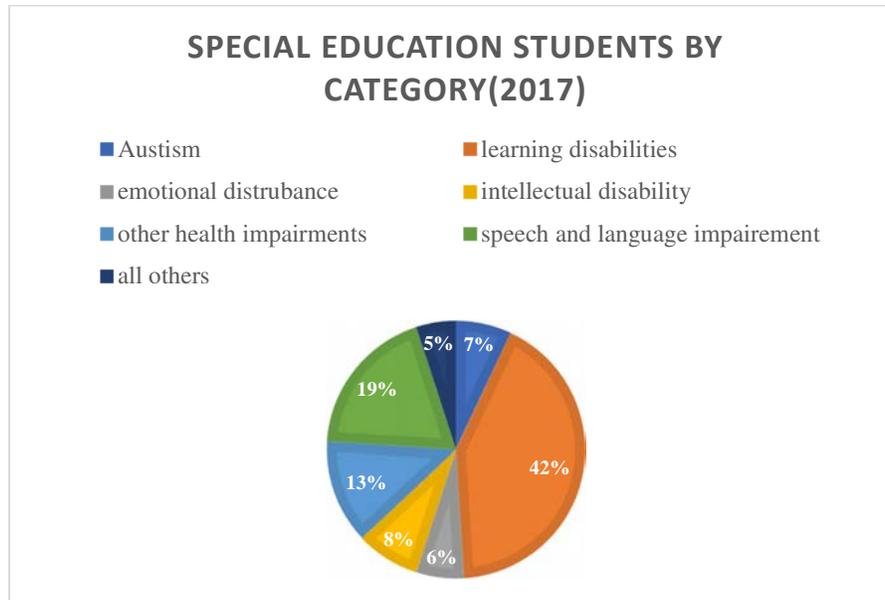


Figure 3: illustrate the categories a majority, i.e. 33% of children with disabilities are those with learning disabilities.

3.2 Current situation of LD in India:

No other disabling condition affects so many people and yet has such a low public profile and low level of understanding as LD. India is at least 50yrs behind the western system of education when it comes to awareness, identification and care for those with learning disabilities. India faces many challenges in regards to LD students.

3.2.1 Problems with Language:

India is a diverse country, the citizens speak many languages. For most Indians English is a 2nd or 3rd language. Therefore it is harder to differentiate children with LD to those who are simply new to the language. Psycho-educational tests used to assess children with LD are mostly only available in English and a few other languages including Hindi, Marathi and Kannada. Furthermore, unlike Hindi where we write as we speak, English is more complex, having arbitrary words that need to be remembered.

3.2.2 Lack of awareness:

According to a study conducted in Haridwar, 67% of teachers had no knowledge of learning disabilities. The educated upper middle class is comparatively, more aware of this disability. Therefore Private schools that charge hefty fees are better equipped to manage children with LD. They have both counsellors as well as a team of special educators. Whereas Public schools that cater to the lower socio-economic classes lack both awareness and the required facilities. Children with LD are seen as stupid and mentally retarded. The social stigma surrounding the disorder prevents detection, testing and also negatively affects the awareness among people

3.2.3 Shortage of special educators:

CBSE schools have made it mandatory for affiliated schools to appoint a special educator to facilitate the education of children with disabilities. However, there is no such law making it mandatory for other school boards to follow the same. According to a recent report in Delhi,

out of 927 available posts for special educators 432 are still vacant. Infact, children with LD are often bullied by fellow students, and sometimes even teachers who do not have enough knowledge about LD.

3.2.4 Grading and assessment:

There is a lack of standardisation of assessment patterns. Assessment of LD children is conducted using a variety of methods. Many boards like CBSE have made concessions available for children with LD, however they do not specify the type of assessment or certificates required, which also vary from one board to another

3.3 Interventions in learning disability:

The exact cause of learning disabilities are still unknown, doctors think that it may be due to genetic or physical brain injuries during the pregnancy period. Although there is no cure for the specific learning disabilities, the difficulties caused by them in the areas of reading, writing, spelling, etc., can be managed through early interventive methods.

There are a few interventive methods that can help children with learning disabilities better cope with the schooling environments.

3.3.1 Special Education: Special educators are professional teachers that are trained to deal with students with varied disabilities. Each special educator specialises in a certain area of education. There are 3 types of special educators.

- ✓ *Remedial educators:* This assessment style focuses on helping identify and resolving the learning gaps in reading, writing, spelling and mathematics.
- ✓ *Occupational therapists:* This therapy helps to deal with a child's cognitive, perceptual and sensory deficits that affect daily functions.
- ✓ *Speech therapists:* This helps identify and manage visual, auditory and speech deficits.



Figure 4: illustrate the Interventions in learning disability.

2. Counselling: Children with learning disabilities often face emotional issues. They may also have trouble understanding and dealing with their disability. This is more often seen in children who are identified later in their life and hence often need some help dealing with their emotions.

3.4 Special equipment: Special equipment like audiobooks, calculators and spell checks can often go a long way to help and assist children with learning disabilities.

3.5 *Classroom adjustments and assistance*: Special seats, quiet environments, modify tests, note takers, readers and proofreading are some of the methods that can be adopted into a classroom to make it easier for children with learning disabilities to participate and learn in a collaborative classroom environment.

4. CONCLUSION

A neurological disorder that impairs a person's capacity to properly gather, process, or apply knowledge is known as a learning impairment. It may have an adverse effect on reading, writing, and arithmetic abilities, which might impair academic achievement. Specialized teaching strategies and assistance may help people with learning difficulties overcome obstacles and realize their full potential. Assistive technology in the field of driving have been areas that are already worked upon. Diagnostic tools for LD using AI and IOT devices is also a field where many patients have been fi led using a variety of different methods. There are a few patients for assistive tools for education of SLD children. However, it was found that there is almost little to no development in the area using assistive technology for remedial help in the last 10 yrs.

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CHAPTER 6

AN ANALYSIS OF THE HOTEL INDUSTRY AND EXPENDITURE

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ABSTRACT:

The hotel industry plays a pivotal role in the global reduced, serving as a foundation for tourism, business travel, and hospitality. As a dynamic sector, it encompasses a diverse range of establishments, from budget accommodations to luxury resorts, each catering to unique needs and preferences. The industry's growth is intricately tied to the overall economic health and stability of regions, making it a reliable barometer of economic trends. The demand for hotel services is closely linked to factors such as consumer spending, business activities, and international travel trends. Expenditure within the hotel industry is a multifaceted concept encompassing a spectrum of financial transactions. This includes investments in infrastructure, operational costs, and consumer spending on accommodation, food, and ancillary services. Capital investments in hotel construction and renovation contribute significantly to the industry's expansion and modernization. Operational costs cover staffing, utilities, and maintenance, among other essentials. On the consumer side, expenditures range from room rates to additional services like dining, spa treatments, and recreational activities. The hotel industry's economic impact extends beyond its direct financial transactions, influencing related sectors such as transportation, entertainment, and local businesses. Tourism, a major driver of hotel demand, fosters cultural exchange and stimulates regional development. Moreover, the industry's responsiveness to technological advancements has transformed the guest experience, with online bookings, contactless services, and personalized amenities becoming integral aspects of modern hospitality. As sustainability gains prominence, hotels are increasingly investing in eco-friendly practices to meet the evolving expectations of environmentally conscious travelers. The hotel industry is a dynamic economic force shaped by consumer preferences, global economic trends, and technological innovations. Expenditure within the sector encompasses a wide array of financial activities, from capital investments to consumer spending on diverse services. The industry's adaptability and interconnectedness with various sectors make it a key player in fostering economic growth, tourism, and cultural exchange on a global scale.

KEYWORDS:

Concept sketching, Consumer feedback, Ideation concept, Target audience.

1. INTRODUCTION

The hotel business is a vital component of the global hospitality sector, playing a crucial role in accommodating travelers, tourists, and business professionals. Over the years, it has evolved from simple lodging establishments to sophisticated and diverse entities offering a wide range of services. The roots of the hotel industry can be traced back to ancient civilizations, where inns and taverns provided basic accommodations for travelers. However, it was during the 19th century that the industry witnessed significant growth and transformation. In the early 1900s, the hotel industry underwent a paradigm shift, with the emergence of grand hotels in prominent urban centers [1]. These establishments were characterized by opulent architecture, luxurious amenities, and impeccable service. The Waldorf-Astoria in New York City opened in 1893, exemplified this trend, and set new standards for luxury and hospitality. The concept of grand hotels spread globally, influencing the design and operations of similar establishments in Europe, Asia, and other continents [2].

The expenditure associated with the hotel industry during the early 1900s was considerably different from the modern landscape. Travel was a more exclusive and luxurious activity, typically reserved for the elite and affluent class. As a result, hotels catered to a niche market,

offering extravagant accommodations and fine dining experiences [3]. The level of personalized service and attention to detail in these establishments contributed to their appeal among the discerning clientele of the time. In terms of expenditure, the cost of staying in a hotel during the early 1900s was relatively high compared to the average income. Travelers often incur significant expenses for accommodation, meals, and other associated services. The limited transportation options further added to the overall cost of travel, making it a luxury that only a privileged few could afford. Despite the high expenditure, the demand for upscale hotels continued to rise, reflecting the societal shift towards valuing leisure and luxury [4].

The 20th century brought about various advancements that further influenced the hotel industry and its expenditure patterns. The advent of mass tourism, improved transportation infrastructure, and a growing middle class led to a democratization of travel. As a result, hotels diversified their offerings to cater to a broader range of clientele. Motels, budget hotels, and other more affordable accommodations emerged to accommodate the changing dynamics of the travel industry. The mid-20th century witnessed the rise of hotel chains, introducing a standardized approach to hospitality. Chains like Hilton, Marriott, and InterContinental expanded their reach, offering consistency in service and amenities across different locations. This standardization not only improved the efficiency of hotel operations but also contributed to a more predictable expenditure pattern for travelers [5].

The latter part of the 20th century and the beginning of the 21st century saw the integration of technology into the hotel industry. The advent of online booking platforms revolutionized the way people made reservations, providing greater convenience and transparency. This shift not only influenced consumer behavior but also affected the marketing strategies and pricing models of hotels. The ability to compare prices, read reviews, and make instant bookings online significantly impacted the expenditure dynamics within the industry. Moreover, the concept of boutique hotels gained prominence, offering a more personalized and unique experience for travelers seeking distinct accommodations. These establishments often focused on design, local culture, and individualized service, catering to a segment of travelers looking for a more authentic and intimate stay. The variety in hotel offerings, from luxury resorts to budget-friendly hostels, further contributed to a diverse range of expenditure options for travelers with varying preferences and budgets [6].

In recent years, sustainability and eco-friendly practices have become key considerations in the hotel industry. Many establishments are adopting green initiatives, not only as a response to environmental concerns but also to meet the evolving preferences of conscious consumers. This shift has led to investments in energy-efficient technologies, waste reduction measures, and overall eco-friendly operations, influencing the expenditure patterns of both hotels and their guests. The hotel industry has undergone significant transformations since the early 1900s, reflecting changes in societal values, technological advancements, and the democratization of travel. The expenditure associated with hotels has evolved from a luxury accessible to a privileged few to a diverse range of options catering to travelers with varying preferences and budgets. As we look towards the future, the industry is likely to continue adapting to emerging trends, ensuring its resilience and relevance in an ever-changing global landscape [7].

2. LITERATURE REVIEW

I. Gallego et al.[8] study focuses on this article presents several ways to identify the target market for a hotel business using five dimensions (volume, development, seasonality, length

of stay, and usage). The process is based on objective and quantitative methods derived from statistical data. Tourism organizations can use this approach to i) identify marketing indicators that achieve their goals; ii) create an appropriate mix of these businesses; and iii) measure the economy based on interest rates and economy. We analyze and demonstrate the technology using data on foreign tourism demand in Spain before and after the pandemic; We highlight the importance of several strategic business objectives for the country's hospitality industry, including hoteliers.

G. Agag et al. [9] study focuses on the microeconomic level, there has been significant research on the relationship between consumer feedback measures and consumer spending. On the other hand, little is known about how consumer recommendations affect consumer spending at the macroeconomic level. Based on real data on feedback and customer usage, this study investigates the impact of different customer feedback on customer usage in business trade tourism. Our research collected data on customer usage and feedback between 2008 and 2017. According to the research, the top customer ratings for the travel agency, restaurant, and hotel industry are customer satisfaction and consumer energy (CES). Moreover, in the field of online booking, top-2-box has the best gambling experience for customers. The results show that the importance of customer feedback reflects the business as a whole and therefore increasing them should be at the top of the agenda in the country.

I. Nur et al. [10] study focuses on the purpose of this study is to examine the economic development factors in South Sumatra and the changes affecting the development of the region. The question of location (LQ) technology and partner (SS) analysis is used in the business domain to examine the business model. According to the National Share (NS) component, manufacturing, agriculture, and mining have more value. Therefore, changes in the country's policy had a great impact on our business. According to integrated marketing (IM) products, the most profitable products are construction and trade, hotels and restaurants, transportation, and telecommunications businesses. This shows that our sector is growing faster than other sectors. Agriculture is the most competitive sector due to its superiority over other sectors in the country, as shown in its Regional Share (RS). Additionally, the sectors that showed improvement from 2001 to 2005 were construction, trade, hotels, and restaurants; Sectors that improved from 2005 to 2010 were finance, service companies, rental properties, businesses, hotels, and restaurants. According to LQ research, mining, agriculture, and construction are the main industries in South Sumatra from 2001 to 2010.

H. Chen et al. [11] study focuses on developing a simple model to estimate total revenue for the U.S. hotel industry using different factors such as hotel rooms, domestic travel, international travel, customer loyalty, and individual spending. Additionally, the model is used in six hotel segments, including luxury hotels, high-end hotels, high-end hotels, mid- and high-end hotels, mid-range hotels, and budget hotels. Design, Methodology, and Strategy: This study uses the autoregressive distribution lag (ARDL) method to develop a forecast model using monthly totals for the last 22 years. Convergence analysis and root cause analysis are also used. The model has proven useful in forecasting the revenue of the entire hotel business and its segments. All forecasting variables except rooms contribute significantly to the total revenue of the hotel industry. Subsegment revenue estimates vary widely. Total revenues, excluding luxury hotels, were positively affected by the consumer confidence index. Revenues in all segments except budget hotels benefited greatly from foreign tourists and consumer spending. citizens increase the explanatory power of job loyalty, higher income, and hotel income.

Revenues for luxury and high-end hotels were negatively affected by only a few hotel rooms. Hotels can make pricing, distribution, and management decisions for their business and operations based on revenue forecasting models. This study is the first to use the ARDL method to examine the ability of macroeconomic variables to predict revenue for the entire hotel industry and segments.

M. Watkins et al.[12] study focus on this article explores the impact of digital advancement on the travel industry. It also takes into account the benefits of technology in promoting e-tourism. The fact that today the world has become inseparable from many portable electronic devices is closely related to the development of electronic tourism. Tourists are attracted to the possibilities of the Internet because they can research the countries they want to visit, learn about attractions and accommodation options, and learn about daily life there. Travelers are using new technologies such as e-ticketing and visas and are slowly starting to rely on them more and more. This situation has enabled the rapid development and spread of e-tourism. Additionally, Kazakhstan's foreign tourism multiplier was calculated ($k=1.15$). It shows how much local income has increased due to increased spending by international tourists.

M. Turner et al. [13] study focuses on the opinions of hotel owners by looking at hotel owners in Australia and New Zealand. Based on the interview analysis, the 6 hotel owner groups evident in the early analysis were expanded into nine hotel owner types. Interview data provide important insight into the differences between budgeting and investment strategies used by different property owners. Research questions indicate that more than 25% of major 3–5-star hotels in Australia and New Zealand are hotel management companies and high-value investors. It is also obvious that different types of hotel owners have different characteristics. Among the findings is that hotels owned by developers, wealthy investors, and strata owners tend to have lower revenues and fewer hotels. Additionally, while former hoteliers often become profitable business owners, managers of hotels employed by hotel management companies often keep their jobs short for a time.

3. RESULT & DISCUSSION

3.1 Hotel industry guidelines and precautions taken while gathering data:

Collecting and managing data in the hotel industry is a critical aspect that involves a multitude of guidelines and precautions to ensure the integrity, security, and privacy of sensitive information. As technology continues to advance, hotels are increasingly reliant on data for various operational and strategic purposes, such as personalized guest experiences, marketing strategies, and overall business management. However, with this reliance comes the responsibility to adhere to industry standards and regulations while taking necessary precautions to protect both the establishment and its guests [14]. One of the primary guidelines in data collection for the hotel industry is acquiescence with relevant privacy laws and regulations. In various regions, data defense laws, such as the General Data Fortification Regulation (GDPR) in the European Union or the CA Consumer Privacy Act (CCPA) in the Combined States, govern how businesses handle personal data. Hotels must establish clear protocols to ensure compliance with these regulations, including obtaining informed consent from guests before collecting any personal evidence and communicating the purposes for which the data will be used [15].

In addition to legal compliance, hotels should implement robust cybersecurity measures to safeguard against unsanctioned access, data breaches, and other cyber threats. This involves

encrypting sensitive data, securing networks, frequently updating software and systems, and providing employee training on cybersecurity best practices. By adopting a proactive approach to cybersecurity, hotels can mitigate the risks associated with potential data breaches, protecting both their reputation and the trust of their guests [16]. Furthermore, hotels must be transparent about their data collection practices. Clear and concise privacy policies should be communicated to guests, detailing the types of data composed, the purposes for which it will be used, and how long it will be retained. Transparency fosters trust between the hotel and its guests, demonstrating a commitment to ethical data-handling practices. Guests should have the option to opt in or out of certain data-gathering activities, ensuring that their privacy preferences are respected [17].

When gathering data, hotels should prioritize the principle of data minimization. This means collecting only the information that is strictly necessary for the intended purpose and avoiding the accumulation of excessive or irrelevant data. By adopting a minimalist approach to data collection, hotels reduce the possible risks associated with managing vast amounts of sensitive information and simplify their compliance with privacy regulations. In the context of guest relations and customer experience, hotels should prioritize data accuracy [18]. Inaccurate data can lead to misunderstandings, failed reservations, and a decline in overall guest satisfaction. Regularly updating and validating guest information is crucial to ensure that the hotel has the most up-to-date and reliable data, facilitating smooth and error-free interactions with guests throughout their stay. Additionally, hotels should invest in secure data storage solutions. Whether utilizing on-premises servers or cloud-based platforms, the chosen storage systems must adhere to stringent security standards. Access controls should be implemented to restrict unauthorized personnel from accessing sensitive data, and regular audits should be conducted to identify and address potential vulnerabilities. Secure storage not only protects guests' personal information but also safeguards the hotel from legal and financial repercussions associated with data breaches [19].

Employee training is another essential component of data collection precautions in the hotel industry. Staff members who handle guest data should be educated on the importance of data protection, privacy policies, and the potential consequences of non-compliance. Regular training sessions can help employees stay informed about evolving best practices and regulations, empowering them to contribute to the establishment's commitment to responsible data management. Lastly, hotels should establish a comprehensive data breach response plan. Despite all preventive measures, breaches may still occur, and having a well-defined plan in place enables the hotel to respond swiftly and effectively. This plan should include communication strategies, steps to contain the breach, and procedures for notifying affected parties and relevant authorities. Prompt and transparent communication during a data breach is crucial for maintaining trust and credibility with guests.

The hotel industry must adhere to a set of rigorous guidelines and precautions when collecting and managing data. Legal compliance, cybersecurity measures, transparency, data minimization, accuracy, secure storage, employee training, and a robust data breach response plan collectively contribute to a comprehensive approach to responsible data handling. By prioritizing these precautions, hotels can not only protect sensitive information but also enhance guest trust and satisfaction in an increasingly data-driven and technologically advanced hospitality landscape [20].

3.2 Hotel industry understanding and designing for the target audience:

Understanding and designing for the target audience is a critical aspect of success in the hotel industry, as it directly influences the overall guest experience and the financial performance of the establishment. The hotel industry is incredibly diverse, catering to a wide range of travelers with distinct preferences, needs, and expectations. To effectively design and tailor offerings for the target audience, hoteliers must first grasp the nuances of different traveler segments. One of the primary considerations in understanding the target audience is recognizing the diversity of traveler profiles. The hotel industry accommodates various segments, including leisure travelers, business professionals, families, adventure seekers, and luxury enthusiasts. Each of these segments has specific requirements and desires, ranging from the need for efficient business amenities to family-friendly facilities or upscale leisure services. By conducting thorough market research and analyzing guest demographics, hotels can identify the dominant customer profiles and tailor their services accordingly. Moreover, geographical and cultural considerations play a crucial role in understanding the target audience. Hotels located in different regions or countries must be attuned to the cultural preferences and expectations of their guests. This includes aspects such as cuisine choices, religious considerations, and cultural sensitivities. A hotel's ability to respect and incorporate local customs enhances its appeal to the target audience, fostering a sense of cultural authenticity and inclusivity. Designing for the target audience involves creating a guest-centric environment that aligns with the preferences and expectations of the identified market segments. For instance, a business-oriented hotel may prioritize well-equipped meeting rooms, high-speed internet, and concierge services tailored to the needs of corporate travelers. On the other hand, a family-friendly resort may emphasize spacious accommodations, child-friendly amenities, and recreational activities suitable for all ages.

The rise of technology has also introduced new dimensions to understanding and designing for the target audience in the hotel industry. Millennials and Generation Z, for example, often prioritize technology integration in their travel experiences. Hotels catering to these demographics may focus on seamless mobile check-ins, smart room controls, and high-speed Wi-Fi connectivity. Understanding the target audience's tech-savvy preferences allows hotels to enhance the overall guest experience and stay competitive in the evolving market. In addition to technological considerations, sustainability and eco-conscious practices have become increasingly important for a certain segment of the target audience. Travelers who prioritize environmental responsibility seek hotels with green initiatives, energy-efficient practices, and eco-friendly certifications. Designing accommodations with sustainable materials, implementing waste reduction measures, and showcasing a commitment to environmental conservation can attract and retain this environmentally conscious demographic. The concept of experiential travel has gained traction in recent years, emphasizing unique and memorable experiences over traditional luxury. Understanding the target audience's desire for authentic experiences, hotels are incorporating local culture, immersive activities, and personalized services into their offerings. This shift requires a thoughtful approach to design, ensuring that the hotel's physical spaces and services contribute to a holistic and enriching guest experience. Furthermore, social media and online reviews have a profound impact on a hotel's reputation and the perceptions of the target audience. Guests often share their experiences through various digital platforms, influencing potential customers' decisions. To design effectively for the target audience, hotels must not only meet but exceed guest expectations. Consistency in delivering

exceptional service, maintaining aesthetically pleasing spaces, and promptly addressing guest feedback contributes to positive online reviews and word-of-mouth recommendations. Understanding and designing for the target audience are integral components of success in the hotel industry. By recognizing the diverse needs, preferences, and expectations of different traveler segments, hotels can tailor their offerings to create a guest-centric environment. Whether catering to business professionals, families, eco-conscious travelers, or those seeking unique experiences, the ability to design with the target audience in mind ensures the hotel's relevance, competitiveness, and sustained success in a dynamic and evolving market.

3.3 Hotel industry ideation and concept sketching:

In the dynamic landscape of the hotel industry, ideation and concept sketching play pivotal roles in shaping innovative, customer-centric offerings. Ideation is the creative process of generating, developing, and refining ideas, while concept sketching involves visualizing and illustrating these ideas. The intersection of these practices is particularly crucial in the hotel industry, where staying ahead of evolving consumer preferences and market trends is essential for success. The ideation phase in the hotel industry involves brainstorming sessions, often bringing together diverse teams with expertise in hospitality, design, technology, and customer experience. This collaborative approach fosters a melting pot of ideas that can range from reimagining traditional hotel services to introducing cutting-edge technological solutions. For instance, brainstorming might yield ideas such as incorporating artificial intelligence (AI) for personalized guest experiences or designing unique themed accommodations that resonate with specific target demographics.

Concept sketching is the natural progression from ideation, where abstract ideas take a visual form. This step involves creating rough sketches, mood boards, and visual representations of the proposed concepts. In the hotel industry, these sketches can include floor plans, interior designs, branding elements, and even digital interfaces. For example, if the ideation process suggests a focus on eco-friendly practices, concept sketches might visually explore sustainable architectural designs, renewable energy sources, and the integration of green spaces within the hotel premises. One prominent trend in hotel industry ideation and concept sketching is the emphasis on experiential hospitality. Instead of merely providing a place to stay, hotels are increasingly focusing on curating immersive and memorable experiences for guests. This could involve themed stays, cultural immersion programs, or collaborations with local artists and artisans. The concept sketches in this scenario might depict not only the physical spaces but also the activities, events, and interactions that contribute to a holistic guest experience. Moreover, the integration of technology is a key aspect of contemporary hotel ideation. From smart room controls to mobile check-ins, hotels are exploring ways to enhance convenience and personalization through technology. Concept sketches, in this context, may showcase augmented reality (AR) applications for interactive room tours, digital concierge services, or even robotics for automated room service. These visual representations help stakeholders grasp the potential of technological integrations and guide the subsequent development phases. Boutique and niche hotel concepts are also gaining traction in ideation and concept sketching. These establishments aim to offer unique, intimate, and culturally rich experiences that differentiate them from conventional hotel chains. The sketches in this realm might capture the essence of a theme, whether it's a historical era, a specific design philosophy, or a regional cultural narrative. The goal is to evoke a sense of exclusivity and individuality that resonates with a discerning target audience. In addition, sustainability has become a central theme in

hotel ideation and concept sketching. As environmental consciousness grows, hotels are exploring eco-friendly designs, energy-efficient technologies, and waste-reduction strategies. Concept sketches in this context may showcase green rooftops, solar panels, water conservation systems, and other features that align with sustainable practices. The visual representation aids in conveying the commitment to environmental responsibility to both stakeholders and potential guests. Furthermore, the concept of co-living and co-working spaces within hotels is emerging as a response to evolving lifestyle trends. Ideation in this area involves envisioning flexible spaces that cater to both work and leisure, blurring the lines between traditional hotel rooms and collaborative work environments. Concept sketches might illustrate multifunctional spaces with adaptable furniture, integrated technology for remote work, and communal areas that foster networking and social interactions. hotel industry ideation and concept sketching are integral processes that drive innovation and shape the future of hospitality. The creative exploration of ideas and their visual representation not only sparks imagination but also serves as a roadmap for the development of unique, customer-centric hotel offerings. Whether it's embracing experiential hospitality, integrating advanced technologies, or championing sustainability, collaborative efforts in ideation and concept sketching contribute to the continual evolution and redefinition of the hotel industry.

4. CONCLUSION

The hotel industry has undergone a remarkable evolution since its early days in the 1900s, transforming from exclusive and opulent establishments to a diverse array of accommodations catering to a broad spectrum of travelers. The expenditure patterns within this industry have mirrored societal changes, transitioning from a luxury accessible to a privileged few to a more inclusive range of options that accommodate various preferences and budgets. The 20th century saw the rise of grand hotels and the standardization of hospitality through chains, while the 21st century ushered in the era of online booking platforms and a focus on sustainability. The democratization of travel, coupled with advancements in technology, has given rise to a more competitive landscape, prompting hotels to innovate and differentiate themselves. Expenditure in the hotel industry has become more transparent and flexible due to online booking platforms, enabling travelers to compare prices and make informed decisions. The introduction of boutique hotels and unique accommodations has provided consumers with diverse choices, allowing them to tailor their experiences to personal preferences. Additionally, sustainability has emerged as a significant factor influencing both the industry's practices and consumer choices, as eco-friendly initiatives become integral to hotel operations. Looking forward, the hotel industry is likely to continue adapting to emerging trends, including the integration of advanced technologies, a focus on personalized and immersive experiences, and a commitment to environmental responsibility. As travelers seek more than just a place to stay, the industry's ability to innovate and meet evolving expectations will be crucial for its sustained success. Ultimately, the hotel industry's journey from exclusivity to inclusivity and from traditional to innovative reflects its resilience and responsiveness to the ever-changing demands of a dynamic global market.

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CHAPTER 7

AN ANALYSIS OF THE INDIAN FILM INDUSTRY: LARGEST FILMS PRODUCER COUNTRY

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ABSTRACT:

The Indian film business is the largest in the world in terms of several films fashioned with between 1,500 to 2,000 films produced every year in more than 20 languages. A recent survey conducted by Socialite revealed that 84% of businesses have increased their video production in the past year. Also, there is a growing number of freelance filmmakers, videographers, and photographers due to the increase in demand for high-quality video content for marketing. This leads to renting film gear for creating high-quality visual content for companies and brands. In India, the film industry and film rental industry work on word of mouth and references. Local vendors rely on referrals to establish trust with new clients, and filmmakers tend to trust vendors recommended by their contacts. This causes accessibility problems for freelancers because of a lack of necessary contacts in the industry. Freelance filmmakers often face difficulties finding high-quality equipment or may experience issues with equipment unavailability. Comparing equipment charges across multiple vendors to find the best deal can also be a daunting task. It is quite challenging for rental services to stay up-to-date with the current trends in the market, given the constant release of new equipment from various manufacturers. This project looks deep into the problems faced by freelance filmmakers in the process of finding reliable vendors and renting gear for their projects. Also understanding how the local gear rental industry works to develop a marketplace platform that builds trust connects filmmakers with trustworthy vendors and provides greater accessibility to equipment.

KEYWORDS:

Film Industry, Gear Rental, Multiple Vendors, Rental Market.

1. INTRODUCTION

The video production industry in India has witnessed a significant surge in recent years, leading to an increase in the number of self-taught freelance filmmakers, videographers, and photographers. Video has emerged as a powerful marketing tool, and its potential has been recognized by businesses of all sizes in India. With the advent of remote video production services on freelancing platforms like Story Hunter, there has been an increased demand for such services. As a result, the rental industry for video equipment has also witnessed a boom. However, freelance filmmakers face several challenges in the process of renting equipment, which this thesis project aims to explore. The local gear rental market in different parts of India works differently than the high-scale rental companies.

Larger rental companies typically have more organized systems, better-maintained equipment, and a higher level of customer service, which results in a higher cost for equipment rentals. Many local vendors don't provide insurance and the cost of gears is much less than big rental companies. There is no standard pricing policy, and vendors are free to charge according to their affordability. Being in the rental market for years, local vendors have learned to work with filmmakers and give them good customer service and affordable rates. Though local vendors are not as organized as big rental companies, freelance filmmakers will prefer working with reliable local vendors with reasonable gear rates. Despite the significant growth in the Indian video production industry and the increased demand for video equipment, freelance filmmakers face several challenges when renting equipment. One of the major challenges that filmmakers face is the lack of availability of the necessary equipment. Often, they have to spend

considerable time searching for the right vendors who can provide the required gear. Equipment is often unavailable due to high demand or limited availability from some vendors. Vendors may specialize in particular types of equipment, such as lights, cinema cameras, or grips, rather than carrying a full range of options. Additionally, comparing equipment charges across various stores to find the most cost-effective option can be a daunting task. Freelance filmmakers prefer to inspect the gear themselves when renting from new vendors, as there is always a possibility of the equipment not functioning correctly due to previous usage. Any delay in shoot schedules can be very costly, and therefore, filmmakers cannot afford to take any chances when it comes to equipment reliability. Additionally, they struggle to access equipment rental services outside of major cities, which can limit their ability to work on projects in rural areas. These issues can result in significant barriers for freelancers to rent and produce content. Freelance filmmakers are solely responsible for overseeing all pre-production processes, which include scripting, budgeting, location scouting, gear rentals, and securing necessary insurance.

The film industry poses numerous challenges for filmmakers throughout the production cycle, from pre-production to post-production. Despite the significant presence of the rental industry in India, filmmakers and videographers still face accessibility issues. Freelance filmmakers, in particular, encounter difficulties in finding dependable vendors and attendants outside of major cities, which leads them to rely heavily on their professional networks to locate trustworthy equipment providers. There is a need for a more organized rental market to meet the needs of filmmakers. Freelancers often work on tight budgets which leads them to find local vendors who have lower rates than the big rental companies. However, assessing the quality of equipment provided by these new vendors, and coordinating with them to prevent production problems can be a major challenge for filmmakers.

The primary objective of this project is to identify and address the critical challenges faced by freelance filmmakers in India when renting video equipment. This study aims to explore the contributing factors that lead to equipment unavailability and restricted accessibility for filmmakers and analyze the current video equipment rental market. The scope of this project involves conducting a detailed study of the problems that freelance filmmakers, videographers, and photographers face while renting gear from local vendors. The study will aim to identify loopholes in the local rental industry market and existing services to create insights and 'how might we' statements. These insights and statements will be used to develop feasible solutions that cater to the needs of both filmmakers and vendors. To achieve this, the experiences and perspectives of filmmakers and vendors will be collected, and synthesis tools will be employed to create concepts that address their pain points. The ultimate goal is to design a platform that streamlines the renting process for filmmakers and builds trust between vendors and renters. The final design will be tested with filmmakers to gather feedback and make further improvements, ensuring that the platform meets the needs of the end-users. This project aims to create a convenient, efficient, and trustworthy rental service that addresses the existing problems in the industry.

2. LITERATURE REVIEW

E. Hafeez et al. [1] study focuses on the biggest movie in the world is considered to be Bollywood. In 2012, a total of 2,961 films were shot in India, of which 1,602 were feature films. Movie ticket prices in India are among the lowest in the world. In 2010, the average ticket price in the United States was approximately \$7.50, while the average ticket price in

India was 25 rupees (55 cents). 73% of cinema space in the Asia-Pacific region comes from India. In 2011 alone, the Indian film industry generated revenues of approximately US\$ 1.86 billion (Rs 93 billion) and is expected to reach by 2014. India's large film audience is a major source of revenue for the industry. Approximately 14 million Indians go to the cinema every day. In 2012 alone, Bollywood sold over 2.6 billion tickets, while Hollywood sold 1.36 billion tickets. The popularity of Indian films is increasing all over the world, especially in countries with large immigrant populations. The aim of this research paper is to summarize the historical development of Indian cinema since its inception. This major historical survey analyzes the reasons for its expansion over the years.

A. Kenichi et al. [2] study focuses on cosmetics are often made from active ingredients and formulated as creams, powders, lotions or solutions. According to EU legislation, cosmetics are "any product or preparation that comes into contact with the external surface of the human body, for a specific purpose or mainly to care, scent, change appearance and/or correct and/or protect body odor." either cure them or cure them." However, technological advances in active carriers and chemicals have led to a rapid process in which many cosmetic products cause changes in the skin through the products they deliver. To this end, Reed and Klieg call these products "cosmeceuticals" (a combination of cosmetics and drugs). So far, the word "cosmeceutical" has no legal meaning. Substances called cosmeceuticals have the ability to affect many aspects of skin physiology, such as trans epidermal water loss, keratinocyte adhesion and regeneration, modulation of the inflammatory cascade and/or alteration of the surface microbiota due to antiseptic activity. For these reasons, it is said that they have drugs or drug-like drugs in their possession.

S. Sahu et al. [3] study focuses on The Indian film business is the largest in terms of the quantity of films fashioned each year. It's still a very diverse film industry. A recent study shows that only a few films are successful. The film industry is under pressure due to uncertainty about revenue. Professionals and filmmakers agree that there is a need for specialist techniques that can accurately predict a film's performance before it is produced. This leads to increased competition arising from the diversity of the Indian film industry. There are not many academics studying Indian cinema; people who tend to focus on pre-release predictions or have negative predictions. The next film, which is limited to Indian films, which is the main subject of this study, will be made after the traders (directors, actors) sign the contract. This prediction is believed to be the oldest. Hindi film data from the last 30 years, which includes films released in all regions of the country, was downloaded and used in our analysis. To increase the accuracy of the prediction, we included the production of the novel and selected some features from the video. Our proposal is the K-fold Hybrid Deep Ensemble Learning Model (KHDEM), which combines hybrid learning and deep learning models (DLM). Finally, logistic regression (LR) classifier was used for prediction. Using the binary classification model, we achieved all baseline models with 96% accuracy.

K. Pandian et al. [4] study focuses on Indian animation represents a sleeping giant that is only now beginning to wake up. There is no definitive information yet on the size of the animation industry in India. However, compared to other countries, films in India are not produced and consumed at rates close to this rate. This is fun in itself because the history of India is full of clues as to what would be the basis of a significant and successful Indian animation industry. India is a cinema hub. India produces more films in different languages than any other country in the world. There is a unique love for watching this movie. There is no other choice.

Storytelling has been an integral part of Indian culture since recorded history and has helped connect communities and countries. Children receive moral education, instruction, and wisdom through oral tradition for generations. The visuals used to tell the story are equally important. Religion is represented by many iconographic images that show the power and influence of the gods over the people of the world. If cinema has become an important part of Indian culture and has its own business, the software and information technology (IT) business is also a new business and one for which India has not emerged as an international supplier anytime soon. Even though animation has entered two important areas of human thought, it still does not have a foothold in India.

3. RESULT & DISCUSSION

3.1 *Equipment renting process:*

Pre-Shoot Preparation First, the filmmaker confirms the location of the shoot and creates a list of required gear. **Finding reliable vendors** Since filmmakers only trust vendors that their contacts have used, they ask their social circle for vendor contacts in Delhi. After receiving vendor contacts, the filmmaker contacts multiple vendors, mentioning the referral's name to the vendor [5]. **Gear availability and cost comparison** Availability of gears is checked with each vendor, as not all vendors have all types of gears available and sometimes gears are already rented by other clients. Rates are compared among the vendors and two vendors are finalized, one for lights and the other for a camera dolly. **Finalizing the vendor**, the filmmaker confirms rates and negotiates with the two vendors, sharing the shoot location and duration, as well as a verification ID [6]. The vendor then provides a final quotation, and the filmmaker makes an advance payment. **Coordinates with vendor** Before the shoot, the filmmaker contacts the vendor to ensure that all equipment is packed, as missing something important can halt the shoot. An attendant arrives with the gears and they are cross-checked against the gear list. **Preparing for the shoot** the filmmaker then orders the attendants to set up all gears, while maintaining a good relationship with them to encourage them to perform well.

3.2 Rental process of the film industry:

A local rental vendor's journey begins with a call from a new client. They obtain a list of equipment, confirm availability, and share rental rates. After negotiations, location details are requested, and a new order is added to the challan book. The vendor also requests the client's ID proof before further arrangements are made [7]. The vendor then creates a formal quotation and shares bank details for an advance payment. Attendants are assigned, transportation is booked, and the equipment is delivered to the location. After the shoot, the vendor's attendants retrieve the equipment, and the full payment is received from the client. The rental market for film equipment is faced with a challenge in keeping up with the latest equipment trends due to the constant launches of new and updated gear by manufacturers. This often results in expensive equipment becoming quickly outdated as new models replace them, sometimes within just six months [8]. To make space for new gear and generate revenue, rental vendors may prioritize selling outdated equipment to markets and individuals with low demand. Therefore, film rental vendors need to stay updated with the latest trends to retain their customers and remain competitive in the market [9].

Local vendors have been maintaining gear logs on paper for many years and have not yet embraced modern data-keeping technologies. They seem to be stuck in their old-fashioned approach to record-keeping. The local vendors have not insured any of their gear, primarily

due to the high cost associated with insuring their entire inventory [10]. Furthermore, they do not offer any third-party insurance options to customers for coverage against accidental damages. Interconnected vendors often sub-rent specific gear models to fulfill the needs of their clients, as not all vendors have all types of gear available for rent. Clients prefer a wide range of gears to choose from and since vendors can't have all kinds, they collaborate or partner with other vendors [11]. Local vendors often face challenges in verifying the identity of new clients, which can lead to concerns over theft and scams. As a result, some vendors may be hesitant to rent equipment to unfamiliar clients. Some vendors have experienced theft firsthand, such as when a client's delivery person failed to return rented equipment, as recounted by a vendor [12].

3.3 Journey Map of the film industry:

Stages of journey	Shoot location	Listing gears	Searching reliable vendors			
Activities	Confirm next shoot location outside Mumbai	Make a list of gears	Calling social circle for vendor contacts in Delhi	Receives vendor contact from friends	Calling multiple vendors	Mentioning referral's name to the vendor
Happy Neutral Unhappy	■	■	■	■	■	■
Touch Points		Excel sheet	Phone/ contacts	Message app	Phone call	
Experiences	Freelance filmmaker decides the location with the team	Makes a list of gears needed for the project. Filmmakers also notes down the alternative if in case needed.	Filmmakers only trust vendors that their contacts have used. They don't take risks in terms of reliability and quality of gears that local vendors will offer.	It can be difficult to find reliable vendors when filming outside of one's hometown.		local vendors only trust new clients that come through references. Vendors have experienced scams and thefts before.

Stages of journey	Pre-Booking					Booking			
Activities	A new client calls the vendor for gear rental.	The vendor asks for the referral name.	The vendor obtains the gear list via WhatsApp	The vendor confirms gear availability.	The vendor shares the rental rates.	The client and vendor negotiate and agree on the final rental rate.	The vendor requests location details.	The vendor confirms the new order and adds it to the challan book.	The vendor asks the customer for their ID proof.
Happy Neutral Unhappy	■	■	■	■	■	■	■	■	■
Touch Points	Phone call	Excel sheet	Message app/ email/ excel sheet	Phone call	Phone call, brochure, quotation		Phone call/ message	Challan book/ excel sheet	

3.4 HMW helps filmmakers check the availability of gears without the hassle of calling multiple vendors:

In the dynamic realm of filmmaking, efficiency is often key to realizing creative visions. One of the persistent challenges faced by filmmakers is the time-consuming process of checking the

availability of essential gear from multiple vendors. How might we streamline this cumbersome task, providing filmmakers with a seamless and convenient solution to assess gear availability [13]. The solution lies in the development of a comprehensive online platform that aggregates information from various gear rental vendors, offering filmmakers a centralized hub for checking gear availability without the hassle of making numerous calls [14]. To begin with, the platform should boast an intuitive user interface that allows filmmakers to easily navigate and search for the specific equipment they require. Incorporating a user-friendly design ensures that even those less technologically inclined can effortlessly access the information they need [15]. This interface should include a robust search feature, enabling users to input their gear requirements, such as camera models, lenses, lighting equipment, and more. Furthermore, the platform could offer advanced search filters, allowing filmmakers to narrow down their choices based on rental duration, location, and pricing [16].

The heart of this innovative solution lies in its ability to seamlessly integrate with the databases of various gear rental vendors. Establishing partnerships with a wide array of equipment suppliers is essential to ensure the platform's database remains up-to-date and comprehensive. Through API integrations or other technological interfaces, the platform can pull real-time data on gear availability, eliminating the need for filmmakers to contact multiple vendors individually [17]. This integration should extend beyond availability, including details on pricing, rental terms, and any additional services offered by the vendors. To enhance user experience, the platform can implement a rating and review system for both gear and vendors. Filmmakers who have previously rented specific equipment can share their experiences, providing valuable insights for others. Additionally, vendors with consistently positive reviews could be highlighted, instilling confidence in filmmakers when selecting their gear. Such a system not only aids filmmakers in decision-making but also fosters a sense of community within the filmmaking industry. Moreover, the platform should offer a seamless booking system, allowing filmmakers to reserve the required equipment directly through the interface. This feature could include an integrated calendar that displays real-time availability, ensuring that filmmakers can secure the gear for their desired dates. By streamlining the booking process, the platform minimizes the risk of miscommunications and double bookings, contributing to a more efficient and reliable experience for both filmmakers and vendors [18]. To address concerns about the security of transactions and the condition of rented equipment, the platform could implement a secure payment gateway and a comprehensive insurance system. This ensures that filmmakers can confidently rent gear online, knowing that their financial transactions are protected, and the equipment is covered in case of damage or loss. Building trust between filmmakers and vendors is paramount to the success of the platform, and these features contribute to a secure and reliable rental ecosystem. Furthermore, the platform could incorporate a notification system to alert filmmakers about upcoming rental deadlines, ensuring timely returns and preventing potential disputes. Additionally, vendors could receive notifications about new booking requests, allowing them to manage their inventory effectively. Automating these processes through notifications reduces the administrative burden on both parties, freeing up time for filmmakers to focus on their creative endeavors and vendors to manage their businesses more efficiently. Considering the global nature of the filmmaking industry, the platform should support multiple languages and currencies, catering to a diverse user base [19]. This inclusivity ensures that filmmakers from various regions can access the platform with ease, further expanding its reach and impact. Moreover, the platform could feature a blog or resource section that provides filmmaking tips,

gear reviews, and industry news, fostering a sense of community and continuous learning among users. The development of an innovative online platform that streamlines the process of checking gear availability for filmmakers is not only feasible but also highly beneficial for the industry. By combining an intuitive interface, seamless database integrations, a robust booking system, and additional features like ratings and reviews, the platform addresses the pain points of both filmmakers and gear rental vendors. This holistic approach not only saves time and effort but also contributes to a more connected and collaborative filmmaking community. With the right implementation and industry-wide adoption, this platform has the potential to revolutionize the way filmmakers access and secure the gear they need, ultimately enhancing the overall filmmaking experience.

3.5 HMW develop a secure method for verifying the identity of new clients:

Developing a secure method for verifying the identity of new clients is paramount in today's digital age, where the risk of identity theft and fraud is ever-present. A robust identity verification process not only safeguards sensitive information but also instills trust between businesses and their clients. In this comprehensive discussion, we will explore various elements that constitute a secure identity verification method, considering both technological advancements and best practices in the field. The foundation of a secure identity verification system lies in employing a multi-layered approach. One of the fundamental components is biometric authentication, which leverages unique physical or behavioral attributes of individuals to verify their identity. Biometrics, such as fingerprints, facial recognition, voice recognition, and iris scans, offer a high level of accuracy and are difficult to forge or replicate. Integrating these biometric factors into the verification process enhances the overall security posture, providing a more robust and reliable means of confirming a person's identity [20].

Additionally, the utilization of government-issued identification documents serves as another critical layer in the identity verification process. Verifying the authenticity of documents like passports, driver's licenses, and national identification cards helps ensure that clients are who they claim to be. Advanced document verification technologies, such as optical character recognition (OCR) and document authentication algorithms, can be integrated to scrutinize the legitimacy of the presented documents, detecting any signs of tampering or forgery. Incorporating artificial intelligence (AI) and machine learning (ML) algorithms is pivotal for staying ahead of evolving identity fraud techniques. These technologies can analyze patterns, detect anomalies, and continuously adapt to emerging threats. By leveraging historical data and continuously updating algorithms, an identity verification system becomes more adept at recognizing suspicious activities or attempts at fraudulent access. This adaptive capability is crucial in an environment where attackers are constantly refining their tactics.

To further enhance security, the implementation of a knowledge-based authentication (KBA) system can add a layer of verification. KBA involves posing specific questions to the client based on information only they should know, such as details from their credit history, previous addresses, or other personalized data. This method serves as an extra layer of defense against impersonation or unauthorized access, as it requires knowledge that is not easily obtainable by malicious actors. In the context of remote client onboarding, video identity verification has gained prominence as an effective means of ensuring that the person interacting with the system is genuine. Video verification allows live interaction between the client and a verification agent, enabling real-time assessment of facial expressions, gestures, and responses. This not only adds

a human element to the verification process but also enables the verification agent to make informed judgments based on contextual cues. Furthermore, the secure storage and management of client data are integral to maintaining the integrity of an identity verification system. Employing robust encryption protocols to safeguard sensitive information and implementing secure data storage practices help prevent unauthorized access. Regular security audits and compliance with data protection regulations are essential to ensure that the identity verification system remains resilient against emerging threats and adheres to the highest standards of privacy and security. While technological solutions are vital, it is equally important to consider the human factor in the identity verification process. Employee training and awareness programs can help staff identify and respond to potential security threats effectively. Additionally, implementing user education initiatives for clients, such as guidance on creating strong passwords and recognizing phishing attempts, contributes to the overall security ecosystem.

Collaboration with regulatory bodies and industry peers is crucial for staying informed about the latest security standards and compliance requirements. Adhering to international standards, such as ISO 27001 for information security management, demonstrates a commitment to maintaining the highest levels of security and compliance. Developing a secure method for verifying the identity of new clients requires a holistic and multi-layered approach. By integrating biometric authentication, document verification, AI and ML algorithms, knowledge-based authentication, video identity verification, and robust data security measures, businesses can establish a comprehensive and resilient identity verification system. Moreover, continuous monitoring, adaptation to emerging threats, and collaboration with regulatory bodies contribute to the ongoing effectiveness of the system. In a digital landscape where the risks of identity theft and fraud are ever-evolving, a proactive and dynamic approach to identity verification is essential for safeguarding both businesses and their clients.

3.6 HMW ensures vendors provide well-trained attendants that filmmakers need:

Ensuring that vendors provide well-trained attendants for filmmakers is a critical aspect of the filmmaking process. Filmmakers rely on a range of vendors for equipment, services, and support to bring their creative vision to life. From camera and lighting equipment to post-production services, the success of a film project often hinges on the competence and expertise of the attendants provided by these vendors. To address this challenge effectively, it is essential to consider several key factors that contribute to the training and preparedness of attendants, fostering an environment that supports collaboration and excellence in filmmaking.

One fundamental aspect of guaranteeing well-trained attendants is establishing clear communication channels between filmmakers and vendors. This begins with a comprehensive understanding of the specific needs and requirements of filmmakers for a given project. Vendors should invest time in consulting with filmmakers to gain insights into the nature of the project, the equipment and services required, and any unique challenges that may arise during production. By fostering an open line of communication, vendors can tailor their training programs to meet the specific demands of the filmmaking process. Training programs should be comprehensive, covering both technical skills and soft skills that are crucial in the dynamic and collaborative environment of filmmaking.

Technical proficiency is paramount, as attendants must be adept at operating and troubleshooting a variety of equipment, ranging from high-end cameras to specialized lighting

rigs. Moreover, they should be well-versed in the latest technological advancements in the industry, ensuring that filmmakers have access to cutting-edge tools that enhance the quality of their productions.

In addition to technical skills, soft skills such as effective communication, problem-solving, and adaptability are equally vital. Attendants often work closely with diverse teams of filmmakers, including directors, cinematographers, and producers. The ability to communicate clearly and collaborate seamlessly is essential for ensuring a smooth workflow on set. Training programs should incorporate role-playing scenarios and real-world simulations to provide attendants with practical experience in handling the complexities of a film production environment. Furthermore, vendors should prioritize ongoing education and professional development for their attendants. The film industry is dynamic, with new technologies and techniques constantly emerging. Attendants must stay abreast of these developments to remain effective and valuable contributors to the filmmaking process. Vendors can facilitate this by organizing regular workshops, seminars, and training sessions conducted by industry experts. Additionally, providing access to online resources and encouraging attendants to pursue relevant certifications can contribute to their continuous learning and growth.

Another key element in ensuring the competency of attendants is the development of standardized operating procedures (SOPs) that outline best practices for equipment use, safety protocols, and collaboration on set. These SOPs serve as a reference guide for attendants, providing a systematic approach to their duties and responsibilities. Clear and well-documented SOPs contribute to consistency in service delivery, reducing the likelihood of errors and misunderstandings during film production. To enhance the effectiveness of training programs, vendors should also consider implementing mentorship programs. Pairing less experienced attendants with seasoned professionals creates a supportive learning environment where knowledge and skills are passed down organically. Mentorship programs foster a sense of camaraderie among attendants, encouraging collaboration and the exchange of ideas. This not only enhances the overall skill set of attendants but also contributes to a positive and collaborative atmosphere on set. Additionally, vendors should prioritize diversity and inclusion in their training programs. The film industry is becoming increasingly aware of the need for representation and inclusivity both on and off-screen. By ensuring that attendants receive training that emphasizes cultural sensitivity, diversity, and inclusion, vendors contribute to the creation of a more inclusive filmmaking environment. This not only aligns with industry trends but also enhances the vendor's reputation as a socially responsible and forward-thinking partner for filmmakers.

Regular feedback loops are integral to the improvement of training programs and the overall performance of attendants. Filmmakers should be encouraged to provide constructive feedback on the competence and professionalism of attendants during and after the production process. This feedback can be used to identify areas for improvement in training programs and to address any issues that may have arisen during a project. Vendors should view feedback as a valuable tool for continuous improvement and actively seek ways to refine their training initiatives based on the input received from filmmakers. Ensuring that vendors provide well-trained attendants for filmmakers involves a multifaceted approach that encompasses clear communication, comprehensive training programs, ongoing education, standardized operating procedures, mentorship, diversity and inclusion, and feedback mechanisms. Vendors play a pivotal role in supporting the success of film projects, and by investing in the training and

development of their attendants, they contribute to the overall quality and efficiency of the filmmaking process. As the film industry continues to evolve, vendors that prioritize the competency and professionalism of their attendants will stand out as valuable partners in the collaborative and creative world of filmmaking.

4. CONCLUSION

Filmmakers prefer to rent their gear to their trusted friends or circle of acquaintances. Filmmakers seem to prioritize maintaining the condition and quality of their gear, and they are willing to lend it to their close friends for free, without charging any rental fees. Many filmmakers have learned how to use film equipment on their own, without formal training or education. relied on online resources such as YouTube and experimenting with gears to learn the necessary skills and techniques to operate the equipment. Only once a year there is a 3-day exhibition of newly launched gear in big cities. filmmakers get to experiment with new gears and review them. this is popular among accomplished filmmakers who get invitations to these big exhibitions. Filmmakers need more of these events to enhance their gear knowledge and skill. Experienced reliable vendors offer high-quality gear at a higher price and provide exceptional services. However, some clients may choose to rent gear from other vendors who offer lower prices and don't give additional services needed to a filmmaker. Many freelance filmmakers and students have low budgets and try to find gear at a lower rent. this is time-consuming as it takes calling multiple vendors asking rates on call and then deciding where to rent it.

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CHAPTER 8

STATE OF THE HEART: UNDERSTANDING THE ROLE OF THE FASHION INDUSTRY FOR WEDDING

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ABSTRACT:

The 'State of the heart' is an attempt to predict a plausible solution and future for the wedding industry. Since weddings are multi-dynamic and work on more than one level, the technology integration can bring a change of convenience, precision, and thereafter cost-effectiveness. This research helps to establish a base and coin the concept of a 'smart wedding.' Even though weddings have a traditional connotation to them, the Millennials and GenZ have a different standpoint. A touch of personalization with an abundance of experience is what they want. Artificial Intelligence has paved its path for every possible industry there is. The Indian wedding industry should embrace it at the earliest rather than being the late-movers. There is a tremendous amount of prospect that the synthesis of the two might change the perception of a wedding in India.

KEYWORDS:

Bride, Fashion, Industry, Technology, Weddings.

1. INTRODUCTION

Weddings in India have always been a big fat affair with large labor forces. The pandemic deprived us of the luxuries of human contact. People couldn't travel across cities stirring chaos for wedding to-dos like wedding shopping, decor. Covid-19 led to a standstill for a lot of things. Indian weddings aren't a one-stop solution, and hence, the planning and execution can be very taxing and tedious. With the global dominance of weddings in India, the industry can't afford to operate on human errors [1]. The connotation of weddings in India is reasonably biased towards women as they feel it is her job to make sure that the wedding is seamless whereas the groom merely has to 'attend' his wedding. Marriages are always categorized as traditional in India disregarding the preferences of the bride and the groom. We hold a lot of value in our traditions and cultures, even though some are outdated. Marriage is the legal and formal recognition of the union between two people as partners in a relationship. A wedding is a ceremony for a marriage celebration. A marriage or a wedding doesn't just bind two people together but also their families, beliefs, customs, and culture [2].

Different countries and regions have different traditions when it comes to marriage. What remains perpetual is the union of two people. The wedding industry has been lucrative because of the will as well as the custom to marry. India is an overly populated country with around 12 million weddings taking place every year. Out of these 12 million weddings, 80-90% are arranged marriages as per the studies carried forward [3]. Arranged marriages are based on the compliance of families of the couple rather than the groom and bride. The concept of arranged marriage has been deeply embedded in the likings of the South Asian communities. As per a few studies, women feel safe and secure if their marriage has been decided by the elders of the family as they feel that their parents know best. Even though more and more people are trying to take the reins in their hands, most Indian couples are born out of an arranged marriage [4].

Before the start of the Internet age, the arranged marriages took place through the Indian matchmakers and matrimonial ads submitted in the newspapers. The portals have just started and transcended from print to digital. Indian matchmakers have made an entire business out of arranged marriages. These matchmakers find people seeking the same things in life and family as per their requirements and set them up. The institution runs on a biodata, a document that sums up your background, education, qualifications, skills, and hobbies. The biodata also

encompasses the physical attributes of the person like, their height, weight, and complexion. It also entails what the person is looking for in their life partner. The modern-day matchmaking process starts with the meeting of the potential couple where they try to understand each other and each other's needs in a span of a few hours. If the first meeting goes well, there is always a scope for a second meeting and then another, and finally, when the man and woman are ready the families are introduced. The online portals and matrimonial sites like shaadi.com, jeevansaathi.com, etc, work similarly as they are solely dependent on the biodatas of the two parties [5]. These sites are driven by technology but still have the same approach that has been prominent for decades. These matrimonial sites have come into existence since 2003 and have been at their peak ever since but there also has been hesitance towards a digital matchmaking site India is contradictory to the West because of the set of beliefs instilled in all. Sociologists have described the Indian family structure to be 'patrifocal' in nature. Indians have built a society based on the quality of interdependence of the family. Indians are encouraged to build their own family in the house they were born in, whereas, the youth in the West is encouraged to leave their homes to start their adult life on their own feet [6].

South Asians have been taught to put the family's interest and name ahead of their own. Weddings in India have a balance of culture and celebration. With every subculture comes a new tradition. Culture looked up to in India and weddings are the perfect occasion to carry on these traditions, which have become a worldwide known phenomenon. India is diverse within itself, and hence, the diversity has given birth to different cultures and therein different values and traditions. The influx of different religions and cultures has broadened the range of ethnicity [7]. A few rituals are present in every culture but they are interpreted in their languages making it extremely personal and unique to their culture. Applying henna is not only a form of adornment but also has scientific remedies like, cooling down nerves so that they aren't tensed. Henna or Mehendi is prevalent in Sikh, Muslim, and Hindu brides. A few grooms also sportingly apply smaller henna designs or their fiancée's initials to indicate that they are about to marry. It is of utmost importance to keep the value of cultures and traditions while planning a wedding. One can always modernize it or can personalize it until one disrespect it.

Cultural appropriation truly holds the value of weddings in India. There are a few things you can't do wrong but there are also a few things that can be changed like, the number of pheras can be changed from a maximum of 7 to a minimum of 4; kanyadan can be omitted if you don't believe in it and you can get a priest that looks into the interests of the bride and groom. Wedding fashion in India varies from culture to culture in colors, drapes, ornaments, accessories, and garments. A few cultures and subcultures prefer wearing a saree on their big day like, the brides from South India who adorn it with beautiful temple jewelry. The heritage weave of South India is their Kanjeevaram sarees which they adorn for their weddings. Usually, these sarees are inspired by flora and fauna and have beautiful motifs all over with heavy usage of gold or zari. But every South Indian bride and groom dress differently as per their region. Our believe that there is much more to a wedding than just perfecting it. It's about taking a risk, trying something new yet sticking to your roots, and experiencing each detail that comes with it. A wedding is supposed to be your love language that translates into an experience through the decor, outfits, venue, music, and everything else. The world is moving towards a smarter sanctuary with agile technology. The booming wedding industry shouldn't shy away from adapting to reality. Even though it calls for modern changes, traditions and emotions will keep the sanctity of weddings alive

2. LITERATURE REVIEW

L. Rabine [8] described that the Dakarois weddings, all the attention is on the bride. She shows her grace and style as a new wife by wearing a series of trendy clothes. In Senegal's fashion, these clothes are called 'ethnic', 'pan-African' or 'European' styles. I have been to lots of

weddings in Senegal and taken pictures, but Abdoulaye and Zeynab's wedding was really unique in its clothes and traditions. Abdoulaye, Zeynab, and their brothers and sisters celebrated their freedom in their own way. My research looks at how colonization and decolonization are connected. The second step is about the old-fashioned idea that traditional things are better than modern things when it comes to fashion and weddings. I don't use old-fashioned labels to talk about the clothes and the wedding. How do Zeynab, Abdoulaye, and their friends understand the forces of decolonization and neo-colonization as they make clothes and live their lives.

Following the 2015 U.S. Supreme Court decision that legalised same-sex marriage throughout the country, our research investigates how lesbian married couples manage style, fashion, and outfit choices on their wedding day. Reddy-best *et al.* [9] conducted in-depth interviews with ten couples, guided by authenticity theory, to find themes connected to self-expression and identity negotiation. Participants experienced gender and symbolic negotiations while pursuing authenticity, prompting empowerment, ambivalence, and emotional labour. Ambivalence over the notion of "bride," gender's role in style building, representations of the true self, and heteronormative experiences were among the themes explored. Couples attempted to alter the bride's position by performing a political act via wedding day fashion. The research has ramifications for wedding vendors and planners who cater to the increasing number of same-sex couples in the United States.

Alarcon *et al.* [10] described that the fast growth of the internet and the popularity of social media has changed the way we communicate. Traditional media used to be the focus of communication strategies, but that has changed. The new trends show that social networks are very important for connecting with people. Real weddings are really important for fashion brands at the event because they can help spread their messages to a lot of people. The text uses different examples to connect big fashion brands with events and looks at the social media pages of these brands to see what they are like. The results show how people respond to the efforts made to communicate and how important it is to use these actions to improve connections with people involved.

Ourahmoune *et al.* [11] research looks at how people in modern Algeria buy and wear clothes for weddings, and how gender plays a role. The research will focus on studying the Kabyle people, who are a minority in a country where most people are Arab and Islamic. This will help us understand how fashion is related to people's identity. A study of how people talk about and use fashion during weddings shows that rich people are changing their attitudes and desires for luxury items. Moreover, wearing clothes that used to be seen as bad may make power differences based on gender, money, and race stronger. In this study, people's choices are influenced more by what the group thinks rather than trying to be different or expressing their own identity through fashion, as in past research.

Parkins and Findlay [12] described that the fashion industry, with its connection between individual and society, has the potential to make changes in systems of power. However, its ability to make changes can be taken over by neoliberal ideas that use politics to promote the idea of a perfect individual that can be bought and sold. This might seem like it's challenging the dominant power, but it actually ends up supporting it in a subtle way. A Practical Wedding is a website that supports people who feel left out or disagree with the traditional wedding industry. It gives them a place to share their ideas and experiences. Many of the blog posts criticize the expensive and overwhelming wedding industry and offer a place for LGBTQ+ and feminist people to talk about and organize their weddings. However, the posts about clothing and fashion don't really include feminist ideas. While these posts seem to be about including everyone and standing up against unfair treatment, they actually end up supporting the

traditional ideas of male power and control in the industry that APW is supposed to be fighting against. This article is asking about the importance of removing fashion from politics in a blog. It also wants to know what we can learn from this separation between clothing and the feminist political scene for people who study feminism online.

Chagas and Mezabarba [13] article looks at how Muslim women in Brazil choose and prepare their wedding clothes, and how they use and talk about them. The goal is to learn how religious women interpret the rules of Islam about covering their bodies when getting ready for special events like weddings. How do they mix wedding dress styles with religion. This analysis uses research and interviews to show that Muslim women want modest and authentic wedding dresses that blend Brazilian culture, female beauty, and Islam. In short, the research shows that the mix of religion and fashion creates a unique style that is improvised and creative, because Islamic fashion is not common in Brazil.

Funduk *et al.* [14] described that the Many brides from different cultures and societies still like to wear a white wedding dress. It is still seen as a magical representation of everything that is sacred. Alternatively, ideas for traditional white weddings are shown a lot in movies, shows, magazines, and ads. Modern wedding culture and fashions in Slovenia are made in wedding stores with their rental clothes, which are like the popular white weddings in the Western world. The research aimed to look at what the white wedding dress means in Slovenia, and to understand how it is made, worn, and its significance in society. The researchers used a mix of methods. First, we used critical discursive analysis (CDA) to find out what the white wedding dress symbolizes in terms of how men and women relate to each other. Furthermore, we used numbers to figure out how much of the known elements are there and how strong they are. In the qualitative study, we found that the modern white wedding dress represents feelings of being trapped, relying on others, trying to be thin, lack of authenticity, and exaggerating the appearance of the bride's body. The study showed that the symbolic elements we found are very common in modern Slovenian wedding dresses.

Rahman *et al.* [15] described that the wedding planning industry is beginning to offer a new sharia version for weddings. However, there is no set rule for what makes a wedding organizer sharia compliant. This study wants to make a list of things to do for a Muslim wedding based on Islamic laws. The sharia wedding organizer index can help you see which sharia wedding organizers are available. This study will gather information from past research and ideas to create a list. This study uses a method called Simple Additive Weighting to figure out the weights. The main reason for making the index is the Maqashid Sharia index theory by Al-Ghazali. The research shows that there are 13 signs used to measure how well a wedding planner follows Islamic rules. The signs are being by yourself, following old customs, getting ready for a wedding, having someone do your makeup, time for praying, how to eat politely, different kinds of food, choosing what to wear, agreeing to a deal, different choices to pick from, how you pay, the kind of music, and reasons to get married. This study made a list of rules that sharia wedding planners have to follow.

Ji *et al.* [16] research suggests a way to use a 3D image of a person's torso to create a 2D pattern for making a corset. The 3D scanning gives us a picture of the human body in point form. Authors made a model of the human body for research and designed a basic 3D style for a corset. Authors used different line designs to create a similar style, and then turned the 3D design into 2D patterns using a platform that flattens curved surfaces. The verification was done using a virtual simulation platform and actual physical methods of making it. This study shows how we can use digital technology to design clothes in a better way. Our idea makes it easier to design wedding dresses and makes them fit better and feel more comfortable. It can make it much easier to create wedding designs and help you work faster. Also, our new method

can be used to design not only wedding dresses, but also other types of clothes [17]. More and more people are interested in looking beautiful and expressing themselves, so wedding traditions are changing to reflect this. Changes in how people live today are also affecting the way weddings are done, including the kind of dresses people wear. Wedding dresses are changing to suit people's personal preferences. Lately, more women are wearing Hanbok wedding dresses with parts of traditional Korean wedding clothes. The way weddings are done has changed, and now brides have more options for their dresses, hair, makeup, and accessories to show their unique style and keep up with the latest trends. The new popular colors each year affect how people do their nails, makeup, hair, and what clothes they wear. Kim and Kwon [18] research wants to use the popular nail polish colors from Pantone to make nail designs that match the color and style of wedding dresses. There isn't much research on this topic yet. Authors discovered how the color and design of nail art can be important for a bride's wedding look when wearing a modern dress with traditional Hanbok elements. It was also confirmed that there are many ways to create different looks. This study wants to help the nail art industry grow by making more designs for wedding dresses and using Pantone's color trends. This should make people want to do more research on how fashion and art influence nail art designs.

3. METHODOLOGY

3.1 Research plan:

Present research revolved around three things weddings, technology, and pandemic. I referred to various articles from prestigious magazines and publications of India, and a few academic papers have been my source of information. These have helped me gain a better understanding of the current needs and perceptions of people. The primary research entails reaching out to the concerned target market with the experts through different methods to get various responses for a collated answer. This further helped me get an understanding of the market's perceptions, needs, and wants. It also gave a glimpse of how future-ready the market is.

3.2 Survey questionnaire:

This research looked at young people and their opinions about weddings in the future. They made a survey to ask them about it. The questions focused on what people like, how computer programs can help, and what might change in the wedding business. One big question was thinking about how new technology might affect brands in the future. As technology becomes more important, people's opinions on how it will change the wedding industry and affect brands are really important. This study looks at how young people feel about using technology in weddings. It could show how things are changing and give new chances for companies to change and come up with new ideas.

3.3 Focus group and Expert interviews:

The focus group activity included a group of 6 millennials who are about to or will marry in the near future. Furthermore, I divided them into a group of 2 Team traditional and Team Futuristic. I then asked both the teams to draw up a brief wedding plan with a customer in mind. We further discussed both these plans to check the feasibility. All the interviewees belonged from different backgrounds, yet they still had a common link that connected them to the wedding industry. Their insights helped me gain a better understanding of the feasibility and plausibility of a smart wedding

4. RESULT AND DISCUSSION

Millennials and GenZ know what they want, and their decisive nature was reflected in the survey. A majority of the respondents think that weddings are a costly affair, and are built on the grounds of family, culture, emotions, and celebration. There is a substantial amount of

preference or shift towards technology. Most people believe that technology will make everything experiential, and the scope is vast. The majority of the responses suggested that they wanted weddings to be more experiential, sustainable, and cost-effective shown in the Figure 1.

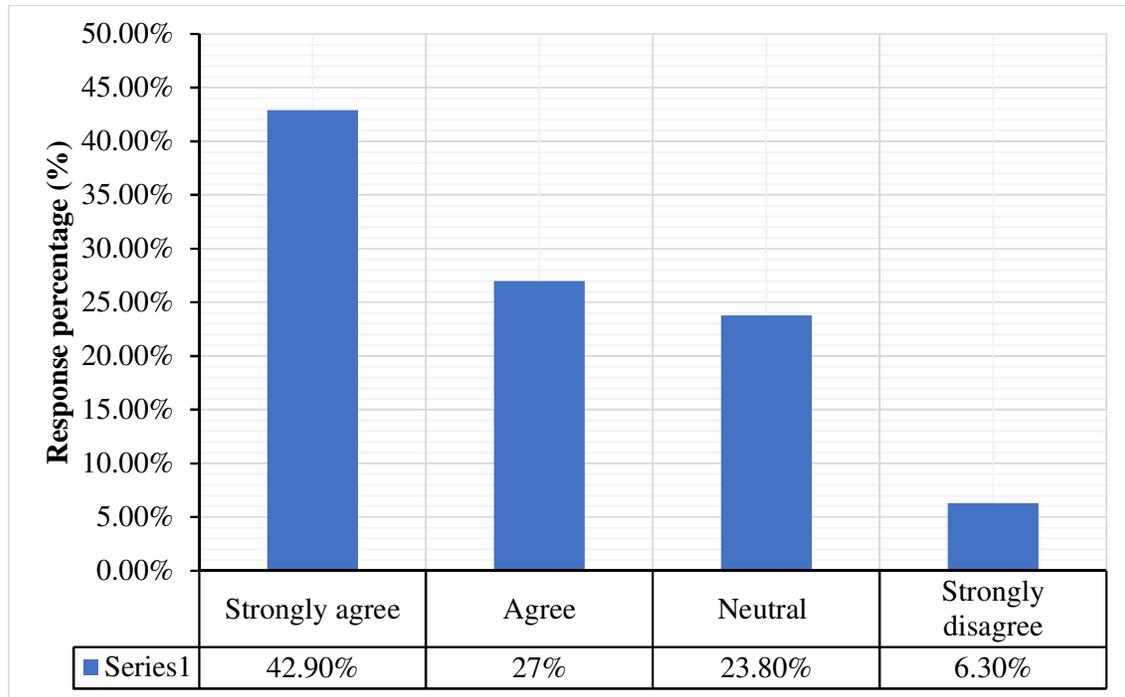


Figure 1: Representing the response of the question the scope of technology impact brands in the future.

The focus group activity conducted was targeted towards millennials that are of marriageable age at the moment. The aim was to uncover their perspective towards traditional and futuristic weddings. Each group has three people where they had to play a role of a wedding planner. A brief was already given simple, fun, interactive, and enjoyable for the couple too. The majority of the participants gave me a big maybe for trying their hands on a futuristic wedding 7 to 10 years down the line. All of were the opinion that technology is efficient and cost-effective in the long run but human touch and connection bind the wedding industry. Four experts, four different fields, four perspectives, one 98 common ground weddings All the four expert interviews, conducted through different mediums, were delightful and very insightful shown I the Figure 2. We had talks beyond the fashion industry revolving around weddings, technology, culture, etc. Some even had personal instances to share.

Most of them were keen to see a future where a smart wedding takes place as it will definitely be a one-of-a-kind experience. There will come a future where technology will drive our lives entirely and even then, the presence of human expertise will be needed. Amruta has pursued her fashion studies from LCF and Institute Marangoni. After coming back to India, she cofounded Vanda Fashion Agency with Vedhika Ghotge. They mainly serve as a bridge for brands who want to be in India and stylists who need swifter sourcing of those brands, especially for international brands. Deshiv Puri got into Rahul Mishra right out of college. Deshiv interned at the brand when he was in the last year of his college and proved to be valuable to the team and the designer. Deshiv studied fashion communication at NIFT, Kannur. He is solely responsible for the brand’s PR & Communications department. His experience at Rahul Mishra has been nothing short of a success story. Dhrumil Shah started his Marketing

firm when he was just in college. Deshiv met his business partner there, and the rest is history. Dhru Vats has made a big name in Gujarat and Gujarat's film industry. Dhrumil recently started an event management company during the pandemic. Both his companies are trying to modernize age-old traditions with the presence of youth.

“Bridal Market Won't Have A 'Bura Time' And Will Always Boom No Matter What. Smart Technology Is Beautifying the Wedding Process for The Luxury Market.

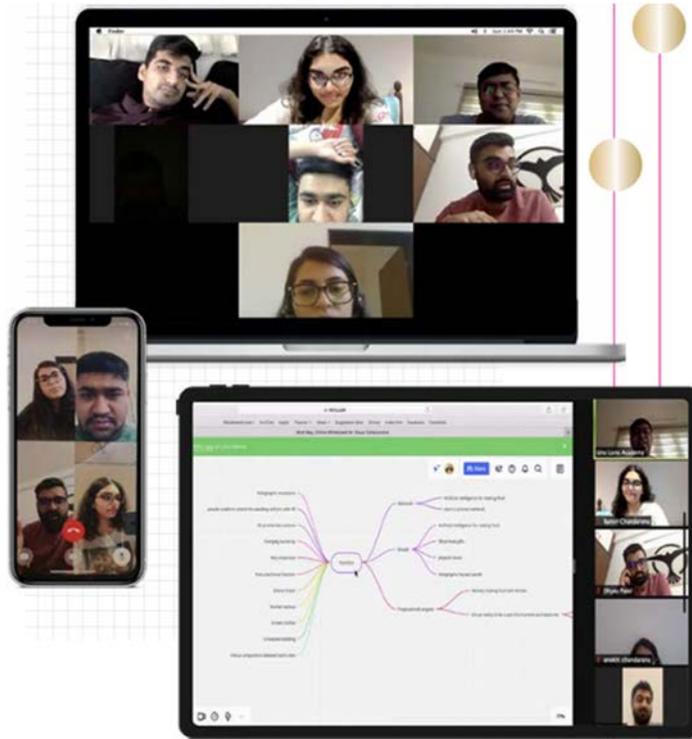


Figure 2: Representing the individuals involved in the group discussion.

Shirali's graduated with her UGC in Textile Design from NIFT, Gandhinagar, and PGC in Advertising and PR from MICA, Gandhinagar. 'Dhaaga Saarang' came into existence in 2013 for her graduation project. The project, along with the title received a lot of appreciation and was carried with her for all her business ventures as well as her journey as a stylist. Technology is the way to move forward, but a human touch will be necessary. We, Indians, love the feeling of personalization which works on a human-to-human basis. The couture industry of India will soon go through changes because of new collaborations and business signings, like that of Sabyasachi and ABFL, and hence, technology is very well plausible. All the methods suggested that technology will be beneficial for the industry and its customer but with the presence of human contact. The bridal industry needs to be exciting for the customers and their needs. There is hesitance with the use of technology because of the historic value, the treasured culture, and the rich traditions. Till the time technology proves to be free of glitches and cost-effective, it will lure more people.

Weddings in India are very vibrant in terms of the festivities, colors, and outfits. The process was simple to keep the essence of weddings intact through emotions. The entire process needed to look modern through visual elements such as colors, outfits, and props. Hindu marriages are diversified because of different subcultures like Gujarati, Bengali, Marathi, etc. They differ from region to region as well as per India Online, but some traditions remain invariable like the pre-wedding celebrations such as Ganesh Puja to wish for prosperity and take blessings for new beginnings, the Haldi ceremony to purify and cleanse the bodies of the to-be-bride &

groom, Sagan/Sagai for the exchange of gifts to confirm the engagement, and Sangeet to celebrate the occasion with music and dance. Bengali weddings have a unique form of adornment with their style of drape, makeup, and headgears. Saat paak is a very important ritual in Bengali weddings where the bride sits on a stool or pidi, which is lifted by her brothers so that she is taken around the groom seven times.



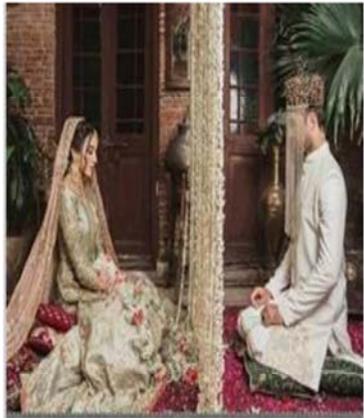
Hindu wedding



Bengali Wedding



Gujarati Wedding



Muslim wedding



Christian wedding



Marwari wedding



Malayali Wedding



Tamilian wedding



Assamese Wedding

Figure 3: Representing the different patterns of the outfit used in the various wedding culture.

Gujarati weddings are rich in color palettes shown in the Figure 1. The wedding functions are similar to other cultures but their post wedding functions are filled with fun and laughter. In the older days when child marriage was legal, the bride would cry a lot, and to distract them they introduced games for the couple like ghar rokai, where all the sisters of the groom would stop the couple from entering unless they were given a monetary incentive so that they could get their blessings. Aeki Beki is one such fun game where the bride and groom are supposed to find a ring inside a vessel filled with milk and rose petals and the winner gets the gift from the family. The ladies of the Gujarati community always wear their sarees with their patent front drape, which is distinctive to their culture. But few of the customs vary from one culture to another. The Sikh community is known for their marriages in Gurudwara, where they get married in front of the Granth Sahib. The ceremony is called 'Anand Karaj', a joyous union. The bride and groom then take the Lavan Pheras around the Granth Sahib.

A Sikh wedding has innumerable events from a Roka, where the parents give their blessings to the couple and Kurmai, a formal engagement; to Chura and Kalire, where the bride's uncle/s gift her 21 white and red bangles that are dipped in rosewater and curd and are opened once the Chura ceremony has been completed. The traditions and rituals in a Muslim are similar to a Hindu ceremony beside the main ceremony. Muslims have Nikaah, where a curtain is drawn between the bride and groom, and the quazi asks the couple if they agree to the marriage. They then sign the marriage document to seal the deal. Christian weddings are far from the brighter color palettes. White & Black are usually the preferred colors, which look stunning against the backdrop of a church or even nature. The exchanging of vows is what truly makes a Christian wedding heartfelt. It is a very simplified ceremony starting with the processional to the prayer to the recessional. Malayali bride adorns a Kasavu saree which is a traditional saree in Kerala.

The simplicity of the saree is in the colors white with a tinge of gold in the borders. A Kasavu saree can also be made in brighter colors for the brides. The choice of temple jewelry for a bride in Kerala comprises Palakka, Kasu Mala, Kamarband, and Matha Patti. A Malayali groom, on the other hand, is usually decked up in a pristine combination of white and gold with a matching scarf, Melmundu. Their attire ranges from traditional to modern as there has been a substantial shift from bare-chested with dhotis to indo-western attire. A Tamil bride exuberates elegance in the Kanjeevaram saree, where a Brahmin bride adorns 9 yards whereas a non-Brahmin bride adorns 6 yards. Tamil brides have a patent style of draping called Madisar, where the Oddiyanam, a waist chain, wraps over the saree along with other temple jewelry pieces. Nethi is worn on either side of the hair parting and is one of the prominent pieces from the attire. The West is very different from the South when it comes to weddings because of an abundance of colors.

The West comprises Gujarat, Maharashtra, Rajasthan, Goa & Karnataka. These regions have their variants of cultures and subcultures, especially Gujarat and Rajasthan, that are deeply rooted in handicrafts. Marwar is considered the land of royals in the heart of Rajasthan. Marwari weddings are full of opulence, and the couple doesn't fall short of grandeur. The bride may either choose to wear a heavy lehenga or a saree, traditionally in red. Rajasthani jewelry is famous for their Kundan, Jadau and Meenakari work, donned by the bride in the form of Rakhri; Borla, a Maang tikka; Timaniyaan, a diamond-studded choker; Choodiare, bangles, Bajuband is worn on the arms as armlet; Bichhiya, a toe-ring, and Nath, a nose ring. The Marwari groom dons the royal attire either in an achkan, jodhpurs, or a sherwani. Jewelry plays an important role for grooms as they usually wear a necklace with a sarpech and a sword. Rajasthan is filled with designers and tailors that made ensembles for the royal family, and now they have opened up to a niche market. Assamese weddings or Biya have a plethora of silk, especially Muga silk, famous in the state. The brides have a special attire called the 'Mekhla Chadar', a two-piece attire draped like a saree traditionally in an off-white color. The main

embroidery in the attire is zardosi, which can be worn with two sets of jewelry, gold and handmade ones known as Jun Biri. Assamese grooms are as simple as they come with a white dhoti kurta set with their traditional shawl called the Cheleng. They also further accessorize it with a turban and an Assamese sword called Hengdang.

The film is set in the imminent future, where technology crossovers with the wedding industry seem plausible. The story uncovers the hassle-free experience that technology brings to these couples. Wedding planning isn't supposed to be tedious, but an empirical event and AI brings you just that your entire wedding to-do list at your doorstep! These unconventional times call for out-of-the-ordinary solutions that are perfectly fit YOU. Kiara is a very dynamic woman, and hence, her look had a minimal pop of color and accessories. A casual blazer with a white vest and jeans that are perfect for work to lunch look. The slightest hint of luxury is seen from her A modern bride that prefers comfort over fads is how we could describe Kiara.

Statement pieces in blushed tone paired with a contrasting green set to hint a touch of extraordinary. She exuberates flamboyance and modern a regal feel. outfit as well. Abhay's look for the first two scenes is a very laid-back business look that shows that he is just coming from the Abhay's wedding look is an effortless yet regal look. A neutral sherwani with a simple strand of jadtar necklace and a complimentary khes. The wedding day needs to be fashionably comfortable but also suit his personality. office. The look comprises a pair of trousers with a comfy sweatshirt, and a laptop bag to complete the look. His personal preferences always are enticed by affordable luxury or luxury brands. Abhay's wedding look is an effortless yet regal look. A neutral sherwani with a simple strand of jadtar necklace and a complimentary khes. The wedding day needs to be fashionably comfortable but also suit his personality. A bronzed look with neutral to brown smokey eyes with a natural flush. Open & semi curled hair to depict the new age bride. The groom has a clean look with only a tinge of concealer. Textures play an integral role in balance when transcribing the visuals or the imagery. A mix of textures is always easy on the eyes. The film consists of an overall mix of textures like coarse, smooth, and uneven.

5. CONCLUSION

The millennials and GenZ are open to newer experiences and newer dimensions. Weddings have always been at the heart of emotions, and it continues to do so. But these festivities always call for human contact to bestow their trust. Where there is a scope for technological glitches, there is also a window for human errors. Tech does make things exciting and intriguing, but there is a prerequisite of human contact to a lesser degree. Currently, AI is doing wonders in every industry, along with the fashion industry. A few of these tech-savvy ideas work well in the context of the pandemic. But there is a sense of hesitance from people at the moment, but eventually, smart weddings most definitely will grow on them. Coming up with ideas was the easy part, whereas checking their feasibility was difficult. The initial idea had been worked on too many times with constant research as some loved the idea and the others weren't sure.

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CHAPTER 9

SOCIAL BEAUTY: INVESTIGATING THE BEAUTY INDUSTRY'S ROLE IN SOCIETY

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ABSTRACT:

The theory of social beauty, a term coined by me that highlights the modified lives lived by people on social media. The modification here doesn't necessarily mean leading a fake life, instead, it showcases how people tend to alter certain aspects with the hope of portraying themselves in a way they wish to be perceived by others. With social beauty, to identify and further understand the common personas created by users on social media. Social beauty aims to focus on looking at life on social media in a conceptual manner, the life that users present to the world beyond. Further, with the help of our research and survey analysis, the resolution of my paper will discuss the identified personas in-depth and highlight the way these personas could be leveraged by various beauty brands to streamline and personalize their overall process of marketing. The purpose of this study is to demonstrate that brands can perhaps choose one or more of these personas to market to maximize their return on investment. The target audience for the present paper consists of old Gen Z's and Young Millennials.

KEYWORDS:

Social Media, Modifications, Personas, Beauty Industry, Marketing, Personalization.

1. INTRODUCTION

Scrolling through our phones for hours on end, one can only imagine the kind of impact this has on our minds, body, and personality. Whether we agree with social media's importance in our lives or not depends on our personal preferences and lifestyle choices. It has a dominating effect that usually plays out or tries to overlap with our real lives. Social media has undoubtedly changed how people communicate and connect, and this impact is more dynamic and overarching than just simple human relationships. At this point, it is evident that there is nothing that can't be achieved through social media [1]. Initially created to bridge the communication gap between people, these existing platforms are now used for entertainment, communication, gaining and spreading knowledge, building a business, and ultimately also building your own identity. Having said that, one cannot overlook certain dangers associated with such liberations. When one lives their life on social media, they're ultimately letting an app take a peek into their life, typically voluntarily [2].

With the growing commercial use of social media, it can become invasive when the data being posted online is being leveraged and studied by different industries for commercial gain. The social media channels mentioned above will now be considered mainstream since there's a new app popping up every day with many of them eventually turning into fads, these apps continue to dominate the social media industry. The global social media market is currently estimated at 231.1 billion dollars in 2023, compared to \$193.52 in 2022 with an annual growth rate of 19.4% with the top social media apps being Instagram, TikTok, Facebook, Twitter, WhatsApp, YouTube, Pinterest, Snapchat Etc. The social media channels mentioned above will now be considered mainstream since there's a new app popping up every day with many of them eventually turning into fads, these apps continue to dominate the social media industry [3]. Having stated that social media can't necessarily be limited to these platforms.

With technological advancements- something as simple as a game found on the App Store has turned into a platform for communication. Additionally, OTT platforms like Netflix and Prime; Dating apps like Bumble or Tinder, and music streaming services like Spotify are becoming more creative and streamlined with each passing day and don't necessarily limit themselves to

servicing just one purpose. While all of these platforms serve a different purpose, it ultimately comes down to this industry being the Pioneer in effective communication on all fronts. Coming to the commercial aspect of social media, the Facebook marketplace, Amazon storefront TikTok ads, and former Instagram shop features becoming common features for consumers to shop and explore new businesses daily [4]. Such features provided by different apps become great platforms not just for selling but also for marketing. Social media marketing provides businesses with an open platform to increase visibility, form a personality, and build a community of their own in the hopes of an effective recall value, similarly, on the consumer side, it provides users with access to new brands, get to learn about their offerings, indulge in said offerings and eventually become a part of this journey. Such aspects of social media marketing were especially highlighted when the pandemic restricted us from the world outside [5].

Influencer marketing becomes a huge base for beauty brands to market their products since consumers continue to prefer to see such products tested and reviewed by trusted people before investing in them. Content creation here not only becomes an added element to increase visibility since it targets both the brands and the creators' audiences, but it also increases the viability of the same. A known face becomes a credible element to enhance community building for product endorsements. Influencer marketing could happen either through paid sponsor deals or barter deals and if a brand is lucky enough, an influencer might just post about the brand without any planned deal. The content produced by beauty brands on social media always keeps in mind the kind of audience they're targeting [6]. Earlier, the number of likes and comments a piece of content received was the primary indicator of its success. Constant algorithm changes, for better or for worse, have made it extremely difficult for creators and businesses to maneuver and keep up with the same. Regardless of what a brand is aiming to promote, marketing has become extremely content-driven and requires a "wow" factor. Clickbait and gimmicky content continue to generate more views as it promotes a sense of curiosity [7].

Consumers have grown to become more vocal, and with the rise in necessary social movements such as inclusivity and body diversity, these become important values that brands need to work towards and attach themselves to. Brands can no longer be just about the products and services they offer; they need substance, elements of storytelling, and certain values that they align with to be able to communicate and connect with their consumers more efficiently. Beauty standards refer to the 'norms' of beauty created for people. They highlight the criteria for a person's appearance, body type, lifestyle, etc. These standards suggest to people the skewed 'ideals' that further categorize them into terms like beautiful," which is an unjustified antonym. Such beauty standards end up having drastic adverse effects on people and put pressure on them to conform to such norms [8]. Research shows that 88% of teenage girls fall into the trap of beauty standards created by the media. The repercussions of such ideals usually relate to a negative impact on people's mental health and well-being since they face constant dissatisfaction due to an altered and false perception of themselves. With technological advancements and the rise of AI and AR in social media and various editing apps, people can essentially alter their faces to get their desired look. Research conducted by Dove's self-esteem project highlights the dependency people have on filters to look presentable [9]. According to the report, about 80% of girls start using filters or editing apps to alter their looks at the age of 13.

Celebrities and influencers further add to such insecurities by idolizing and promoting their perfectly 'constructed' realities online. Users start to doubt themselves completely as a result of the lives influencers portray online, which raises unrealistic expectations. Even beauty brands use such standards to their advantage by adding highly edited images of models and profiting off of people's insecurities. Using the concept of beauty and its standards to highlight

trends forces people to never feel comfortable in their skin. Whether it was the overly skinny 'heroin chic' look of the 90s or the trendy BBL and plump lips of the 2010s, Accordingly, with such pressure created online to conform, people feel the need to change themselves to fit in accordingly. The beauty industry has always been at the forefront of innovation, invention, and rediscovery. Even so, with the pandemic, the industry was quick to respond to the drastic changes that followed [10].

When businesses were struggling to survive, the beauty industry, although suffering the brunt of it as well, bounced back quickly, with new brands and small businesses on the horizon every other day. While 30% of the beauty market shut down, they instantly made up for the losses incurred with in-store sales through a major increase in e-commerce sales. The pandemic forced brands to come up with innovative strategies, most of which transformed the industry completely and further became non-negotiables for creating a successful brand. The use of AI/AR makes the entire process of online shopping more seamless. Whether it was the inclusion of a virtual try-on or the skin analysis feature introduced by skincare brands, such concepts made online shopping much more efficient for users [11]. Cultural and social aspects like inclusivity and diversity were quick to become major topics of criticism and discussion concerning brands. Belonging to a generation where people scroll on social media for hours on end, consuming all sorts of content, keeping up with and forming new bonds with other digital natives or even establishing themselves as a content creator, one does seem to wonder about the kind of consequences such an exposed life holds and the way it influences us.

Come to think of it, one might also find it confusing to establish the difference between their personalities on social media vs who they may be. In the wake of celebrating the 'real you' on social media, users put their best foot forward. This doesn't necessarily imply that they're "faking it," but it does demonstrate a genuine effort to show people what the user wants them to see. The Theory of Social Beauty uncovers the personas that people tend to create as they live their lives on different social media apps. Social Beauty establishes the extent to which the creation of such social identities influences us IRL! In the wake of the plethora of new social media apps such as TikTok, Clubhouse, Only Fans, BeReal and other popular features such as Instagram status/stories and the prompts feature on various dating apps compel us to put out a version of ourselves that we ideally would want to show or be perceived as. How we wish to be perceived, our social persona ultimately tends to become a part of our identity. Social Beauty focuses on creating an experience in a more conceptual manner, where our lives online are mainly viewed as an experience, an experience provided to the world beyond. With Social Beauty, and wish to understand the modified lives online to further see how beauty businesses can use said personas to their advantage and streamline their process of marketing online.

2. LITERATURE REVIEW

Beauty stuff on social media has grown a lot, but no one has looked into how it affects how people feel about how they look. Seekis and Barker's [12] study utilized a model to examine the correlation between young women's engagement with beauty content on social media and their consideration of cosmetic surgery. A study was completed by 399 college-aged females between the ages of 17 and 25 to understand their social media usage and self-perception of appearance. The authors used path analysis to see if there were connections between things, both straight and through other things. The research findings align with the tripartite influence model, indicating that individuals who frequently consume beauty-related content on social media are more prone to making comparisons with others and being swayed by societal norms of attractiveness. This can lead to concerns about their appearance and even considering cosmetic surgery. However, feeling like you need to look beautiful and being worried about your appearance did not explain why people who engage a lot on social media about beauty

are more likely to think about getting cosmetic surgery. The research gives us a new understanding of how people who are involved in beauty social media might think about getting cosmetic surgery. Social media influencers play a crucial role in the beauty industry by simplifying the process of finding different beauty products and ideas for people. They also advocate for embracing diverse cultures and sharing their daily lives on social media platforms. These makeup artists leverage their expertise to collaborate with cosmetics brands and earn substantial income by endorsing their products to their social media followers. Hassan *et al.* [13] study looked at social media influencers, but it didn't focus on how they talk to young people about makeup and using it. This study looked at whether popular beauty influencers can persuade young women to choose certain makeup brands. The authors asked a group of young women who watch makeup tutorials on social media like YouTube, Instagram, and Facebook to answer some questions. Furthermore, we collected and analyzed 271 completed surveys. An influencer's capacity to impact young millennials hinges on their understanding, appeal, and relatability to the audience. Social media influencers are considered a good way to advertise to a lot of different people and make more people know about a brand.

Nanda *et al.* [14] study aims to investigate the impact of beauty influencers, social media marketing, and consumer perceptions on the purchasing decisions of Korean skincare products. The study utilized a survey method to gather data from 118 Narotama University students who have purchased Korean skincare products. The data was analyzed using a computer program called SPSS. The decisions people make when purchasing Korean skincare products are positively affected by beauty influencers, social media advertising, and brand image, as shown in this study. It mainly affects social media marketing and brand image, but it doesn't affect purchasing decisions for beauty influencers.

By closely examining the promotional techniques and product demonstrations of K-beauty social media influencers, this research investigated the impact of these influencers on people's attitudes toward new products. Wang and Lee [15] study was conducted to examine the impact of social media influencers' posts on the purchasing behavior of young Chinese consumers towards new products. Different combinations of influencers, whether they are celebrities or not, were tested with and without showing the sponsorship, as well as with and without displaying the product. According to the study, user-generated social media posts without brand sponsorship were the most influential in encouraging people to try a new product. Also, the type of influencer, whether they were sponsored, and how the product was shown, all had a big effect on whether consumers would like a new product. Consumers were more likely to buy a new product when it was promoted by popular people, sponsored, and shown to the public. Our research has yielded significant recommendations for companies in the beauty industry implementing SMI marketing approaches. Social deixis is often seen in movies. Social deixis refers to the way language is used to refer to people, groups, or relationships between them. This study wanted to explain the different ways people show their social status and the reasons for showing it in the movie *Beauty and the Beast*. Noerrofia and Bahri [16] looked at this study using Stephen C. Levinson's *Levinson*. The authors of this study used a qualitative method to analyze the data. In the movie *Beauty and the Beast*, it was found that the characters mentioned people and relationships a total of 34 times. The writers discovered 68 different ways people interacted socially in the movie *Beauty and the Beast*. They found that 34 of these interactions were categorized as types of social behavior and the other 34 were categorized as the goals of social behavior. The writers discovered two types of social communication, there were 18 styles in how people relate to each other and 16 styles in how people talk about themselves. In addition to the writers we found, there are three main goals of social deixis. 9 manners of speaking demonstrate politeness and consideration, 18 manners of speaking that demonstrate closeness, and 7 manners of speaking that demonstrate control and power.

Individuals in the beauty industry are finding that using social media is leading to improved and more engaging connections, as opposed to traditional online services, for sharing information. Kang and Na's [17] research focused on the dissemination of ideas related to beauty and collaborative innovation through social media platforms. Our research aimed to explore the influence of social influences and the dynamics of information transmission. This study involved the selection of 694 experienced consumers with a focus on beauty. The validity and reliability of the tests were verified to test the research questions, the path was analyzed and the model was measured. Here are the findings of the research. At first, how pretty people are in one-person media and how useful they are influences how others act in social media. This is because people tend to copy others in their group. The way smaller groups are connected had the biggest impact on how people acted. Similarly, only the people you look up to and the connections between them have a big impact. Secondly, how people imitate others, form connections with others, and compare themselves to others in beauty-related media one person had a big impact on working together to create something. This can help researchers understand how these relationships continue and grow, and can also help them study other related factors.

Kaur and Kumar's [18] study looks at how social media is used in the Indian beauty and wellness industry. It focuses on what people do on social media. The study talked to people who own or manage beauty and wellness centers to find out what helps them promote their businesses on social media. It found that five important things help with this reason, the way they use the internet, how they run their business, the good things about their business, and the way they measure how well their social media promotion is working. The study reveals that Facebook and Instagram are the leading social media platforms, closely followed by Snapchat, YouTube, and Linked In. The study shows that social media is very popular for advertising beauty and wellness centers, more than traditional ways like TV or radio. Valuable information can be gained by business owners, promoters, and marketers to enhance their usage of this inexpensive marketing instrument. The study helps fill a gap in research about how social media is used to promote beauty products. It gives a detailed understanding using a framework called the 5M's.

3. METHODOLOGY

3.1 Study Design:

This study looks at how social networks affect the beauty industry. Starting with a lot of information from reports, research papers, and articles about beauty in society, the study then looks at specific examples to see what it can learn from them. Our study summarizes the results in an organized way. The study uses two ways to analyze the information, including looking at words and numbers. Qualitative methods use surveys and personal interviews to get detailed information about how social networks affect people's feelings and thoughts shown in Figure 1. Quantitative analysis uses numbers and statistics to measure trends and patterns. Our study combines different methods to show how social networks affect the beauty industry. Combining the qualitative and quantitative findings helps us understand the study better and create a detailed summary of the results.

3.2 Quantitative and qualitative analysis:

The first step in collecting data to fulfill my primary research was a survey. The objective of the present survey was to understand an individual's intake of social media and the various factors that contribute to the alteration of personalities created online. Further, it included questions to understand a person's idea of their beauty routine and consumer habits concerning beauty standards. The next step in getting expert insight would be interviewing industry experts. The present study targets people who've had experience working at social media

companies as well as beauty companies to understand how both industries benefit one another. The interview will further bring a holistic perspective into understanding how the creation of such personas would be beneficial for beauty brands to tailor their content to people's social personalities online.

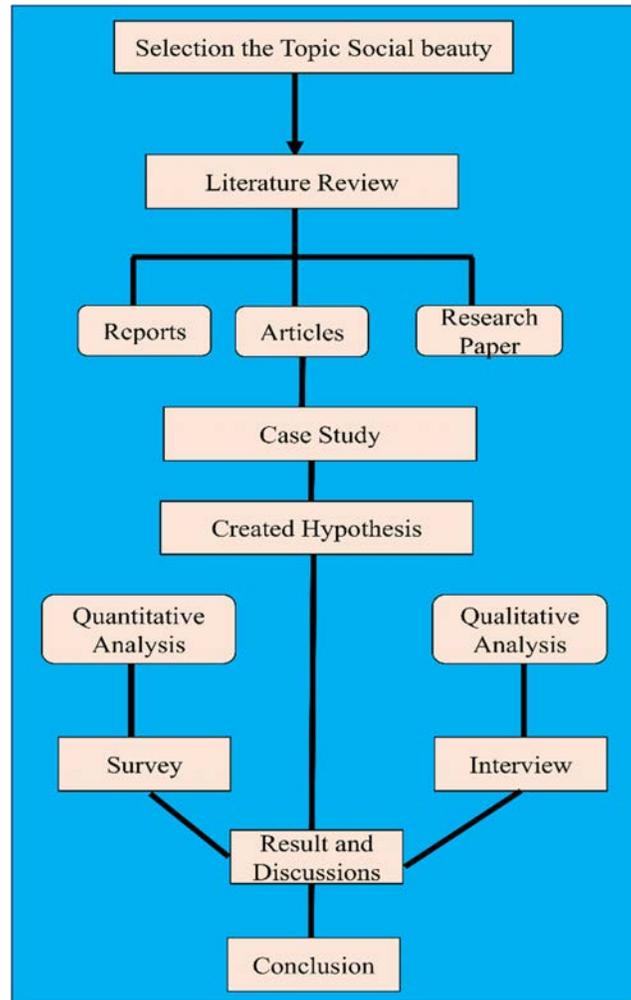


Figure 1: Representing the outline of the present study.

3.3. Case Study:

Glossier Play shut down for various reasons concerning the brand's sustainability practices, its Fig: 4 47 target audience and the disconnect consumers felt between the two brands. Moreover, the CEO, Emily Weiss, felt that such products did not necessarily require a new brand altogether and could have just been an extension of the current range. While Glossier Play shut down, the main brand also underwent a drastic internal restructuring due to a shift in the business model.

3.4 Survey Outline:

A survey was conducted to understand an individual's intake of social media and the various factors that contribute to the alteration of personalities created online. Present survey including a total of 102 responses ranging from the ages 16-35. The social personas created were inclusive and based on the personas listed as per WGSN's report on beauty consumers in 2023. One of the key focuses of my survey was to understand the extent to which people modify their

lives on social media. Questions relating to these examined the aspects people alter online and the reasons for the same. Finally, the research concluded with an understanding of how much power influencers and celebrities hold in influencing users' buying decisions on social media. The response to the survey was extremely insightful as it helped me understand the different ways people view and use social media and the influence it holds over their lives.

3.5 Survey questionnaires:

The survey was structured in a way that began with general questions regarding a person's social media intake. This included questions that uncovered a person's motive to use social media, how they would describe their social media personality, how often they post etc. It further moved to questions that gave an idea of the user's beauty routines and consumer habits concerning beauty standards created on social media. It started with questions that investigated their thoughts on beauty standards and then moved to persona-driven questions. The survey question is listed below:

1. What is your age?
2. What do you do on social media?
3. How would you describe your feed on social media (your profile)?
4. How often do you post/update your profiles?
5. Do you believe in sharing your life online with people?
6. How would you consider your personality to be on social media?
7. How do beauty standards influence your personality online?
8. Do you edit your pictures/content on social media (Filters/Body modification)?
9. How do you portray your beauty habits online?
10. Would you consider your identity online to not be true to your real self?
11. What aspects about yourself do you alter online?
12. Why do you feel the need to alter such aspects?
13. Would you consider making your personality online your reality?
14. Which beauty aesthetic would you consider to align most with your personality on social media?
15. Do you think influencers & celebrities alter their lives to portray something online?
16. Which celebrity do you think showcases their reality?
17. Do Influencer/Celebrity content on social media influence your beauty purchases?

3.6 Interview outline:

In the present study interviewed 4 different people for my qualitative research. The objective of my interview was to validate the theory of social beauty and understand the extent to which this theory would be suitable and helpful for beauty brands to market their products on social media. The questions for the interview were categorized into 3 different parts. The first part understood the extent to which social media influenced their lives, further, it went into understanding their views on social media marketing and the last part mainly focused on questions related to social beauty and their insights on the same. The selection of industry experts for this interview was done based on certain criteria, which included- people with a strong social media presence, whether they had a distinct visual identity on social media etc. Further, our study mainly looked at people who've had experience working in either beauty brands or marketing roles specific to social media. The 4th person interviewed is a practicing therapist and a social media influencer who mainly creates fashion and psychology-based content, this was done to understand user and consumer perspectives on persona-based marketing.

4. RESULT AND DISCUSSION

4.1 Glossier Play:

Glossier launched a colorful, young sister brand, Glossier Play. Glossier Play included colorful, dialed-up shades that created an interesting extension to the brand's already existing product portfolio. Unfortunately, Glossier Play shut down after 2 years as it shifted away from the sustainable practices it preached. Further, people believed that there was a major disconnect between Glossier and Glossier Play. Glossier Play shut down for various reasons concerning the brand's sustainability practices. Moreover, the CEO, Emily Weiss, felt that such products did not necessarily require a new brand altogether and could have just been an extension of the current range. While Glossier Play shut down, the main brand also underwent a drastic internal restructuring due to a shift in the business model.

Glossier Play, a sister brand to Glossier, launched in March 2019 and consisted of products like colorful liners, glitter gel pots, vinyl lip glosses, and liquid highlighters. While the collection mainly aimed at creating dialed-up extras that people could use for going out, the brand was quick to observe multiple mishaps and strong reactions from its die-hard consumer base. While Glossier Play mainly intended to create products meant for going out, fans of the cult brand felt a strong disconnect. They saw Glossier as the brand where they could go for their daily natural beauty essentials and didn't feel the extension to be necessary, as they would prefer going to some other brand if they wanted makeup for going out. Further, products like the Glitter Gelée and their foil packaging went against the brand sustainability quotient. COVID and climate change further heightened the need for beauty brands like such to rethink their values and everything a business stands for. Most importantly, consumers felt that the product quality didn't live up to the standard that Glossier initially created for itself. Fans felt the formula was subpar, the application process was difficult, and the look of the products was extremely patchy. Glossier Play made a quiet exit by only informing people who purchased products from it through an email. While the products have now been discontinued, the brand's Instagram account, although private, is still live on their social media page.

Following the launch of a cleansing oil in February, Glossier teased the launch of something new called 'Glossier Play' in March with a cryptic post that didn't reveal any details about the launch. People in the comments speculated what they believed Glossier Play to be. The new brand had also been teased on her 'Into the Gloss' blog, where she shared her passion for brand creation. Finally, the CEO, Emily Weiss revealed Glossier Play to be the sister brand to Glossier. Glossier Play featured dialed-up extras perfect for going out. "It's kind of like if Glossier is your everyday essentials, Play is your going-out makeup," Weiss exclusively tells Allure. The first launch of Glossier Play consisted of products like colorful liners, glitter gel pots, vinyl lip glosses, and liquid highlighters. Prices for the collection ranged from \$14-\$20, with product bundles with all 4 products going up to \$60. Glossier Play even included Troye Sivan in their ad campaign. The brand made a quiet exit after being in business for 2 years with an email sent to customers of Glossier Play.

4.2 Survey outcome:

Different age groups of individuals participated in this survey shown in Figure A. Social media is typically used by people for a variety of things Scrolling through explore pages (86.3% or 88 users) presents the accessibility and convenience that social media projects. It helps one keep up to date and stay entertained through just their phones. Staying in touch with family, and friends (66.7% or 68 people), and keeping up with world affairs (49% or 50 people) keeps the initial and main motive of social media alive shown in Figure 2B. Creating and sharing content (44.1% or 45 people) presents an artistic/creative approach for people who wish to

utilize such an accessible platform to get recognized. Further, using social media to share thoughts (29.4%) or even raise awareness (18.6%) usually gives people a platform where they gain and spread knowledge or even find like-minded people to enhance or validate the information that is put out. Most people (46.1%) don't necessarily categorize their content into a particular category and post content in a randomized order. People don't necessarily put too much thought into what they're posting and view social media as a digital journal to document their lives in the most organic way possible. Many others post their content in a thematic order. Common categories observed were: Lifestyle, fashion, and beauty (23.5%); Thematic & Artistic (11.8%), etc. Posting fashion/lifestyle and beauty content shows people who might be trend-conscious and would like to depict a part of their personality through their style on their feeds. Others posting thematic content have an artistic approach to social media and tend to stick to showcasing only those aspects that align with their visual personality online. Other minor categories include educational content (3.9%), Travel & adventure (2.9%), Fitness (2%), and Food (1%) which mainly showcases people tailoring their content according to their interests.

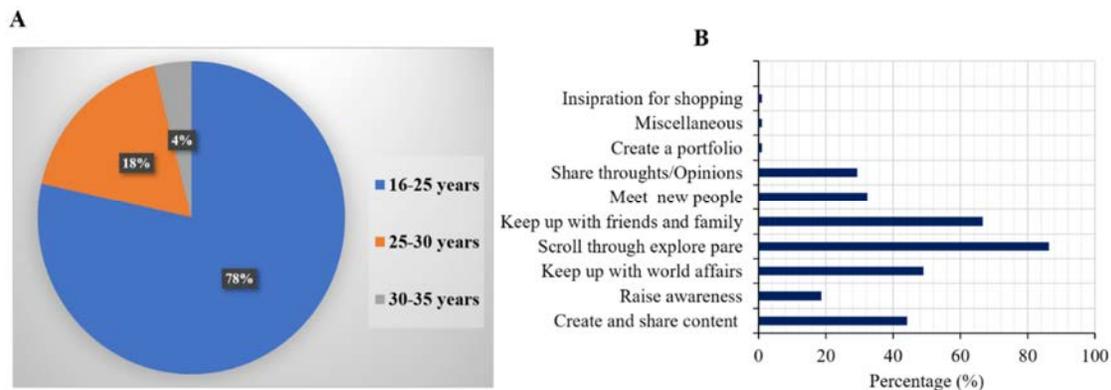


Figure 2: Representing the data of the participant's age group (A) and the opinion about the participants about spending their time on social media (B).

This question showcases people's pattern of posting on social media: Most people (25.5%) either post rarely on social media, post once every few weeks (24.5%), or even just once a month (13.7%) Further, people who post regularly on social media post Once every few days (14.7%), Once a week (9.8%), or even once a day (8.8%) Only 2.9% of people are active and post once every few hours are shown in the Figure 3A. This suggests the way people use social media at their disposal and as an outlet to keep up with the world as well as update their status at the same time.

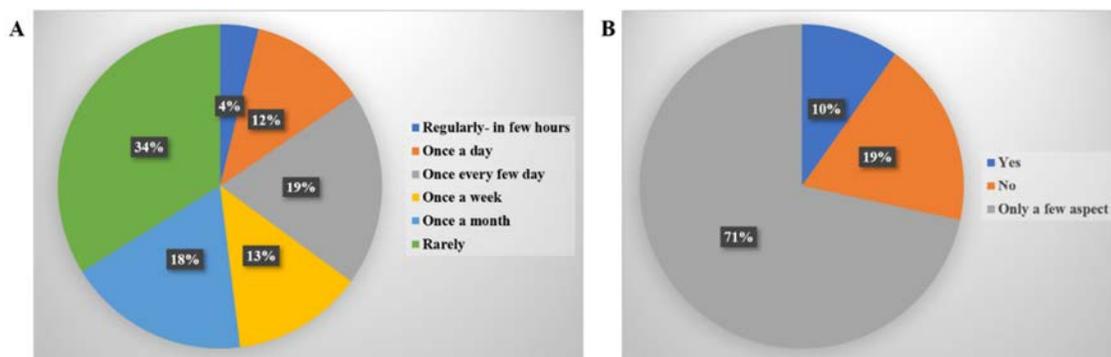


Figure 3: Representing the participant's opinions about the social media update (A) and belief in sharing their life online with people (B).

For a majority of people (71.6%), the content is structured in a way to make only certain aspects of their life public online, while some (18.6%) like to keep their lives private and don't necessarily share details due to reasons concerning their privacy, others feel comfortable enough to make their lives on social media public for everyone to watch. Social media becomes an outlet for us to present ourselves in any way we want to, further, people tend to feel a connection with others when they see what others are up to and vice versa. Choosing to post about personal life on social media can boost self-esteem and make one present as extremely sociable. This describes people's personalities online Most people (55.9%) people use social media to feel a sense of connection which highlights the convenience brought by social media and also keeps the original motive of social media alive which people continue to appreciate shown in Figure 3B. Others relate more to the idea of providing structure (20.6%) to showcase an artistic/creative approach or even use it to highlight a part of their personality they wish to amplify online or offline. Further, traits like leaving a mark (10.8%) or even a spiritual journey (2.9%) present the power of social media that people can easily leverage to make or seek the change they wish to see. The way people react to the existence and influence of beauty standards does say a lot about how they perceive themselves as well as how they like to present themselves on social media. It also suggests to what extent and how people let the toxic pressure created by such beauty standards influence them. Here, most people (43.1%) people believe in the existence of such standards but choose to ignore them and 14.7% people don't believe in the existence of such standards, which suggests how comfortable and confident people are and also presents a firm ground against such toxic standards. While others feel as though such standards heighten insecurities (18.6%) and others feel conscious of what they post (16.7%), this shows the extent to which such standards can influence somebody negatively.

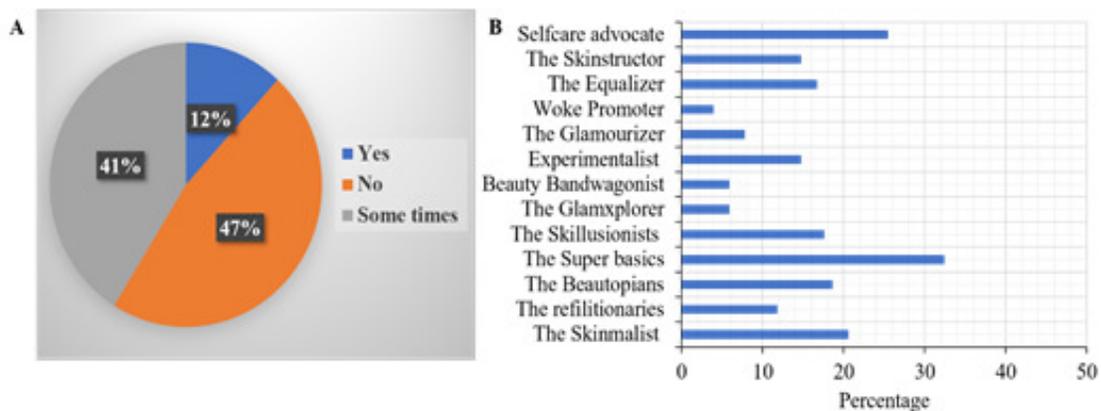


Figure 4: Representing the participant's opinions about editing their pictures/content on social media (A) and portraying their beauty habits online (B).

While still feeling affected by such standards negatively, most people (47.1%) don't necessarily edit their pictures in terms of face filters and body modification tools. While some (41.2%), sometimes use such filters a small fraction (11.8%) do admit to using such filters shown in Figure 4 A. This suggests the negative influence such beauty standards can have which makes people feel the need to alter themselves to fit the standards. Beauty habits online relate to the way users showcase their interest in beauty online. Whether it's related to following beauty/skincare brands, creating beauty content, or simply presenting beauty-centric habits online. The most common answer here was 'The Super Basics' (32.4%). These people value simplicity and give more importance to personal care and hygiene. Next is the 'Self-Care advocate' (25.5%) who values well-being and growth. Just as previously stated, these people reject beauty standards and preach confidence. Similar to the Self-care advocate, there are 'The

Beautopians' (18.6%) and 'The Equalizers' (16.7%). These personas more or less share similar values along the lines of embracing self-love and acceptance and value authenticity shown in Figure 4B. 'The Skinnimalist' (20.6%) becomes another common response. Skinnimalists believe in using products that have multitasking qualities to be more efficient. 'The Skinstructors' (14.7%) define those people that take their beauty routines seriously. They highly value research to make the best buying decisions. Further, 'The Skillusionists' (17.6%) and 'The Experimentalists' (14.7%) capture the essence of people who consume beauty content and buy beauty products regularly. These people are fond of makeup and use it to depict their creativity. They're trend-conscious and keep up with them through creating and viewing beauty content online. 'The Glamxporer' (5.9%) and 'The Glamorizer' (7.8%) are selected by a minority of people. These 2 personas value elegance and glamour and feel confident with makeup.

The most common aspects people feel they alter online are: Their aesthetic sense (32.4%) in terms of the feed they have, Lifestyle (28.4%), and style (23.5%) are common aspects that people alter which suggests that people view social media as a creative outlet and present their life/aspects of life they aspire to live shown in the Figure 5. Other aspects like tonality (13.7%) and opinions (15.7%) become smaller aspects that people alter to fit in or be socially acceptable. And the rest 6% believe that they stay true to their real selves. People present themselves the way they wish to be perceived online. It doesn't necessarily mean that they're hiding their reality, they just choose to keep their life private and only show aspects that they feel are appropriate. The majority of the people alter such aspects to either maintain privacy (39.2%) or to maintain distance between real life and social media (32.4%) Others, either aspire to live such life in reality (26.5%), stand out (19.6%), or fit in (13.7%).

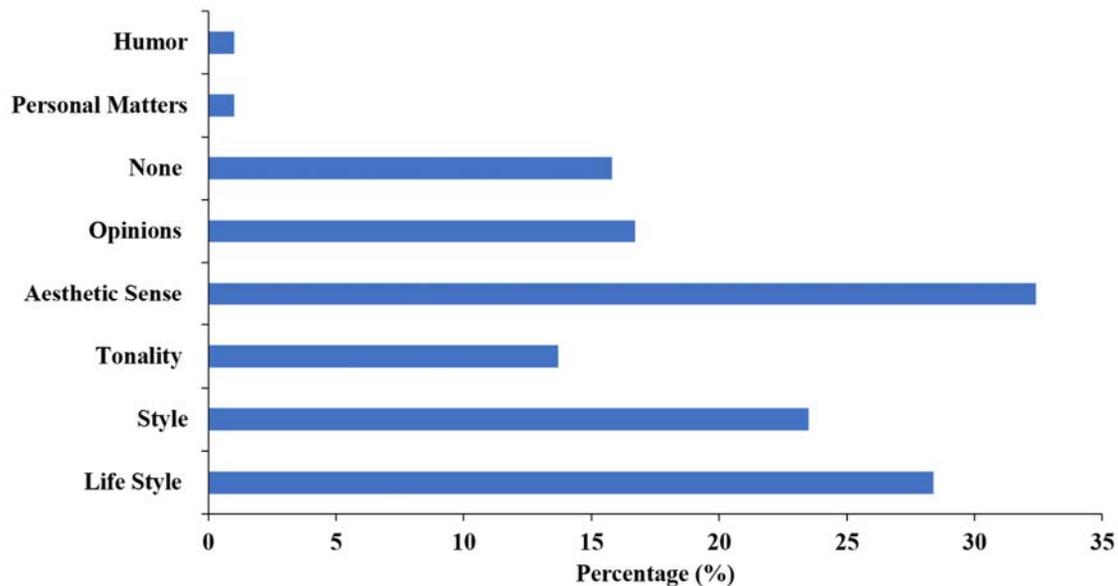


Figure 5: Representing the participant's opinions about the aspects altered online about them.

Aspiration for such life created online becomes a strong aspect, 52% would only integrate parts of their personality online into their reality, while 25.5% aspire to make their personality online their reality. The rest (22.5) would keep the two separate. This question featured a set of images along with keywords. The aim was to understand which beauty aesthetic would usually align with the users' personality online. It not only focused on the beauty aspect but also gained an overall aspect of a user's social personality. The majority of the people selected either selected 'Clean/Natural (68.6%) or Comfort/Confidence (13.7%). This shows a growing trend in

focusing on self-acceptance and embracing natural beauty. Inclusive/Ethnic (3.9%) became another commonly selected keyword Inclusive/Ethnic, another trend that became popular during the pandemic. These people wish to amplify their culture through their content. Other commonly selected keywords included Bold/Daring (2.9%) which suggests confidence and Creative/Artistic (2.9%), which presents the people that use social media to showcase their craft. Less common were heavy glam/trend-savvy (4.9%) and self-care/well-being (2%). Based on the 3 questions above regarding celebrity/influencer content: Celebrities and influencers have become a huge part of social media. With a large following, such influencers have the ability and control to buying decisions for consumers to a large extent. About 60.4% of people believe that celebrities and influencers influence their buying decisions, while the rest (39.6%) seem to remain uninfluenced. Users look up to such people for inspiration. Influencers and celebrities become the base for the kind of life people aspire to live. Yet, most people (86.1%) believe that influencers and celebrities tend to romanticize their lives online. While 5% believe that they live genuine lives and the rest (8.9%) are somewhere in the middle. Celebrities like Selena Gomez, Urfi Javed, and Rakhi Sawant are some celebrities who are believed to live organic lives online.

4.3 Interview outcome:

Rupanshi believes that targeting a specific audience rather than posting randomized content allows brands to personalize their content. By giving an example of her past job at Lotus, she suggested that having a set target audience helps the brand understand its consumers's wants and needs and further helps them in tailoring their content accordingly. Rupanshi further establishes that the personas created for the theory of social beauty have the potential to work to maximize personalized marketing provided brands select a variety of such personas that share similar values and target their content accordingly. From her previous experience, she shared that the beauty brand itself targeted content according to the various values and interests that people shared like sustainability and ASMR content.

Given a chance, Rupanshi sees herself using these personas created for social beauty as they are extremely strategic and diverse to her. Further, it allows brands to target their content to reach such diverse people effectively. According to Saloni, targeting content specific to people helps brands form a loyal customer base and increases brand retention. Previously working in roles related to social media, Saloni feels that such personas that mainly target behavioral qualities become helpful.

Attitude-based personas created under social beauty can be helpful to a great extent, even for Saloni, as they can help brands streamline marketing and make the overall process more efficient. Saloni would use these personas to experiment with marketing and see what aspects like size, price, etc. ideally work best for each persona. Further, Saloni believes that these personas don't necessarily stereotype people as long as they're beneficial for brand marketing. While she believes that social media marketing should keep a set target audience, they can diverge between a primary and secondary audience with the primary ones being their key focus. Even with persona-based marketing, Sanya Goel believes that brands should have multiple personas in mind while marketing to create a diverse group of people as one person might not be limited to just one persona and can have a range of values they relate to. Given the example of her current job, she has a personalized approach to marketing to streamline the overall process. Sanya Goel's approach to persona-based marketing is more product-based and believes that each product can be marketed to a different persona. Further, using influencers for marketing helps them reach all the different kinds of personas they target. Ultimately, a brand could use the concept of such personas to its advantage as it gets to learn about its consumers in-depth and create content accordingly.

4.4 Outcome of current study:

Targeted content becomes an efficient way to market on social media. Finding like-minded influencers is extremely important as one can only market products they truly have the knowledge and passion for. A brand can make the most out of its investment by targeting its content to a specific audience. The consumer personas were created to become an easier way both for the consumers and the brand. While for the brands, the process of targeting content becomes streamlined, for the consumers the decision-making process becomes extremely efficient once they can categorize themselves and their needs. Overall, it reduces confusion for the consumer from all the various products being recommended and gives them the knowledge to make informed decisions. While most people wouldn't mind being categorized, some can be indifferent/against it, so, personalizing and targeting content although would be a slow process, will be beneficial in the long run.

The outcome of my primary research provided insight into examining how and why people alter their lives on social media. It majorly established the amount of influence social media has on people by establishing the existence of major aspects online such as general social media activity, brand marketing, and influencers. Further, the study required people to categorize themselves based on personas that were established through secondary research. Through this, I inferred that while most people tend to alter certain aspects online, they primarily do it either to maintain distance between social media and real life or to make the personality created online a source of inspiration. Such aspects emerge majorly from trends created on social media. These trends are usually created by influencers or content creators and can be based on elements like viral products, outfit & lifestyle inspiration, etc. This analysis was made keeping in mind the survey as well as the interview that majorly highlighted the influence of trends in impacting people's lives online. Further, while investigating the impact of beauty standards, while it can create negativity and translate into insecurities, it was surprising to learn how few people were affected by the existence of beauty standards. This can be related to users amplifying the need to project confidence and comfort, all such aspects can also further be related to one of the beauty trends of 2023- Self Expression, a term that has been preached by various influencers and celebrities.

5. CONCLUSION

Further, the personas created categorize people based on their portrayed beauty habits online. Clean beauty and skincare-focused beauty routines dominated the results. Other personas focused on viewing beauty as a source of creativity and storytelling, both of which relate to the idea of self-expression online. These personas in a way that categorizes people, it is solely done for commercial purposes as it becomes a more efficient way to market to consumers. Lastly, It was also surprising to note that although people use tools such as filters on social media, they don't necessarily get influenced by them negatively, this could also be related to the fact that most people ignore the existence of beauty standards. It majorly creates a positive outlook on social media, where users have been able to find a balance between falsified aspects and their reality. Self-confidence and expression become huge aspects to boost such as a balance where people can determine what they want/don't want to be influenced by. While it majorly explored the consumer side of social media to understand how personas online affect buying behavior, it touched upon the negative aspects like beauty standards/filters as well. The personas created by users online could allow brands to target their content and make it persona-specific. Since celebrity and influencer content tends to have a significant impact on buying decisions, they all ultimately correlate with one another.

Altering oneself to fit into a persona that may or may not be influenced by content creators to fulfill an aspirational element of recreating the life one seeks. Such personas not only become

a guide for brands to personalize their content by targeting specific users that fit into the brand personality, but they can also lead to brands being able to maximize the amount of investment put into marketing online

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CHAPTER 10

COOL CASE: CURRENT CHALLENGES FACED BY THE VEGETABLE VENDORS

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ABSTRACT:

This will offer a thorough comprehension of the sector and assist in identifying best practices and solutions that have been used in others. The goal of this project is to learn more about the problems that local market vegetable vendors encounter and to provide a fix. Reviewing previous research and literature on vegetable vending practices, market trends, and legal frameworks is another aspect of the secondary study. Vegetable sellers face challenges in current practices, facing issues such as market trends and legal frameworks. This study aims to understand those difficulties and possibilities and propose improved solutions. The study will then come up with a proposal and a solution that takes into account the opportunities and difficulties for vegetable vendors that have been discovered based on secondary research. Overall, the initiative seeks to make a significant contribution to the vegetable vending sector by putting up a workable and advantageous solution for all parties.

KEYWORDS:

Fruits, Supply Chain, Street Food, Vegetable, Vendors.

1. INTRODUCTION

Vegetable selling in India has a long and rich history that dates back to ancient times. In the early days, farmers sold their produce in local markets or directly to consumers in their village or town. In India, vegetable sellers are commonly known as “sabziwala” or “sabzi mandi.” During the Mughal era, bazaars were established in different parts of the country, where traders and merchants would gather to sell their goods, including vegetables. The famous Chandni Chowk market in Delhi, established in the 17th century, is still a major hub for vegetable sellers. During the British colonial period, large-scale cultivation of vegetables started in India, and the produce was sold in markets and bazaars [1]. The British established wholesale markets in major cities, where vegetables were traded in large quantities. After India gained independence, the government took steps to modernize agriculture and promote the growth of the vegetable market. The government established regulated markets, called “mandis,” where farmers could sell their produce to licensed commission agents. In recent years, the growth of organized retail has had a significant impact on the vegetable market in India. Supermarkets and hypermarkets have emerged as major players in the vegetable retail market. However, small-scale vegetable sellers and local markets still play a crucial role in supplying fresh produce to consumers, especially in rural areas [2]. Today, the vegetable market in India is a diverse and complex ecosystem that includes small-scale farmers, wholesalers, distributors, and retailers. Vegetable selling remains a vital source of livelihood for many people in India, and the country’s rich cultural heritage continues to influence the way vegetables are sold and consumed [3].

In developing nations like India, vegetable merchants are extremely important to the food supply chain. They play a crucial role in bridging the gap between farmers and urban customers by offering people cheap access to fresh, wholesome goods. Despite their essential role, vegetable vendors often face numerous challenges that limit their productivity, profitability, and sustainability. Vegetable vendors frequently encounter a variety of difficulties, including a lack of access to credit, poor infrastructure, and insufficient market information, even though they make a considerable contribution to the economy and society [4]. The quality of the fruit they give and their ability to support their families are both negatively impacted by these difficulties. The purpose of this thesis project is to examine the difficulties that vegetable

vendors in India confront and to suggest solutions. Policymakers, practitioners, and other stakeholders who are involved in fostering the expansion of the vegetable industry will need to consider the study's conclusions carefully. The research will offer insightful information about the needs and goals of vegetable sellers and contribute to the discovery of creative solutions to enhance both their financial well-being and the quality of the products they sell [5].

Vegetable sellers in many developing nations, especially those in urban areas, make a vital contribution to the agricultural economy and food system, but they also confront several difficulties that make it difficult for them to improve their living conditions and offer clients fresh, wholesome vegetables. Inadequate infrastructure and support systems, a lack of markets to sell into, unfair competition from large merchants, and weak bargaining power with suppliers and customers are a few of these difficulties [6]. The purpose of this study is to investigate the challenges and opportunities faced by vegetable sellers in different areas and to find viable design interventions that can enhance their economic and social well-being while promoting sustainable agriculture and healthy food options for consumers. Few examples of potential design interventions. Affordable and accessible storage solutions for perishable produce. Digital platforms to connect vendors with suppliers and customers. Designing portable and eco-friendly market stalls. Community-based training programs on nutrition, and food safety. This thesis research aims to establish more sustainable and inclusive food systems that benefit small-scale vendors, farmers, and consumers by finding and evaluating various design innovations.

The objective of the research is to offer a critical study and synthesis of the information already known about vegetable vendors. The analysis would also look at how the vegetable vending industry is affected by outside forces such as shifting consumer tastes, technology development, and governmental regulations. The review would highlight opportunities for additional research and development by looking at the body of existing literature, which would offer insightful information on the state of the vegetable vending business at the moment. Through primary research, we can acquire the information in detail directly from the source. The main goal of this research is to gather new knowledge and a greater understanding of the vegetable vending sector, the difficulties the vendors encounter, the methods employed to maintain the quality of their goods, and their experiences as a whole. We can improve the quality of the produce, ensure the safety of the consumers, and pinpoint areas for growth and development by doing primary research to better understand the vegetable vending sector and its practices.

2. LITERATURE REVIEW

2.1 Fruits and vegetables:

Choudhury *et al.* [7] discussed that the adequate consumption of fruits and vegetables is essential for improving diet-related health in India. Utilizing results from the National Sampling Survey, the authors examine the intake of vegetables and fruit amongst the Indian population. A series of regressions are estimated to characterize the distribution of household fruit and vegetable consumption and explore the main socioeconomic and dietary factors of consumption. Household income and prices have an important correlation, but consumption is also higher when the household is headed by women, lives in rural areas, or has an agricultural livelihood. Caste is a significant cause of inequality, especially among people with low consumption, with Scheduled Tribes consuming less F&V than others. Preliminary data suggests that regular agriculture market regulation is favorably related to the consumption of fruits and vegetables in India, according to the authors.

Nedumaran *et al.* [8] discussed that high-value agriculture in India is transforming, especially in the fresh fruit and vegetable (FFV) sector. Supply chain participants, mainly small and marginal farmers, receive a very small portion of the consumer's rupees due to market uncertainty, high post-harvest losses, information asymmetry, lack of processing facilities, and uneven supply and demand situation. The present study is based on an in-depth assessment to propose a competitive, comprehensive, sustainable, and scalable supply chain model consisting of primary processing centers that connect farmers directly and effectively with consumers. Consumption. The proposed model will connect growers with the rest of the supply chain and streamline supply chain processes to reduce post-harvest losses as much as possible. Integrating market information systems will ensure transparency to support better decision-making, and reduce intermediaries and information asymmetry for producers, as well as product handling. products systematically This model will enhance the efficiency of the FLF supply chain and has practical implications for agribusiness management and policy makers involved in developing the FLF supply chain in India.

Cooper *et al.* [9] study examines the worldwide requirement for agricultural systems to provide long-term and equitable benefits. It investigates the influence of small farmers aggregate on marketplace involvement in South Asian horticulture systems, notably in Bihar, India. In smaller markets, the analysis highlights possible trade-offs between farmer yields and consumer advantages. While raising participation and financing transport have minimal effect, integrating aggregate with competitive freezing and demand-increasing initiatives considerably improves fruit and vegetable supply in smaller markets while preserving farmer involvement. The results emphasize the necessity of multimodal, nutrition-sensitive treatments and urge for policies to tackle cold storage shortages in less profitable sectors. The project intends to build win-win results by suggesting paths and policies for assuring the long-term viability of agricultural techniques and assisting nutritionally vulnerable communities in establishing smaller markets.

Panda *et al.* [10] research investigates the underappreciated importance of markets in India, notably in the Odisha area of Bhadrak. The study looks at acceptable native and farmed crops in rural and urban marketplaces throughout three seasons. The data show a diverse range of 93 species, with 53% being indigenous. The cucumber family and a family called families are particularly well-represented. Approximately 23.7% are wild species, which are treasured by people for both food and medicine. Herbs account for 41.9% of the total, followed by trees, climbers, and shrubs. *Glinus oppositifolius*, *Ipomoea aquatica*, and *Moringa oleifera* are among the most often eaten species. Market studies reveal the economic potential of wild plants, highlighting their importance in producing cash and providing a complement to residents' livelihoods. This dual functioning, which serves both nutritional and therapeutic demands, emphasizes the necessity of biodiversity preservation for bio-conservation, environmental sustainability, and improved food security.

2.2 Indian fruits and vegetables market statistics:

Khan *et al.* [11] discussed that the global nutritional situation has worsened as a result of the COVID-19 epidemic, compounding existing problems. Before the pandemic, 2 billion people lacked daily access to adequate food, a figure that has since risen. Governments and non-governmental organizations (NGOs) work to solve this problem via food distribution activities. The Public Distribution System (PDS) in India is critical to accomplishing food security objectives. However, the informal market culture, where most people buy food, presents considerable hazards, resulting in multiple foodborne disease fatalities each year. Food, unlike

other items, is marketed freely in impoverished nations, perhaps aggravating the severity of COVID-19. Food hygiene measures are critical, keeping with WHO standards for immune system support during confinement. Despite worldwide efforts, resource and facility inadequacies exist, particularly in developing countries, underlining the critical need for awareness and measures to save lives during and after the epidemic. Eipeson and Bhowmik [12] discussed the statistics on global fruit and vegetable production are presented. India has the second largest fruit production (27.8 million tons) after Brazil. Mangoes are the main produced fruit, with an annual production of 10 million tons (65% of global mango production), followed by bananas, citrus, grapes, apples, pineapples, and guavas. Potatoes are the main produced vegetable, with an annual production of 16 million tons, followed by cassava, onions, okra, tomatoes, knolkhol, cabbage, brinjal, and garlic. Other topics include small fruits grown in India; per capita consumption of fruit juices and nectars on the world market (1985-1989); market potential, technology upgrades, policy support, and future industry trends.

2.3 Challenges faced by the Vegetable and Fruits Vendors:

Vupru and Choppy [13] discussed that rapid urbanization has resulted in massive rural-to-city migration, with the casual group accounting for a sizable portion of the metropolitan population. Road merchants account for a significant percentage of the informal category. They provide a variety of things and goods to the public on the road and asphalts via carts, bikes, or transitory spaces. From natural fruits and veggies to hosiery items, a large part of Indian families rely on their administrations to meet their wants. For more than six decades, road distributing was illegal in urban India, until the Dimapur town carried out their commerce via self-finance and worked six days a week for more than ten hours every day. These merchants demand essential foundation offices such as drinking water, electricity, shed layout, open restrooms, and so on.

The Covid-19 epidemic has caused many challenges around the world. Among them, street vendors are the most affected. Michael *et al.* [14] research aims to identify and quantify the problems faced by street vendors during the Covid-19 crisis especially the financial impact with specific relevance to Ernakulam city. The study also explores how street vendors survive in the current situation. They also face competition from new suppliers and so on. This study includes street vendors such as fabric vendors, vegetable or fruit vendors, street food vendors, etc. The results of the study allow us to better understand how they survived their period of captivity.

Elangovan *et al.* [15] study focuses on the impact of the pandemic on street food vendors in the city of Bangalore, to understand the challenges faced by street food vendors during the lockdown and evaluate progress. partial opening and post-containment stages. Street vendors are a common sight across the country, there are many of them, but our research is limited to Tiffin centers, fruit and vegetable vendors, famous chat shops outside across the street, and countless juice/chai/coffee shops. Sales are spotted on street corners, on footpaths, and at local markets located in the Eastern region of Bangalore. In a pandemic scenario, when the whole world has to stay at home, street vendors are among the hardest hit groups, with the livelihood of the vast majority severely affected; The impact of COVID-19 has been devastating for street food vendors. Therefore, our research focused on understanding the context of street vendors, how they managed their livelihoods during the lockdown by facing this critical situation, and how they responded.

Doku *et al.* [16] research sought to assess a tomato preparation process and the associated issues experienced by merchants in Ho Chi Minh City's central market. Descriptive statistics were used to analyze data collected from respondents. The study revealed the handling methods

used by tomato sellers at Ho Chi Minh Central Market, including storing the fruit in crates as well as orderly distribution on the warehouse floor. According to interviewees, these methods are applied to ensure a long shelf life of tomatoes. Another treatment method revealed by the study is displaying fruit on trays when hawking. This activity is aimed at attracting customers and improving sales or patronage. The study recommends that sellers should be trained in modern and hygienic methods of handling goods to improve the shelf life of fruit. Furthermore, the Ho Chi Minh Central Market management agency should provide affordable storage facilities to properly preserve perishable products to maintain hygiene and improve shelf life.

N. Mkwizu's [17] research looks at the issues that women vegetable sellers encounter in Arusha, Tanzania, with a particular emphasis on the Tengeru market. The case study technique, which employs a cross-sectional research design, gives a detailed grasp of the issue without embracing the full population. According to survey findings, the majority of female respondents aged 21 to 25, with a primary education, work in vegetable selling at local community markets to supplement their income. Participation is motivated by family, spousal, governmental, and cultural pressures. A shortage of governmental and family support, poor assurance, inadequate abilities, understanding gaps, and job disruptions because of abuse against women have all been mentioned as challenges. To deal with and relieve the obstacles experienced by women vegetable sellers in Arusha, the report advises the government to act via financial aid, legislation, promotion of awareness, and educational materials.

2.4 Study to resolve the problems of Fruit and vegetable vendors:

The unorganized sector, which contributes significantly to India's economic growth, offers many employment opportunities, of which street vendors are an important segment. Essential to every Indian household, street vendors face the challenges of a growing organized retail sector with superior technology and infrastructure. This change impacts the social structure and professional well-being of unorganized retailers, requiring low-cost, technology-rich design interventions. Singh *et al.* [18] identify the challenges faced by street vendors and propose multi-purpose vending carts as a competitive solution. The aspects of market potential, user acceptance, and support are evaluated using a system usability scale, ensuring intellectual property rights. This innovative intervention addresses the needs of street vendors, serving as a benchmark for researchers, entrepreneurs, and social scientists looking to develop similar solutions, eventually improving the welfare and opportunities of the lower classes of the population.

Soysal *et al.* [19] research cover the closed-loop supply transportation issue with unpredictable demand, client delivery management, and returnable transportation pickup (RTI) operations. The client left it blank. The problem involves decisions regarding vehicle outbound and return routes, delivery and pickup quantities, production quantities in terms of RTIs filled, and RTIs produced by the supplier/Buyer according to a determined schedule. This looks at storage costs, fixed vehicle operating costs, fuel consumption costs, production/purchasing costs, RTI cleaning costs, and handling costs. The authors formulate the problem as a mixed-integer linear programming model and propose a solution approach based on Relax and Fix to deal with large cases. The authors perform in-depth analyses of a case study derived from a fruit and vegetable distribution network and several hypothetical cases. Our analysis studies the impact of several changes in issue parameters. Additional numerical analyses are performed to demonstrate the use of the model to assess the costs of becoming greener and more environmentally friendly. Furthermore, experiments on relatively large-scale problems allow us to demonstrate the potential benefits of the proposed heuristic. Negotiation is an important element of real transactions. Negotiation is nothing more than bargaining. Any large company that buys fruit

and vegetables from street vendors plays an important role. Yadav *et al.* [20] discussed that the e-commerce Chatbot project will help us negotiate product prices. Customer satisfaction is the primary concern of all web applications, and chatbots help them resolve issues quickly without wasting time drafting emails, sending them to authorities, and waiting for responses. Chatbots act as an intermediary resource between businesses and users and make it easy to solve various problems that any customer may encounter. Negotiation is an activity that poses linguistic and theoretical challenges, helping to produce solutions. Very often customers do not understand what they are looking for and what they want, but here chatbots will help customers buy exactly what they want.

Yugang *et al.* [21] study examines the Supplier Maintained Inventory supply chain model, with an emphasis on rapidly degrading raw materials used to manufacture slowly decaying final goods. The production vendor determines across the system inventory choices, particularly the product replenishment cycle and raw material replenishment frequency. For each store, the analysis assumes known deterioration rates and deterministic demand. A combined model computes total inventory and degradation costs, proving the cost variables' convexity. A golden search algorithm finds the best solutions. The numerical findings show that the product's deterioration rate has a considerable influence on overall expenses, underlining the importance of product management. Furthermore, growth in the number of shops affects the raw material's replacement regularity less than a product's common replacement period, emphasizing the supplier's susceptibility to retailer expansion. These results shed light on how to optimize inventory choices in the administration of supply chains, especially when it comes to rapidly degrading initial supplies and their influence on final product prices.

Wallace *et al.* [22] discussed that foodborne infections are a major health issue in low- and middle-income countries (LMICs), especially in traditional markets with inadequate facilities and regulatory monitoring. The expertise, mindset, and actions (KAP) of food sellers dealing with fresh commodities in LMICs are the subject of this scoping study. The majority of the 84 relevant research found were done after 2014, with a focus on urban and periurban Africa. Value chains for dairy, meat, and fruits/vegetables were often researched. Vendors usually demonstrated insufficient expertise and operated in hazardous settings. Food safety policy noncompliance was ascribed to a lack of knowledge or operational expertise. There were no substantial gaps in understanding and behaviors, and there were no positive attitudes about food safety. KAP was not consistently influenced by age, gender, product type, or locality. Local government employees are identified as critical accelerators for improving food safety procedures across market merchants.

3. DISCUSSION

India is the world's second-largest producer of fruits and vegetables, behind China. Fruits and vegetables are available throughout the year thanks to the country's varied geography and temperature. In the years 2021 to 2022, India produced 107.10 million metric tonnes of fruits and 204.61 million metric tonnes of vegetables. Fruit cultivation covered 7.09 million hectares in 2021–2022 and vegetable cultivation covered 11.28 million hectares. The Food and Agriculture Organisation (FAO) of the United Nations ranked India as the second-largest producer of fruits and vegetables worldwide.

The largest fruit-producing states in India are Andhra Pradesh, Maharashtra, Madhya Pradesh, Uttar Pradesh, Tamil Nadu, Karnataka, and Gujarat. India has a sizable food sector. Uttar Pradesh, Madhya Pradesh, West Bengal, Bihar, Gujarat, Odisha, and Maharashtra are the top vegetable-producing states. The following table shows the growth of production of fruits & vegetables throughout the years. Figure 1 represents the growth of the production of fruits & vegetables throughout the years. Vegetable vendors made up 20% of all vendors, followed by

fruit vendors at 18%, fast food vendors at 19%, and tea vendors at 12%, according to the survey. Paan vendors and paani puri vendors each account for about 8%. The analysis also revealed that non-street food vendors had a monthly turnover of Rs. 28,000 compared to the average street food vendor's Rs. 35,000.

3.1 Importance of Vegetable & Fruit Vendors:

In India, vegetable vendors are crucial members of the food supply chain because the majority of households rely significantly on fresh produce for every meal. The following justifies the significance of vegetable vendors in India. Fresh produce is easily accessible in local areas thanks to vegetable vendors. It is made simpler for consumers to eat healthy food because they frequently get their produce straight from farmers and sell it for reasonable costs. In India, selling vegetables is frequently a major source of income for many low-income households. It offers chances for small-scale entrepreneurship and self-employment, particularly in rural areas. Farmers receive financial assistance from vegetable vendors who give them access to a direct market and a reasonable price for their produce. By encouraging more farmers to plant vegetables, this income support helps India's agricultural industry. Vegetables are a good source of vitamins and minerals that are necessary for health, therefore eating them frequently can help avoid several disorders. In India, vegetable vendors are crucial in providing access to these nutritious meals for the populace.

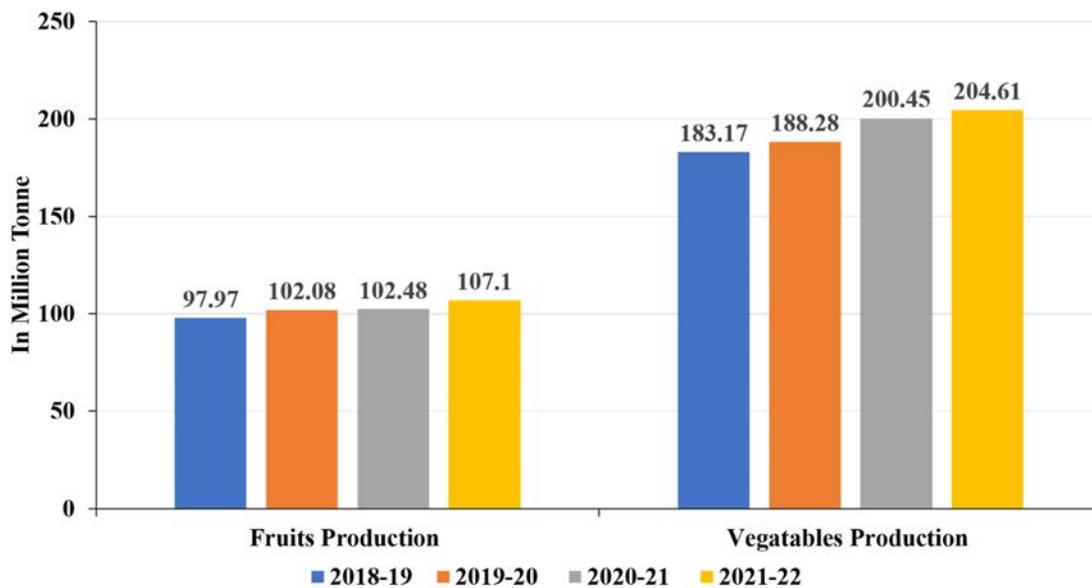


Figure 1: Representing the growth of the production of fruits & vegetables throughout the years.

3.2 Laws & Regulation:

Vegetable vending in India is mostly an informal sector, and the laws and regulations governing vegetable vendors vary from state to state. However, there are some overarching laws and regulations that are applicable across the country. Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014. This act provides for the protection of the livelihoods of street vendors and the regulation of street vending activities. It applies to all street vendors, including vegetable vendors. In India, municipal corporations in each city or town have their laws regulating street vendors, including vegetable vendors. These laws may cover licensing, sales restrictions, and hygiene standards. This act provides for the grading and marking of agricultural produce, including vegetables. It ensures that the quality of the produce is

maintained and that consumers get what they pay for. In India, vegetable vendors are subject to state-specific laws and regulations that cover licensing, hygiene standards, and sales restrictions, among other things. This act provides for the regulation of food safety and standards in India. It applies to all food businesses, including vegetable vendors.

3.3 Online store:

In India, demand for online grocery shopping has significantly increased as of 2021 as a result of the COVID-19 pandemic and the convenience it provides to customers. Redseer Consulting's analysis estimated that India's online grocery sector will be worth \$3.3 billion in 2020 after expanding at a CAGR of 74% between 2016 and 2020. According to a survey by Goldman Sachs, the Indian online grocery business is anticipated to expand quickly and reach an estimated value of \$24 billion by 2025. This growth can be attributed to elements like rising smartphone and internet usage, the ease of online grocery shopping, and the COVID-19 pandemic's effects. In India, buying fruits and veggies online is still a relatively new idea, thus many customers might choose to buy these products in person to guarantee the product's quality and freshness. Fruits and vegetables can be purchased from both street vendors and online retailers. Unlike street sellers, who require customers to physically visit their location to make a purchase, online businesses let clients shop from the comfort of their homes or place of business.



Figure 2: Representing the overview of the different online stores for fruits and vegetables.

Due to fewer overhead expenses, street sellers may be able to offer lower prices, although online retailers may run specials or promotions that make their products more affordable. Since they frequently purchase their produce directly from nearby farmers, street vendors might be able to offer fresher products than internet retailers, whose transportation of produce from distant regions may compromise the produce's freshness. Online retailers might offer a broader assortment of fruits and vegetables because they are not constrained by a physical area, whereas street vendors might only offer a small selection depending on what is available at the neighborhood market shown in Figure 2. Online retailers are typically seen to be safer during the COVID-19 pandemic since clients can place orders from their homes and avoid crowded markets, although street sellers may provide a higher risk owing to intimate contact with other people.

3.4 Case study:

The COVID-19 pandemic has become one of the most significant and socially disruptive health crises in recent memory, and there is rising concern about how the pandemic's disastrous economic and social ramifications are harming food systems both globally and locally. Given the significance of the retail food environment in establishing and maintaining healthy diets, disruptions to certain elements of it, such as the accessibility of fresh vegetables, could have a detrimental effect on population health, which has already been identified as a subject of concern. Since the COVID-19 pandemic broke out, several fresh produce sellers, most notably street carts selling fresh vegetables, have been forced to close due to a combination of declining demand and COVID-19 fear. Contrary to larger, more established grocery store vendors, these

fresh vegetable vendors might not have the financial foundation to withstand the changes in supply and demand brought on by the COVID-19 epidemic; as a result, there may be a greater risk of closure or changes to services for these vendors. The epidemic caused many people to choose to pursue their careers as vegetable vendors, including rickshaw drivers, store owners, small hotel personnel, and many more. As a result of the rise in this ratio, the vendors, who were already struggling to make ends meet daily, now had to deal with a whole new group of people.

3.5 Vegetable and fruits business:

Vegetable sellers prioritize maintaining the freshness and quality of their produce to attract and retain customers who prefer clean and fresh products. This is because customers are more likely to purchase from suppliers who give high importance to product quality. Vegetable vendors lower prices to avoid waste, showing that they appreciate their goods' value and desire sales. This also fosters customer loyalty towards quality, affordable produce. Vegetable vendors strive to please their customers and minimize waste by delivering as well. This reduces the likelihood of their goods being held for too long and spoiling, which can lead to lost revenue. Online stores store products in bulk, which may lead to lower quality and less fresh products. Street vendors, on the other hand, source fresh goods daily from the market, giving customers the advantage of buying fresh produce. Because fruits and vegetables are easily spoiled, vegetable vendors take the necessary precautions to keep their products as fresh as possible. Additionally, it shows that vegetable vendors are skilled and knowledgeable in handling and preserving produce, which is crucial to their business.

3.6 Design & Delivery:

The form and functionality of the product will be designed using this data. Designing concepts requires careful consideration of data such as consumer preferences, market demands, and expectations from the product. Design & Delivery The design phase includes insights from the user that is the vegetable vendors and the insights from the customers because whatever the role of vegetable vendors affects the customers. The design should place a high priority on maintaining the freshness and high quality of the fruits and vegetables, utilizing any methods including cleaning, misting water, and appropriate storage. The focus of the design should be on ensuring that customers are happy, including allowing them to select from a wider range of product options they want and giving them access to reasonably priced, high-quality items. The design should take into account sustainability so that there is recycling of materials which would help in reducing waste and be affordable for the vendors. The design should take into account cost-effectiveness by reducing needless costs and maximizing earnings, this way the design will help the user (vendor) financially and help protect their goods. This will be like a small investment in the long run. The design should be able to adjust to various surroundings and circumstances, such as changes in the weather conditions, environment, etc. To completely redesign a cart or design a separate product that will act as an attachment to the main cart which will focus on reducing the physical burden of the cart vendor of protecting the goods from unstable roads and extreme weather conditions.

Halfway through the ideation, there was a realization about the cost. After doing a little bit of research the average cost of the existing carts is around Rs. 15,000 to Rs. 20,000. There are also different types of carts like bicycle carts, mini-tempo, bike carts, or a much better version of a push cart than your usual wooden one. The costs are a lot more than affordable for the majority. Initially, the reason for focusing only on the cart vendors was because, through secondary research, it was found out that cart vendors face a lot of problems than the stall vendors. So, the goal this time was turned over to focus on the common problem faced by both the cart vendors and the stall vendors. A common solution to a common problem would also

have a broader scope this way and a huge number of users. “To design an affordable effective cooling system to preserve the vegetables and fruits in a more efficient manner than just sprinkling water on them in these extreme environmental conditions. This type of cooling system should lower the burden by a lot to preserve the goods and in a much orderly way.”



Figure 3: Representing the design of the low-level mockup which is made of a file card.

Many fruits and vegetables, such as tomatoes, leafy greens, eggplant, and okra, among others, can have their shelf lives extended with the use of clay pot coolers. These coolers benefit from the cooling effect of evaporation. It operates similarly to how perspiration cools the body by evaporating. The fruits and vegetables inside the clay pot are cooled by the heat being removed by the evaporation of water from the outside of the pot. The interior of the pots may be up to 10°C colder than the surrounding air, with higher humidity levels to help preserve fruit. Ant Studio, based in New Delhi, created a zero-electricity air conditioner to help residents of India’s capital survive the oppressively hot summers. This low-tech, energy-efficient, and creative cooling system was created for a DEKI Electronics facility to combat the oppressive heat. Conical clay tubes used in the inventive installation’s construction serve to naturally lower the temperature in the area. A low-level mockup made of file cards and cardboard to act as a clay slab is shown in Figure 3.

This was to study and get an idea of how things would place, what needs to be changed, what has to be added, and whether the overall design makes sense. A Digital 3-dimensional model made on Fusion 360. The changes were applied to the design after studying the mockup. Also most importantly, the measurements were decided and taken that would fit the crate as accurately as possible. Final renders of the model with the materials appropriate like in real life for the design to function. The materials are recycled rubber for the case and clay for the slabs acting as a coolant. The mockup was remade with MDF for the case and Plaster of Paris (POP) for the slabs. This mockup was very successful in terms of its proper measurements, and as it was made from MDF it was quite sturdy. Mold for the POP and a wooden Slab with multiple pins drilled in it at an angle to make the holes. POP is reinforced with cotton to keep sturdy and strong so that it won’t break easily even after rough external force affects it.

4. CONCLUSION

It is evident from several sorts of studies on vegetable vendors that their business strategy is founded on a commitment to giving their clients fresh, high-quality products. The vegetable vendors deal with a variety of difficulties every day, such as client demands for cheaper prices, rivalry from other vendors, and unexpected weather conditions or unsuitable environments. In conclusion, doing this project with a focus on vegetable vendors has given important new perspectives on the efforts made by these strong businesspeople. It has demonstrated to us that

they require assistance and to acknowledge the significant contribution they make to the local economy. Further investigation could look into ways to improve the business models of vegetable vendors, such as expanding their market reach or introducing innovative technologies to help them sell their produce more effectively, etc. There is tremendous future potential for a recycled product that uses natural cooling principles to preserve fruits and vegetables. This ground-breaking item has the potential to completely change how we preserve and store fresh produce, not just in markets, and grocery stores but also in homes. Further research can be done to investigate how to increase the product's effectiveness and accessibility to a larger audience. Small-scale farmers, who frequently struggle to preserve their goods without access to refrigeration, as well as consumers who are interested in sustainable living and minimizing food waste, can all benefit from the product's marketing. To stock and sell the product, partnerships can also be created with grocers and supermarkets. The potential for this product's success is enormous given the rising demand for environmentally friendly and sustainable goods.

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CHAPTER 11

REVAMP: A STEP-BY-STEP GUIDE TO REFRESH ONLINE IMAGE

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ABSTRACT:

The use of websites has increased due to various factors, such as the widespread adoption of mobile devices, the COVID-19 pandemic, the recognition of the importance of having a strong online presence, and the growing popularity of social media. Websites have become essential tools for businesses, organizations, and individuals to connect with their target audience and reach a wider audience in today's digital age. A good website can provide several advantages for a company, including improved online presence, enhanced brand image, increased credibility, better customer engagement, higher conversion rates, and valuable data insights. These benefits can help companies establish a strong online presence, reach a wider audience, and engage with potential customers in today's digital age, leading to increased customer satisfaction and loyalty. This capstone aims to redesign Liqvd Asia's website. The aim is to improve the agency's overall performance and increase its competitive advantage in the market. The end goal is to make a well-executed redesign that can create a more effective and efficient digital marketing agency that is better positioned to succeed in today's competitive market.

KEYWORDS:

Customers, Digital Marketing, Liqvd Asia, Online Marketing, Social Media.

1. INTRODUCTION

Digital marketing means using different types of technology to advertise and sell things. Online advertising is very important now because lots of people use the internet. Companies must devise strategies to connect with these individuals through the internet. Businesses use the internet to reach out to potential buyers and advertise their products through digital marketing. This can be very helpful for companies that work on the internet. Businesses can reach a larger number of people through digital marketing as opposed to traditional marketing methods. Digital marketing allows companies to tailor their outreach to specific demographics and connect with a global audience [1]. This kind of marketing can use things like making sure your website shows up in search engines, using social media, sending emails, and more. Digital marketing agencies are adept at aiding businesses in developing and utilizing successful digital marketing strategies shown in the Figure 1. Digital marketing also offers the benefit of allowing businesses to engage with customers on a more intimate level. Businesses can talk with customers right away using social media and other methods. They are capable of providing a swift response to customers' queries and anxieties. The landscape of digital marketing has undergone significant transformations since the inception of computers and the Internet [2].

Due to the rapid growth of the internet and mobile technology, digital marketing has become an integral component of modern marketing strategies. Traditional marketing is unable to reach as many people, save money, and find the right customers as digital marketing can, which offers numerous benefits to businesses. Traditional marketing methods are more expensive compared to digital marketing. Utilizing internet marketing strategies like email, social media, and search engine ads allows businesses to connect with a wider audience at a lower cost [3]. Digital marketing has another good thing. You can watch and measure how well your advertising is doing right away. This helps businesses to make choices based on information. Digital marketing lets you be more flexible and able to respond quickly. Marketing strategies can be changed and made better while looking at what customers are doing and what's popular in the market. In today's marketing, digital marketing is really important. Digital marketing is becoming more and more important. Businesses are starting to see the benefits of using it to reach and connect with customers. And this trend is expected to keep growing in the future [4].

Liqvd Asia is a highly respected digital marketing agency based in Mumbai, India. It has established a reputation for delivering innovative and effective solutions to businesses across various industries. Liqvd Asia offers a comprehensive range of services, including social media marketing, website design and development, search engine optimization, and digital advertising, among others. The agency's vision is to become the leading digital marketing agency in Asia, delivering exceptional results for clients and setting industry standards for innovation and creativity. Liqvd Asia aims to achieve this by staying at the forefront of the latest digital marketing trends and technologies, and by fostering a culture of continuous learning and development. Liqvd Asia's website is essential for the agency's business as it serves as the primary online presence and showcases its capabilities and expertise in digital marketing. The website is the first point of contact for potential clients and serves as a powerful tool to attract and convert leads into paying customers.



Figure 1: Representing the different types of digital marketing.

The website provides a comprehensive overview of Liqvd Asia's services, team, and past work, helping potential clients to better understand the agency's capabilities and experience. By highlighting its successes and achievements, Liqvd Asia can establish credibility and build trust with potential clients, making it more likely for them to choose the agency over competitors. In addition to providing information about the agency's services, the website also plays a critical role in lead generation and customer acquisition [5]. By optimizing the website for search engines and designing it with user experience in mind, Liqvd Asia can attract more visitors and encourage them to take action, such as filling out a contact form or requesting a consultation. By investing in its website and ensuring it is optimized for both search engines and user experience. The objective of this paper is to redesign the digital marketing website to improve its user experience, increase engagement and conversion rates, and enhance its visual appeal. The new design must be user-friendly, responsive, optimized for search engines, and incorporate the latest digital marketing best practices to create a powerful online presence that showcases the company's services and expertise, and positions it as a leader in the industry [6].

It should also align with the business's brand identity and values, and provide a seamless experience across all devices and channels. Based on this analysis, the team will develop a detailed paper plan that outlines the scope of work, timelines, and resource requirements. The paper scope of redesigning a digital marketing website typically involves a comprehensive

analysis of the existing website, identifying areas for improvement, and developing a plan to implement changes that align with the business goals and target audience. Conducting a thorough analysis of the current website to identify areas that require improvement, including usability, design, and functionality. Developing a clear understanding of the business goals and target audience to ensure that the redesigned website meets their needs and expectations. Creating a new sitemap and wireframe for the website to improve navigation, user experience, and search engine optimization (SEO). Developing a content strategy that aligns with the business goals and target audience, including creating new content or revising existing content to improve relevance and engagement. Designing a new user interface (UI) and user experience (UX) that reflects the brand's identity and values and improves the website's overall look and feel. Developing a responsive design that ensures the website is optimized for all devices, including desktop, tablet, and mobile. Implementing new features and functionalities, such as a blog or e-commerce platform, to improve engagement and conversion rates. Conducting user testing to ensure the new website meets the needs and expectations of the target audience. Developing a plan for launching and promoting the new website, including SEO, social media, and email marketing.

2. LITERATURE REVIEW

2.1 Digital Marketing:

Masrianto *et al.* [7] studies about the utilization of technology, media, and communication has altered how people engage with and react to a company's information and offerings. A company's digital marketing capability refers to its proficiency in using digital marketing strategies to enhance its business and outperform its competitors. - This involves creating a strategy and conducting and overseeing digital marketing activities. Recent study finds a method to evaluate and enhance a company's online advertising skills. DMUI's main areas of operation include enhancing biological systems, employing cutting-edge marketing technology, and migrating the company to a digital platform. Data from 217 companies in Indonesia indicates that the average ability for digital marketing among these companies is 71.97, which makes them average. They can become better at online advertising by being more creative, collaborating effectively with others, and figuring out what customers like. Also, companies need to continuously update and review their business plans. To improve their digital marketing, companies must also make use of technology including digital analytics, digital CRM, digital advertising, and display advertising, in addition to websites, social media, and mobile marketing.

Apasrawirote *et al.* [8] study aims to learn more about how companies use digital marketing, we will carefully study all the important information available. The research looked at different types of studies to review information. They used a database to find 57 journals and 143 articles. We looked at what we don't know yet and how different types of data monitoring committees work together. We put all this information together in a general plan for the future. According to this study, possessing strong digital marketing abilities is crucial for businesses and can contribute to their success. According to the digital marketing competency framework, it is advised to seek out fresh approaches for researching marketing and IT. This research examines five significant aspects of digital marketing in the age of digital technology. It also talks about how important technical marketing skills are for businesses, and how to measure business performance.

Langan *et al.* [9] described that the new technology has changed how marketing works in nearly every way. There is a lack of information on how marketing education has evolved in response to new opportunities and practices. An analysis of 529 bachelor marketing degrees was conducted to investigate the incorporation of digital marketing classes. Many business schools

are using a wide range of digital marketing programs. The types of programs used depend on the school. Business degrees are likely to incorporate digital marketing courses, particularly those that cover analytics, and numerous institutions will provide various options for specialization in this area. Researchers found a way to plan advertising campaigns that use digital marketing. This research aims to thoroughly analyze the integration of digital marketing within the larger advertising sector. They can enhance their digital marketing by displaying creativity, collaborating effectively, and grasping customer preferences. Businesses should consistently review and maintain their business plans. Enhancing digital marketing can be achieved by using technology such as digital analytics, digital CRM, digital advertising, and display advertising. Olson *et al.* [10] Consider these questions from the perspective of four different business approaches: pioneering new opportunities, analyzing market trends, and offering low-cost options. and protectors of uniqueness. : This article will demonstrate how businesses handle digital marketing challenges with diverse strategies .Our goal is to help managers put those strategies into action effectively and quickly.

2.2 Evolution of Digital Marketing:

A. Monnappa [11] described that in a world where over 170 million people use social media, everyone with a job should know the basics of digital marketing. In simple terms, online marketing means promoting things using the Internet or other digital technologies. Digital marketing involves utilizing online platforms to reach and engage with targeted consumers and businesses in order to market and sell goods and services. Every day, people use digital content. Traditional marketing methods will vanish as the Internet takes over as the primary advertising platform. Using digital marketing has many advantages. Online advertising costs less than traditional marketing. You can talk to more people in a shorter amount of time. Many customers are abandoning traditional marketing companies and departments because of the impact of new technology. The widespread adoption of tablets, phones, and laptops has led to digital marketers making great strides in promoting on these platforms.

Kim *et al.* [12] described that digital marketing is using new methods to reach people, tell them about products, get them interested, and sell things. It's probably going to stay ahead in technology changes. This study aims to find important research in digital marketing communication, understand the current state of this field, and see how the most important works have shaped it. The study looks at articles in important journals about DMC over the past 12 years. The research review evaluates publications published in key DMC-related journals during 12 years of twelve years. Utilizing combined reference and co-citation techniques, the study investigates 5865 references of 141 digital-related papers in the selected journals in the provided publications. This research proposes theme insights and consequences for both researchers and practitioners based on a comprehensive multidisciplinary examination of important referenced DMC publications that are prospective routes for producing successful DMC.

Kuazaqui *et al.* [13] qualitative study is to present a study of the evolution of marketing, to demonstrate the changes and transformations that have taken place in response to market needs. Marketing is instrumental in driving sales of various products and services to a diverse customer base. Furthermore, it assists in the development of businesses and creates opportunities for all. Ways to engage in research can involve bibliometric and field methodologies. The idea of how marketing has changed over time was discussed. It went from old-fashioned to digital, from common to unique and different, and to what is now called Marketing 4.0. Businesses are changing a lot, so they need to understand how things are different now. They should also help young people learn about the digital world and how to use technology.

A. Pawar [14] described the notion that marketing has evolved dramatically during the last three centuries. The marketing profession has had to stay up with and manage technological changes and our interaction with them since. Although the telephone was invented during the sales period, it was immediately followed by the emergence of televisions and the advertising division. Every employed individual should understand the foundations of online advertising in an age when over 170 million individuals are routinely linked to social networks. This new definition of market awareness includes advertising items over the Internet or other forms of digital media. "Digital marketing," according to the Internet Marketing Institute, "is the use of online mediums for advertising or selling goods and services for specific customers and companies." This idea study examines the progression in advertising toward digital marketing during the last 30 years, as well as the numerous technologies deemed viable for digital advertising platforms for future generations.

2.3 Evolution of Liqvd Asia:

Liqvd Asia is a digital marketing agency that has evolved over the years to keep up with the changing landscape of digital marketing. Liqvd Asia started as a web design and development agency in 2013 but has since expanded its services to include a full suite of digital marketing services such as search engine optimization (SEO), pay-per-click (PPC) advertising, social media marketing, and content marketing. Liqvd Asia has embraced the importance of data-driven marketing and has invested in technologies and tools to help them analyze and leverage data for their clients. This includes the use of artificial intelligence, machine learning, and analytics to help clients make informed decisions about their digital marketing strategies. With the rise of mobile devices, Liqvd Asia has recognized the importance of optimizing websites and digital campaigns for mobile users. This has led to a focus on responsive design and mobile-first strategies to ensure that their client's websites and digital campaigns are accessible and effective on mobile devices. Liqvd Asia has also recognized the importance of integrating branding and marketing. They believe that branding and marketing should work together to create a seamless customer experience. This has led to a focus on creating cohesive branding and marketing strategies for their clients. Overall, Liqvd Asia has evolved in digital marketing by expanding their services, embracing data-driven marketing, focusing on mobile, and integrating branding and marketing.

2.4 Types of Digital Marketing:

A. Lundberg [15] described that companies utilize the internet to connect with customers and promote their products and services in digital marketing. It is a much better way to get new customers than regular marketing. That's because it can find the right people to advertise to and collect information about them. Moreover, it is getting bigger as technology gets better. S. Bogle [16] described that Search Engine Optimization, Pay-per-Click, Social Media Marketing, Content Marketing, Email Marketing, Mobile Marketing, and Marketing Analytics are the seven major areas of digital marketing.

Digital marketing represents one of the most used words these days. Digital marketing is the use of technological products to sell items or products to a specific set of customers to increase a company's market share. Digital marketing was first utilized in 1970 and evolved in 2000, at which time there was a change from traditional advertising to Internet marketing. Angel Rosario *et al.* [17] research was carried out using secondary data. A thorough examination of digital marketing and its many forms was conducted using a variety of books and online sources. Reports, studies, papers, essays, news stories, and websites were used. This research paper aims to understand different digital marketing strategies and their advantages and disadvantages.

J. Kumaravadivelan [18] described that in India advanced promoting group interfaces with an umbrella group for showcasing the item or benefit utilizing advanced innovation, essentially on the net, appear publicizing, and the other advanced medium, in any case moreover as well as portable phones. Computerized promoting exercises unit look motor enhancement, computer program promoting, substance showcasing, and substance mechanization, campaign promoting, and social media showcasing, social media advancement, e-commerce promoting, appear promoting, and the other of advanced media, mail promoting, optical disks and diversions, callback and on-hold versatile ring tones. The most recent advanced promoting patterns in India are: Look and e-commerce can rise above Google to Confront books and Twitter, Snap chat, and connect to exceptionally locked-in gatherings of people with live video spilling. Amid this think about the reference to getting into various sorts of advanced promoting period for economic development in India.

2.5 Importance & Significance of Digital Marketing:

Bhosale *et al.* [19] described that the cause for the rapid growth of e-commerce is computerized promotion. It will increase the speed of purchasing and mending by using this marketing process. You will be able to spread out the most important viewers or clients with the aid of sophisticated advertising, and you will do it quickly and easily. It undoubtedly plays an important role in the existing commercial structure. This method improves the speed and precision of our transactions. Computerized advertising is far less expensive than traditional offline advertising methods. However, one of the most significant benefits of properly driving your automobile is the simplicity with which it can be tracked and monitored. Instead of performing elite client research, you'll quickly view client response rates and tally the success of your marketing campaign in real time, allowing you to plan more effectively for the next one. This idea attempts to emphasize the significance of sophisticated displays in the unused era.

Sharma and Tripathi [20] described that the success of any advanced marketing tactic is inextricably linked to the client's participation in the site being promoted. A website that is difficult to use, perplexing, or slow to load the content might result in a lack of client interaction and, as a consequence, a loss of leads or clients. A website that is easy to use, well-organized, and optimized for mobile devices, on the other hand, may help make leaps in customer engagement, increase conversion rates, and ultimately improve the success of computerized promotional initiatives shown in Figure 2. This research emphasizes the importance of site comfort in computerized advertising and investigates the impact of site convenience on client encounters and how it might influence key execution indicators such as bounce rates, session duration, and conversion rates. By emphasizing the relevance of site simplicity of use in advanced promoting, this article goes above and above to provide valuable experiences for businesses aiming to advance the user's website's client participation and maximize computerized promoting efforts. Understanding the impact of website comfort on the execution of advanced promoting efforts enables organizations to make informed decisions about site design and utility to create a fantastic client experience that increases engagement and change.

Enz and Parmova [21] discuss the importance of print items in SME business communications. To reach this result, the interest of customers of a German visit administrator with a position as an SME in printed travel writing is investigated. As a result, two autonomous tests with $n=1,500$ each are examined. It is possible to illustrate the influence of the factors of age, sexual orientation, and place of residence. The impact is okay in every situation. The calculated relapse is used to try to understand much better how printed travel writing is used. Moreover, we discuss how much money a customer is worth based on their division. It's clear that where people live and how old they are making a big difference in who they buy things from. This

means that some people in certain groups don't use printed materials for business communication. It also becomes clear that having good communication in a small business can make it better than its competitors. When a particular demographic is targeted more successfully than others in a nation or globally.



Figure 2: Representing the importance and significance of digital marketing.

H. Khalifa Ibrahim [22] described that the small and medium-sized businesses are vital for a country's economy as they assist in maintaining employment opportunities and promoting the welfare of local neighborhoods. We should make this trade section more important by making more money through better money management and better advertising. The findings indicated that money management received a score of 49,564 with a significance level of 0.000 005. This means that the way money is managed affects the growth of small businesses. The advanced marketing factor had a high score of 17,812, showing that it has a big impact on the growth of small and medium businesses. Based on the results of many tests, it looks like handling money and promoting businesses are important for helping small businesses make more money in Bandung.

3. DISCUSSION

3.1 Current trends:

When redesigning a creative digital marketing agency, the research goals can vary depending on the specific needs and objectives of the agency. Understand the current pain points and challenges faced by the agency's clients. This research goal could involve conducting surveys or interviews with the agency's current clients to identify the areas in which they struggle and how the agency can better meet their needs. It is important to understand the agency's target audience and their preferences when it comes to website design, content, and messaging. Research in this area could include conducting surveys or focus groups to better understand the audience's preferences. Analyzing the agency's competitors can provide insights into how they are positioning themselves, what strategies they are using, and what design elements are common in their websites. This research can help the agency to differentiate itself from

competitors and stand out in the market. Analyzing the current website can provide insights into what is working well and what needs improvement. This research can include reviewing website analytics, conducting user testing, and analyzing user feedback. Understanding the agency's USP can help guide the redesign process and ensure that the new website effectively communicates the agency's value proposition. It is important to define the goals and objectives for the new website to guide the design process and measure the success of the new website after it is launched. Overall, the research goals for redesigning a creative digital marketing agency should be focused on understanding the needs of the agency's clients and target audience, analyzing the competition, and defining the agency's USP and goals for the new website.

3.2 Demographic & Psychographic:

The audience that uses a digital marketing agency's website can vary depending on the specific services offered by the agency and its target market. However, here are some potential audiences that may use a digital marketing agency's website, Competitive Agency, Marketing Heads, Investors, Job-seeking person, Roles (groups of people with similar goals) Business Head CEOs, CMOs, Marketing Head Associate Creative Directors, Social media managers, Graphic designers, and Student. They value comfort and convenience in their lifestyle choices. They are interested in exploring new ideas and experiences and are always seeking to expand their horizons. This audience is very up-to-date with technology usage and is likely to be early adopters of new gadgets.

They are interested in the latest trends and fashions and are likely to be early adopters of new styles. They live in urban areas and are likely to be active and engaged in their local communities. They are well-educated and value knowledge and learning. They don't have much free time and are looking for quick and easy solutions to their problems. They rely heavily on technology in their daily lives, including digital tools and social media platforms. They are forward-thinking and open-minded, always looking for new and innovative ideas. They are looking for quick solutions and are willing to take risks to achieve their goals.

Simple, clean website designs are becoming more popular, with a focus on easy-to-read typography and white space. Video content is a highly engaging and shareable format, and is becoming increasingly important for digital marketing agencies to incorporate into their websites.

Digital marketing is becoming more manageable and effective with the help of artificial intelligence. It helps with making websites, creating content, and helping customers. Quizzes, polls, and games are becoming increasingly popular as a means of captivating audiences and drawing them to websites. More and more companies are using data to make content and experiences just for you. People's opinions and posts on social media and customer reviews are very important for online marketing and are often included in website design. As Siri and Alexa become more popular, it's really important to make sure website content is easy to find using voice search.

3.3 Competitive analysis:

The website of Liqvd Asia has a visually appealing design with brilliant colors and entertaining animations, providing a distinctive user experience that is consistent with the brand's identity. The minimalistic approach helps to a clean and orderly appearance; however, high-quality photos might be used to enrich the overall design. The typography is expressive and unique, lending a whimsical element to the website. In general, content distribution is well-executed, assuring relevancy and coherence. However, there is space for improvement in terms of adopting brighter colors to appeal to a larger audience. The website has a lot of motion,

including a dynamic slider on the homepage, which adds to its interactive and dynamic aspect. When comparing Droga 5 and Dept, both have visually appealing designs, with Droga 5 going for a simple and clean approach.

Droga 5's typography is more classic and professional, emphasizing direct and efficient communication shown in Table 1. Dept, on the other hand, has a more dynamic and expressive typeface that is in line with current design trends. In conclusion, Liqvd Asia's website is well-designed, although it might benefit from improved picture quality and the use of more brilliant colors. Comparisons between Droga 5 and Dept illustrate the distinct strengths and opportunities for improvement shared by all three systems.

Table 1: Representing the comparison of Liqvd Asia with the other companies.

Features	Liqvd Asia	Shabang	Droga 5	Dept	Analysis
Design Style	Colorful and vibrant design	Minimalistic	Visually engaging design	Minimalist and clean look	Overall, while Liqvd Asia's website is well-designed and visually engaging, some potential areas for improvement could enhance the user experience and better showcase the company's offerings. Some improvements that can be done are as follows: 1. Using high quality images. 2. Using vibrant colours to attract more audience. 3. Using more animation and illustrations,
Typography	Typography is more playful and expressive	Typography is more playful and distinctive	Typography is more traditional and professional	Typography is more straightforward and functional	
Content	Clustered content	Well-distributed and relevant content	Properly distributed and organized content	Well-distributed and properly distributed and organized content relevant content	
Animation	Extensive use of animation	Dynamic slider on the homepage	Extensive use of animation	Use of parallax scrolling and hover animations	
Future technology	No cutting-edge or future technologies are being used	No cutting-edge or future technologies are being used	Several advanced technologies and web development techniques	Several advanced technologies and web development techniques	
Images	Low-quality images	High-quality and relevant images	Visually stunning images	High quality professional Visually stunning images photographs, illustrations,	

				and screenshots	interactive elements.
Standout Features	Playful animations and focus on valuable content and services.	A unique user experience that reflects its brand identity.	Focus on providing value to users through its creative resources and newsroom.	Interactive features and commitment to accessibility and inclusivity	

3.4 User needs:

The website should have a clear and prominent call to action such as “Start a project” on a website can be very effective in encouraging visitors to take action and engage with the Company. In addition to the call to action itself, it’s important to provide a clear and easy-to-use form or interface where visitors can input their project requirements. Innovative design techniques can be used to create a unique and memorable user experience. This could include using interactive elements, such as animations will help guide the user through the website and create a sense of engagement. Contact Us call-to-action is a common and important feature of our website. By providing a contact form, you are giving visitors a way to reach out to you with questions, comments, or concerns.

The careers section on your website can be a great way to attract potential employees and showcase the work culture at your company. Showcase your company culture. Provide an easy-to-use application form. The company offers a wide range of digital services to help businesses of all sizes grow and succeed online. EgDigital Marketing, SEO etc. It can also have a “Start a project” call-to-action. A website that showcases a company’s work and portfolio is a great way to demonstrate your expertise to potential clients. Maybe categorize your work according to the services you offer.

3.5 Design System:

The Liqvd Asia palette is centered around a set of cool and warm color tones. White has been used to maintain the balance between both colors. The purposeful use of these colors helps to create a unique and memorable design that communicates the agency’s creativity, innovation, and energy. Bold, Titillium Web makes way for a modern font in our typography system. The minimal nature of Heebo helps focus the user’s attention on the UI and actions in front of them. This combination provides a sense of readability, versatility, and modernity.

4. CONCLUSION

There is always scope for improvement. The agency should continue to monitor and evaluate website performance, user behavior, and industry trends to make necessary updates and modifications. Additionally, the agency should consider incorporating emerging technologies, such as artificial intelligence, chatbots, and voice search, to enhance the user experience further. Regular updates to website content, including blogs, articles, and infographics, can also help drive traffic and engagement. By continuously evolving and improving their website, by doing it Liqvd Asia can stay competitive and provide a top-notch experience to their website users. The redesign should make Liqvd Asia stay competitive and relevant in the digital world with increased website traffic, user engagement, and revenue. The new design incorporates modern and intuitive features, optimized content, and mobile responsiveness to enhance the user

experience, attract more traffic, and generate leads and conversions. By following a structured and thorough process, a website that effectively communicates its brand, engages its audience, and drives business growth has been made.

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CHAPTER 12

REDEFINING DMART'S E-COMMERCE PRESENCE VIA THE DMART READY APP

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ABSTRACT:

The market for e-commerce in general merchandise has witnessed tremendous growth in the past few years. In India, after the introduction of widespread internet and data connectivity, many more citizens have gained access to platforms from which they can purchase home management and general utility products. To several consumers, digital retail for home essentials has been of great convenience, especially after the COVID-19 lockdown's impact. User Interaction and Experience on such platforms are of utmost importance to a company, as sales from e-commerce can contribute to a significant share of their net profit. One of India's leading big-box stores, DMart, has a vast footprint in the online grocery and home utility goods delivery space through its application and website, DMart Ready. Modern retail giants are increasingly understanding the importance of User Experience strategies in improving traction on their digital platforms. This study aims to redefine DMart's digital presence and create impactful and seamless online experiences for its customers via its mobile application, DMart Ready. The designer used the double-diamond design process to achieve the study objectives, which included discovering current gaps and identifying opportunities for improved functionality in the app's design through user and stakeholder research. Competitive benchmarking via a thorough analysis of existing market players provided standard practices and features for consideration to the designer. The user-centric design process helped users gain confidence in using the application and satisfactorily meet their shopping requirements. The research indicates that users derived maximum satisfaction from a controlled feeling of abundance while using the application, along with features that would match the immersive in-store experience. The study has profound implications for establishing DMart's e-commerce service as a top market player which would result in an improvement in several Key Performance Metrics. These include app downloads, user conversion rate, average order value, and long-term customer retention.

KEYWORDS:

Dmart ready, Designer, Home Essentials, Products, Ready App.

1. INTRODUCTION

ZEUX Innovations is a full-service UX research, design, and innovation company founded in 2016. The company has a vast clientele with a combined total of more than 250 UX studies completed. The company uses an 'outcome-driven' approach in its UX strategy while redefining digital experiences for customers as well as businesses. A few sectors within which ZEUX Innovations has completed UX studies include Banking, E-Commerce, Insurance, Education, Media, and Technology. They have a global clientele, including names such as Discovery Channel, ICICI Bank, Provillac, Reliance Retail, and L and T Finance. During her internship period at the company, the designer adopted the company's methodology and approach to deliver a redesigned solution for an e-commerce platform. Some of the UX processes that ZEUX specializes in include User Experience Research, User Experience Training, User Experience Lifecycle Management, UX Assessment, UX Design and Innovation and Omni-Channel strategy.

1.1 The UX Approach According to ZEUX:

The vision of the company is to enhance user experience across any digital platform, simplifying tasks to create seamless experiences. The UX approach adopted by ZEUX involves observing users in their natural environment, understanding their instinctive actions, and designing solutions that match them. The user's experience is an accumulation of several micro-interactions with an interface; hence each would need to be thoroughly considered in the design process. The company follows an incremental approach while considering UX

strategies, presenting concepts that range from simple and unified, incremental innovation to disruptive innovation. The solutions are created keeping in mind the fundamental laws of UX, while also giving allowance for spontaneity and innovation [1]. The study undertaken by the designer was done keeping in mind the growing importance of digital interfaces in creating successful e-commerce platforms.

1.2 The Hypermarket Space in India:

A hypermarket may also be referred to as a superstore, big box store, supercenter or megastore. They are physically large retail establishments that are a part of a chain of stores. Hypermarkets can be of two categories- general merchandise stores, which offer a complete range of products, as well as specialized stores, which offer products falling under a particular category. Examples of general merchandise stores include DMart, Walmart, Big Bazaar, and Reliance Retail, and specialty stores include IKEA and Croma. General merchandise stores are designed as one-stop shops for customers, offering them great value and convenience. Usually, the prices at such stores are at nominal rates due to their direct vendor connections. With a rising disposable income and a growing middle-class sector, the Indian economy has undergone a 'retail revolution' [2].

Big Bazaar was launched in 2001 by Kishore Biyani of the Future Group, changing the entire Indian retail landscape. Its competitively priced products and wide-spanning variety were unmatched by any other store. However, India has witnessed the popularity of large retail stores even before, with chains such as Spencer's and Saravana Stores dating back to 1969. While hypermarkets initially made their entry into tier 1 cities such as Mumbai, Delhi, and Bangalore, tier 2 cities such as Jaipur, Ahmedabad, and Pune also witnessed the establishment of large retail shops. Indian hypermarkets attract customers across socio-economic groups, but the majority belong to the SEC (socioeconomic class) C category, also defined as the middle class. Indian consumers are segregated based on socioeconomic class (SEC) and the chief wage earner (CWE). The maximum potential customers for Indian hypermarkets come from the middle class with a general distribution of CWEs in supervisory or clerical jobs. Understanding the consumer demographic of the target audience is of utmost importance, to truly design solutions that would cater to their needs [3]. The Indian hypermarket space provides for the middle-class sensibilities of the population, portraying abundance and offering regional goods.

1.3 E-Commerce Hypermarkets & their Significance:

E-commerce has taken the global retail market by storm, as consumers are switching to time-effective methods of meeting their essentials purchases. With logistical and technological advancements, many physical-first market players have also been able to establish an online presence, along with several competitors catering solely to an online shopping market. The emergence of e-commerce in India was marked by Amazon's entry into the market, which was followed by Indian-borne brands such as Flipkart and Snapdeal. The introduction of Reliance Jio in 2016 led to widespread connectivity all across the country, which gave access to online markets to millions of Indians [4]. Within a short period, companies are beginning to establish their online presence to save on real estate costs while also expanding their customer reach. Growing digital literacy and disposable incomes have amplified the rise of e-commerce in India. Products available online now range from home appliances, fashion products, furniture, and packaged FMCG products to fresh produce such as fruits, vegetables, and dairy.

When the COVID-19 pandemic hit in 2020, e-commerce sales in India grew exponentially. The lockdown motivated people to rely on digital platforms to purchase their home essentials, as local corner shops and physical stores pulled their shutters to customers for safety. E-commerce allows for quick purchases without any compromise on health and safety. The online space

does not face the same inventory restrictions as physical marketplaces, hence providing immense opportunities for companies to grow their consumer base [5].

While digital marketplaces are studied to grow in terms of sales and size at a steady rate, good user experience practices play an important role in aiding the transition from physical to digital. The equivalent of satisfactory customer service in physical stores would be thoughtfully designed digital platforms that account for user's habits, experiences, and expectations. Good functionality and accessibility on apps and websites can increase conversion rates, as users are more likely to transition from potential to actual buyers. Online buying platforms should be optimized for convenience in browsing, payment, and checkout experiences. Studies have revealed that good UX can increase a website's conversions by 400%. With the ever-increasing need for UX practices to be inculcated in the e-commerce space, the designer decided to structure her study around redefining the online space for one of India's leading hypermarkets [6].

1.4 DMart and DMart Ready:

DMart is a pan-Indian general merchandise hypermarket, founded in 2002 by Mr. Radhakishan Damani. The chain is owned and operated by Avenue Supermarts Ltd. (ASL), including other brands such as DMart Minimax, DMart Premia, D Homes, and Dutch Harbour. The first DMart retail store was opened in Powai, Mumbai, after which it continued to grow in its spread across the country. DMart now has its presence established in 306 locations, including tier 1 as well as tier 2 cities. It has established outlets in Maharashtra, Gujarat, Andhra Pradesh, Karnataka, Telangana, Tamil Nadu, NCR, Punjab and other states as well. DMart states that it aims to offer customers a wide range of home and personal care products at competitive prices. DMart stores house a product mix ranging from packaged food, groceries, toiletries, garments, kitchen products, crockery, home appliances, and makeup. It aims to be the lowest-priced retailer in any given area, striving to undercut prices offered by its competitors. DMart Ready allows customers to place orders for their home necessities and have them delivered to their homes at a fee of 50 rupees. Customers also have the option of collecting their order from a nearby pickup point at no cost [7]. DMart Ready has established its reach by opening pickup points in multiple locations in each city, hence users have easier access to each point despite residing far away from a DMart store. DMart Ready was launched to provide DMart's wide and affordable range of products to a larger audience, especially while they are in the comfort of their homes. Their entry into the e-commerce market came at a time when Indian consumers were increasingly switching to online shopping, given the lockdown mandates in 2020.

1.5 DMart & DMart Ready Business Model:

To maintain their profits despite the nominal prices offered, DMart aims to maintain low operational costs at their physical stores. DMart appeals to the general Indian consumer, who appreciates abundance. They use a 'butt brush' strategy to achieve this, referring to the cramped spaces between aisles and fully stocked shelves. Physical DMart stores operate with a store ownership model, hence cutting down on possible rental costs. DMart sources its products directly from manufacturers (D2C), with a slotting fee charged for space to stock items in the store. Hence, they can maintain low product costs and offer discounts to consumers as a result of economies of scale. DMart stores stock regional goods and are also strategically located in residential areas of the country, resulting in Indian families relying heavily on the store's offerings. Between March 1st, 2020 to May 30th, 2020, the DMart Ready app saw a tremendous growth in traction, at 13948.1% (as per download statistics for online grocery delivery apps). The company has also leased out spaces for its e-commerce wing within its brick-and-mortar stores, as well as independent pick-up points spread across the city. The company recorded a 16.3% increase in its net profit and an 11% increase in revenue in 2020

after the launch of its e-commerce presence. Due to the extreme importance of the online platform in maintaining DMart's profitability and business success, the company must place importance on the experience customers have while interacting with the same.

The redesigned study was to follow a user-centered design approach to deliver a best-in-class mobile application that fulfills user needs with a better experience and leads to increased orders and downloads. The designer aimed to create a seamless digital experience for users of DMart Ready. Research findings proved that users primarily interact with the mobile application for their needs instead of the website. Hence, the designer defined the scope for the redesign process based on the mobile app. Although the brief aims towards a digital solution, the designer found gaps and possible areas of provision in the service aspect of the stores & e-commerce platform. The final solution strives to bridge these gaps through the mobile application itself, to create a better customer experience as a whole. To maintain study pace and ensure task accountability, the designer created a GANTT chart with different stages of the study outlined, and the duration of each stage. A GANTT chart highlights key tasks on the leftmost column and parts of the timeline over the topmost row. Timeline stages are highlighted against each corresponding task to indicate the duration allocated for it. The designer followed a 4-month timeline to complete the study, with routine checks with the study sponsor to ensure that the deliverables match their needs. Study deliverables included completely designed screens on Figma as image files and a working prototype of key flows within the application. The UX strategy and conceptualization process was presented to the sponsor and stakeholders as part of a UX 'playbook', which defines specifications to be followed for the redesign process.

2. LITERATURE REVIEW

Wohlbe *et al.* [8] described the popularity of mobile apps among consumers, they have become increasingly important for e-commerce companies in recent years to attract customers. The main challenge in enterprise mobile app adoption is attracting and activating new app users. This case study examines the impact of incentives such as coupons and bonus points on downloading e-commerce apps through other mobile apps, known as "mid-apps." After reviewing existing literature on similar topics, hypotheses about the app's installability and actual usage will be developed and tested in an experiment. The assumptions can be confirmed to a large extent, but in particular, the coupons for online stores advertised publishing e-commerce applications do not show the expected effectiveness. Further research questions are identified and practical recommendations for app marketing are derived.

Goswami and Goswami [9] described the advent of the digital economy, the expansion of the Internet user base, the rise in smartphone users, and the growing connectivity of people, machines, and organizations have driven Worldwide e-commerce market penetration grew phenomenally. The disruption in physical shopping caused by the COVID-19 outbreak and the resulting shift in consumer behavior towards more online shopping has also significantly accelerated this growth trajectory. The rapid growth of e-commerce applications is an additional component to this phenomenon and the competition for the sustainability and growth of these applications and related businesses increasingly increasing. The above developments require increased attention to user experience, i. e UX and cognitive response, expressed in consumer needs, preferences, attitudes, behaviors, and comfort, in the design of new e-commerce applications and continuous improvement of existing applications. No sentences were generated. In this article, an approach combining six UX research techniques was implemented and user personas were created in a new environment by taking an existing e-commerce application and attracting new consumers. choose online shopping. Weaknesses were discovered and opportunities for application improvement were identified. This method

of improving usability and user experience will be useful for designing and testing not only e-commerce applications but also applications developed for many other application areas.

Alamanda *et al.* [10] described the development of e-commerce in Indonesia as growing rapidly along with consumers' preference for online shopping. This study aims to analyze people's interest in adopting popular e-commerce mobile applications in Indonesia with the Unified Theory of Acceptance and Use of Technology 2 (UTAUT) approach. Among the many e-commerce businesses in Indonesia, only 5 popular e-commerce businesses were the subject of this study. The quantitative method with verification type was applied. A survey was conducted and questionnaires were distributed online to 400 respondents who were popular e-commerce users in Indonesia. The collected data were analyzed using the partial least squares (PLS) method. The results show that performance expectations and promotion conditions have a significant impact on behavioral intentions, while habits and behavioral intentions have a significant impact on usage behavior. The moderating variable age has a significant impact on the relationship between habits and usage behavior, while price value, enjoyment motivation, and habits on behavioral intention are moderated by the variable. The variable gender as a second moderator did not have a significant impact on all relationships. The results can be used by e-commerce to evaluate and map future marketing

Li *et al.* [11] described the it is essential to scientifically evaluate and compare different mobile e-commerce retail applications (apps) to increase online shopping efficiency and improve the design to improve the system. In this study, the use of mobile applications in online retail is considered an information exploitation process, and the information state transition distance (ITD) theory is introduced to measure the degree of "information transition distance". Convenience" of mobile applications in collecting information about services. Therefore, a new DIT-based evaluation method of the usability of mobile applications in online retail from the perspective of consumers' online shopping behavior models is proposed. Three representative Chinese enterprises, Tianmao Mall, Jingdong Mall, and Suning Easy-to-buy, were chosen as research objects. Furthermore, the corresponding usability indices of the three mobile applications following typical online shopping behavior patterns are quantitatively evaluated. The results show that this study has important implications not only for online consumers but also for online shopping system designers.

Utami *et al.* [12] study investigate the role of interactivity and service quality in customer interaction in the context of e-commerce applications mobile (app). Based on a survey of 717 mobile e-commerce application users in Indonesia, this study uses a quantitative approach using partial least squares structural equation modeling (PLS-SEM) to examine the conceptual framework. The results show that interactivity is positively related to all forms of customer engagement behavior and that service quality moderates the relationship. relationship between increased interactivity and mobilization. This study provides a more detailed understanding of the role of interactivity and service quality in each aspect of customer interaction. Therefore, this study complements previous knowledge on value co-creation in multi-stakeholder service systems.

3. METHODOLOGY

3.1 Study framework:

The study process was based on the double-diamond design framework, which uses critical thinking and a user-centric approach to reach creative solutions for any user experience. The framework operates based on five key characteristics it is creative, user-centered, uncertain, iterative, and relies on feedback. The designer extrapolated learnings from ZEUX Innovation's outcome-driven UX approach, to fit under the double diamond framework. The double-

diamond process consists of 4 stages, namely discover, define, develop, and deliver. The first 2 stages fall under the problem definition space, while the following 2 stages are a part of the solution space. Figure 1 shows the double diamond framework and processes the researcher completed in each phase as part of the study.

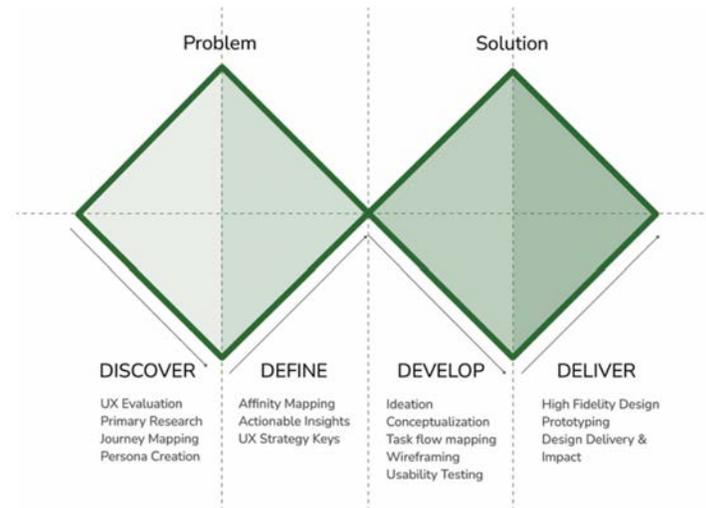


Figure 1: Representing the overview of the diamond framework.

To gain a complete understanding of the current DMart Ready platform and its shortcomings, the designer would need to conduct a thorough analysis of it on her own. UX analysis procedures vary and can be conducted in multiple ways. The procedures use their framework to check whether a digital platform is abiding by particular standards that are proven to contribute to a satisfactory user experience. The 10 usability heuristics were devised by Jakob Nielsen as broad rules of thumb to determine the ease of interaction on any digital page. They are not specific usability guidelines and hence are not named as rules.

3.2 Competitive Mapping Tools:

To understand the performance of any product in the market, it is important to consider competitors and other companies that directly or indirectly provide similar value. The competition mapping process in the case of DMart Ready was conducted against big box & hyperlocal platforms in India, as well as against the function of local 'kirana' shops. Understanding the pros, cons, and USP of each possible option helped the designer derive insights as to how DMart Ready can improve its platform to provide maximum value. Matrices compare any product against 2 parameters, which are plotted on an x and y axis each. The parameters were chosen based on factors that varied among competitors, such as product inventory size or delivery period. Competitive benchmarking is conducted by creating a tabular form that rates or takes stock of each platform's performance/availability of certain parameters, such as classification of inventory, customizability, search refinement options, and product information.

3.3 Quantitative Survey and Qualitative User Interviews:

A quantitative survey helped the designer gain a surficial understanding of user behavior in the market space for online grocery shopping. The designer created a digital survey which was circulated to several users, and conducted face-to-face paper-based questionnaire tests which were registered to combine the results. Quantitative surveys also serve as extremely useful screening tools to understand the user mix and handpick and request participation from users who could provide insightful data. They are following questions listed below:

1. How often do you purchase your home needs?
2. How do you prefer purchasing your everyday essentials and home needs?
3. Which home essentials products do you prefer purchasing at a physical store?
4. Which home essential products do you prefer purchasing online?
5. What is most important to you while purchasing home essentials?
6. What led you to download and use any of the above apps?
7. Which of the following home essential delivery apps have you used?
8. What are some features that you like about these apps?

User interviews are one of the most crucial steps in the UX process, as they help understand user behavior and needs. The designer created a user recruitment plan, which shows the user mix and criteria for each participant. Participants were of varied segments. A standard user research protocol was created before conducting the interviews. The protocol contains key questions to be asked to users under topic headings. While protocols help the designer stay on track during the conversation and act as a guide to interviewing, the designer must leave room for additional questions to clarify doubts and derive more insights.

3.4 Utilization of the other tools:

3.4.1 User personas:

User personas are one of the most fundamental tools in the UX process. A persona is an ideal, imaginary yet realistic description of a target user. Building personas allows the designer to empathize with the user with much more ease, helping them inform design decisions and prioritize features in the product. Personas help highlight the salient needs and expectations of a target user group making it easier for the designer to focus the design towards helping them. In the UX redesign process, the designer underwent two phases of user persona creation. The first set of personas created was general to a home essentials e-commerce app audience. The second set of personas was narrowed down to highlight the target user groups of the DMart Ready app specifically. The personas were created utilizing mapping two dependent parameters on a matrix, which created 4 quadrants.

3.4.2 Usability Testing Tools:

Usability testing is a crucial step in the double-diamond process, especially when applied to UX design procedures. The designer must receive first-hand feedback from target users of the digital product, to understand features they find useful, error-prone steps in the process, and inconveniences faced during the user journey. Although the product is built based on insights and actionable needs based on user research, the solution must match user expectations. A usability test helps confirm the validity and feasibility of the solution created. The UX Development Process was followed to bring ideas derived from research insights to life. The development followed processes of low-fidelity wireframing through paper and digital sketches, and high-fidelity wireframing on Figma. The designer also created a design system and final visual designs on Figma, along with prototyping the solution. Key task flows and information architecture diagrams were created to understand the flow and hierarchy of information in the final design solution.

4. RESULTS AND DISCUSSION

4.1 Competitive mapping outcome:

4.1.1 E-Commerce Big-Box Stores in India:

To understand DMart Ready's current market position and its performance against other key market players, the designer conducted a competition analysis. While the online hypermarket space is relatively new in India, it has been well-established in foreign countries such as the

UK and USA. The comparison process was completed against 3 different categories of platforms that are widely used by consumers in India. The first comparison process was done against online supermarkets in India. The next stage of comparison involved looking at the market position of hyperlocal delivery platforms, which cater to deliveries on an urgent basis shown in Figure 2. Finally, the designer compared the DMart Ready platform with local vendors, corner stores, and department stores. The final comparison is important as it highlights the shortcomings of both online and physical retail experiences. The designer conducted a comparison between the named platforms and DMart Ready, by plotting them on a matrix that mapped 2 parameters.

				
Discounts, Offers & Coupons	★★★★★	★★★★☆	★★★☆☆	★★★★★
Customizability of top picks for user	★★★☆☆	★★★★☆	★★★☆☆	★★★★☆
Classification of inventory	★★★☆☆	★★★★☆	★★★☆☆	★★★★☆
Product Range Available	★★★★☆	★★★★☆	★★★☆☆	★★★★★
Filter + Search Options Available	★★★☆☆	★★★★☆	★★★☆☆	★★★★☆
Product Information given	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Troubleshooting & Customer service options	★★★★☆	★★★★☆	★★★☆☆	★★★★☆
Order tracking post purchase	★★★☆☆	★★★★☆	★★★☆☆	★★★☆☆
Area Serviceability	★★★★★	★★★★☆	★★★☆☆	★★★★★

Figure 2: Representing the competitive benchmarking for E-commerce hypermarkets analysed, based on UX and general service parameters.

The variety of the product mix offered by the service was mapped against the general pricing of products available. Furthermore, competitors with a physical store presence were also highlighted to understand the relevance of the app in their overall business. For comparison, the designer considered the Big Basket Daily platform. The unique selling point for Big Basket Daily is that the subscription basis ensures that fresh produce is delivered daily to the consumer. Product shelf life and freshness are well-tracked. The subscription model eases the user of the inconvenience of placing different orders on an everyday basis. JioMart uses third-party logistics platforms to complete their deliveries, and orders are usually dispatched within 2 to 4 days of receipt. Hence, the purchase completion process spans over a longer time on the platform. The USP of JioMart is that it has an extremely wide product mix, almost comparable to e-commerce giants such as Amazon. Users can find groceries, furniture, electronic appliances, books, home improvement tools, and many more types of products on the platform. Nature’s Basket started as a physical retail store, after which it expanded its business to the e-commerce sector as well. The platform caters to a niche and targeted customer segment of those with higher disposable incomes. This is because of the product offerings and general prices shown on the platform.

4.1.2 Hyperlocal Platforms in India:

Hyperlocal platforms follow an urgent or short-time-span delivery model, wherein goods are delivered to the user within the same day [13]. Delivery speed is determined by the number of delivery partners available depending on demand and the area in which the customer requests servicing. Hyperlocal platforms depend on the products offered by small stores, corner shops,

and supermarkets in the user’s locality. They transport these products directly from these stores to the user’s doorstep. While DMart Ready does not cater to customer needs via a hyperlocal system, the designer compared the platform against the services mentioned to understand the advantages and disadvantages presented by the said delivery model shown in Figure 3. The platform’s unique selling point is its incomparably quick delivery times. Depending on the service area, users can expect to receive their products within 10-20 minutes [14]. The platform’s product mix ranges from general groceries to personal care, stationery, and electronic products as well.

					
Discounts, Offers & Coupons	★★★★★	★★★★☆	★★★★☆	★★★★☆	★★★★★
Customizability of top picks for user	★★★☆☆	★★★★☆	★★★★☆	★★★★☆	★★★☆☆
Classification of inventory	★★★☆☆	★★★★★	★★★★★	★★★★★	★★★★★
Product Range Available	★★★★★	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Filter + Search Options Available	★★★☆☆	★★★☆☆	★★★★☆	★★★★☆	★★★☆☆
Product Information given	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Troubleshooting & Customer service options	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★★
Order tracking post purchase	★★★☆☆	★★★★★	★★★★★	★★★★★	★★★★★
Area Serviceability	★★★★★	★★★★☆	★★★★☆	★★★★★	★★★★☆

Figure 3: Representing the competitive benchmarking for hyperlocal delivery platforms in India analyzed, based on UX and general service parameters.

Formerly called KiranaKart, Zepto operates through ‘cloud stores’ or micro-warehouses. The platform’s unique selling point coincides with Blinkit’s, offering hyperfast 10-minute grocery delivery to one’s location. Dunzo acts as a local corner shop and market aggregator, bringing together products requested by the user and delivering them to their doorstep. Additionally, the platform provides users with the ability to search for local and unorganized sector stores around their area, to search for specific product categories they require. Dunzo also provides a hyperlocal courier service for urgent basis transport of products from one point to another Swiggy Instamart is an extension of the Swiggy food home delivery platform. It was introduced in 2020 during the COVID-19 lockdown, to provide consumers with the convenience of quick commerce when local stores had their shutters down. As with the Swiggy platform, Swiggy One subscriber’s avail of additional benefits and discounts upon their purchase from Instamart. Swiggy has successfully implemented gamification strategies and leveraged events that are relevant during each period to provide users with offers and curated series of products.

4.1.3 Local Vendors & Corner Shops:

Several of the aforementioned hyperlocal delivery platforms collaborate with corner shops and local vendors to bring groceries and home essentials to each consumer’s doorstep. However, local vendors have demonstrated a history of providing product delivery services to customers living in the vicinity of their stores. Loyal customers of local supermarkets or fresh produce vendors use media such as WhatsApp or call a point of contact at such marts to place their orders. The convenience and loyalty benefits offered without the commission leveraged by e-commerce platforms benefit local vendors greatly. In the case of purchasing fresh produce such as fruits, vegetables, and dairy products, trust regarding product quality is of prime importance. E-commerce platforms have their shortcomings with such benefits offered by local supermarkets, which would need to be considered while re-evaluating the design for the DMart Ready application.

4.2 UX Evaluation:

A UX redesign process requires a complete analysis of the existing platform, its features, inconsistencies, and impactful elements. The designer was able to find key gaps and user pain points upon completing the UX review, as well as features that work or do not work well for customer satisfaction. The results guided the designer towards the changes that would need to be implemented. Before acquiring first-hand information by interacting with the app, the designer attempted to gauge an overall user opinion. She did so by browsing through customer reviews published online with descriptions that detail what each user found useful or inconvenient in the app. The first phase of primary research involved mapping out the direct and indirect stakeholders involved in the functioning of the DMart Ready platform. The map indicates the coordination required in the functioning of the e-commerce platform at different stages, such as order placement, collecting products from the retail store, and order delivery/pickup. Mapping the stakeholders helped the designer understand operational requirements as well as restrictions which consecutively have a result on the function of the app. Restraints with logistics and inventory management would, for example, restrict DMart Ready from adopting an on-demand hyperlocal delivery model.

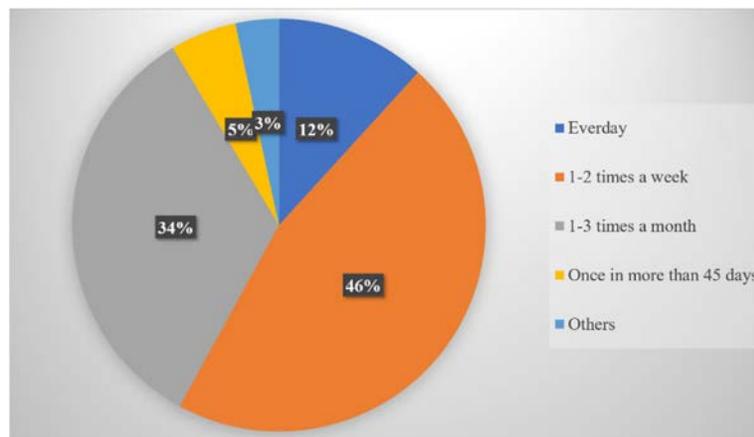


Figure 4: Representing the response of the 110 individuals about their goods needs for the home.

The economic demographic of target customers for the app would include the Indian middle class. Budget and money saving is a huge factor that influences their shopping habits. They are not necessarily looking for the best quality of goods, if they can be purchased at discount prices & a wide range can be found under the same roof. They are the masses, the ‘aspirational’ cohort of India who wish to earn more. The archetype for a typical user would be female homemakers who hold a more traditional role in such families. For others in the population, the proximity of a DMart from their house would influence purchase and loyalty. There can be a greater diversity of people available as online customers- from bulk shoppers to others who are just buying a few goods.

The stakeholder suggested certain system-specific changes to DMart Ready’s model, which were held as experience benchmarks to be implemented in the app. The app should not have any minimum order amounts, allowing users to either bulk buy or buy specific items. Order fulfillment should be quick and hassle-free, and users should be able to leverage product filtering options online to refine their search. The app should allow all payment options. It should emulate the familiarity of the user’s local corner store, providing additional benefits such as rewards for customer loyalty. With advancements in purchase tracking, the stakeholder wished to give users the option of viewing an end-of-year report that lets them see their

purchase habits wrapped up. Ideally, the app should also provide users with suggestions for alternatives that best suit their preferences- whether they are health-oriented, looking for less costly options, and so on. A key experience benchmark to be fulfilled is inclusivity. The best example set for user diversity is WhatsApp. The interface allows for accessibility across socioeconomic and age ranges. A few apps that target users may also be familiar with include GPay, Swiggy, or Ola. Each app has been made in a manner to allow a vast range of users to interact with it easily.

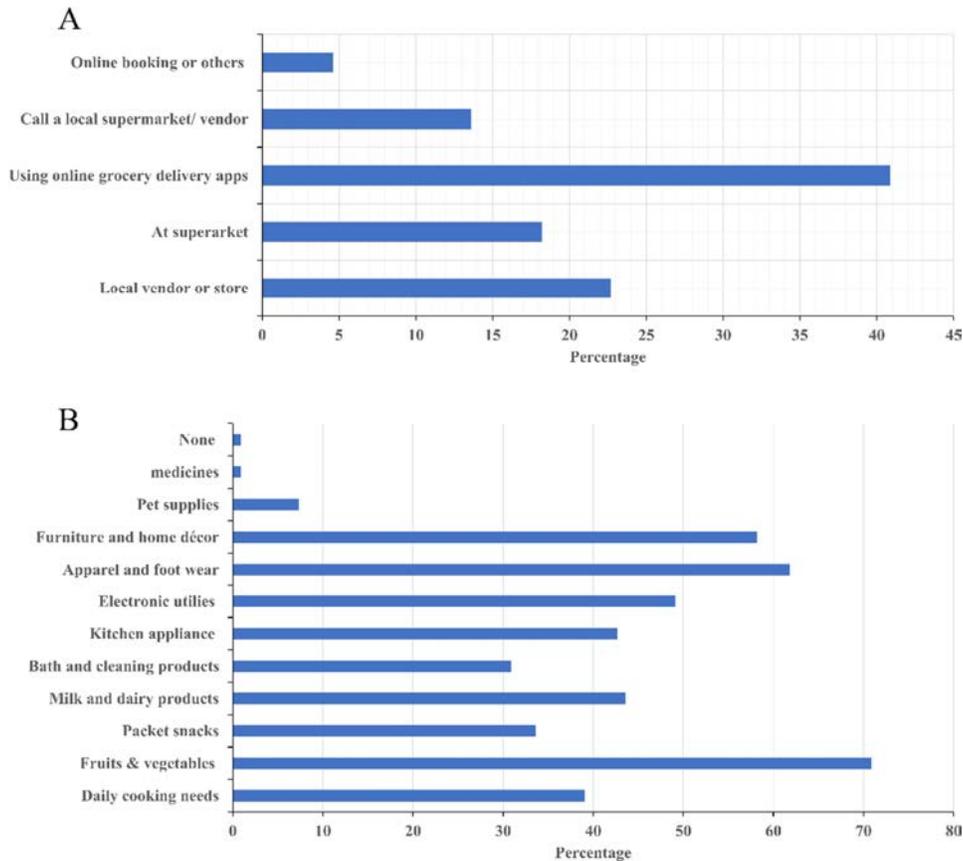


Figure 5: Representing the response of the 110 individuals about (A) their purchasing products and (B) the mode of purchasing for the home.

4.3 Quantitative Survey:

The designer conducted a quantitative survey to gauge an overall understanding of consumer purchase patterns. Quantitative surveys provide the designer with tangible results which can be compared easily. Numerical results from quantitative surveys provide a superficial understanding of user behaviour, however, richer, in-depth insights usually result from qualitative questioning. In the current use case, the survey also served as a useful screening tool in order to select potential participants for qualitative test recruitment. The designer collected answers from 110 respondents across tier 1 and tier 2 cities in India, across an age range of 18 to over 56 years. The infographic in Figures 4 and 5 (A, B) displays important results collected from the survey. The results led to hypotheses created by the designer. The designer posits that most users gravitate towards online shopping due to the convenience, accessibility and ease of home delivery which saves them time.

Furthermore, over 50% of home essentials purchases are completed with the provision of home delivery, either through an online app or from a local vendor supplying to their homes. Users

don't mind purchasing standardized and packaged products online. However, with organic produce or products that require trial and a thorough look at before purchase, users prefer shopping in physical stores. This is due to the tangibility factor and quality check which cannot be provided by the online medium. The designer was able to frame qualitative questions based on survey responses. Since the survey served as a screening tool, the designer contacted a specific pool of respondents afterwards to participate in the qualitative research phase. Important survey response results have been shown on the subsequent pages.

4.4 Qualitative User Research:

The qualitative research was conducted using 2 key methods- user interviews and walk-a-mile immersion. The current section will elaborate on the former method used and its findings. The designer interacted with 10 participants via in-depth qualitative interviews, which were conducted by following a standard protocol. However, the interviews were more conversational so that users could further explain their responses wherever needed. The designer created a user recruitment protocol to set research goals and participant screening requirements before contacting users. The figure on the following page shows the user recruitment & qualitative research plan. The qualitative interviews helped the designer gauge target user profiles, expectations, needs, and challenges. As a result, the interview insights played a crucial role in the creation of user personas to base the UX strategy. Additionally, the results allowed the designer to summarize the pros and cons of the app through a list of drives and blocks presented to the stakeholders for evaluation.

The interview insights gathered were refined to create standardized user personas based on mapping 2 different parameters of behavior observed among users. User personas allowed the designer to map out different categories of target users and their notable behaviors and interactions with the app. Hence, the designer was able to predict and map out each persona's possible journey while purchasing the next stage of research. The first stage of persona creation was based on general home essentials and supermarket app usage. The set of personas was created to gain a broader understanding of potential users outside of the DMart Ready app, and what drivers would lead them to convert and retain themselves as users of DMart Ready. The personas are more generic and could be applied across different home essentials delivery platforms, whether they are hyperlocal or scheduled delivery models. In the second stage, the designer created personas suited for the DMart Ready app specifically. These personas are a part of the larger group of online home essentials shoppers, but may not necessarily be comfortable using other applications as mentioned in the competitive analysis. As seen below, the personas are all female homemakers as they were the primary users as highlighted from the stakeholder interaction and quantitative and qualitative user research. From the persona mapping activity, the designer was able to derive the challenges and needs of the target user, and the main conveniences they are expecting from the app solution.

User Persons 1: The multitasking Mom

1. **Age:** 45 years
2. **Occupation:** Working mother of 2 children, maintains household duties in her free time available.
3. **Conveniences:** Saving time and energy while completing household duties by having goods home delivered. To be able to find a wide range of goods under one roof and not have to visit multiple platforms for different purposes.
4. **Pain point:** Still faces difficulties when it comes to comparing products for quality online. Does not fully trust the source of fresh produce when delivered from an app service. Customer service is a hassle as one may not have the patience to search through chatbot prompts.

User Persons 2: The Hassled Home-maker

1. **Age:** 38 years
2. **Occupation:** Homemaker and mother of 3 children.
3. **Conveniences:** Being able to cater to household needs while staying indoors and looking after her children. To be able to receive her goods at home, not having to haul around multiple bags for home purchases.
4. **Pain Points:** When an incorrect or rotten product is delivered, it not only frustrates her but delays her duties significantly. She finds it difficult to compare prices and qualities of consumer durables online and asks someone else in the family to do it.

User Persons 3: The Bachelor on a Budget

1. **Age:** 27 years
2. **Occupation:** Recently graduated student, living alone in a new city for a job.
3. **Convenience:** To be able to understand home requirements for kitchen, cleaning, etc., and keeping inventory of home goods. To receive goods at one's doorstep without needing to step out and find things in a new city.
4. **Pain points:** Unable to understand product quality, and freshness while checking online. Finding budget-friendly options online is a difficulty, even with the offers and discounts available.

User Persons 4: The Serial Snacker

1. **Age:** 22 years
2. **Occupation:** University student living with her family.
3. **Conveniences:** To receive deliveries at her doorstep almost 24/7, when local corner stores may be shut. To purchase and browse through select snacks and food that may be difficult to find in a supermarket or corner store.
4. **Pain points:** Minimum order amounts and delayed deliveries hinder her from placing an order. When something she wants is out of stock, she gets frustrated when she can't find a similar option.

4.5 Research analysis:

Before the ideation and conceptualization stage, the designer arranged and analyzed information collected to create actionable statements and define a scope for implementation. Affinity mapping involves creating segregated categories of information from synthesized user interview data. The categories indicate different aspects of the experience which pose opportunities for change. The affinity mapping process resulted in 28 categories. A few data points could be classified under more than one category, which was accounted for in the mapping process. During the process, the designer aimed to filter out clusters that would fail to produce rich, meaningful insights. The affinity mapping process helped the designer identify different possible areas of intervention which would lead to an improved overall user experience. Deriving insights from raw data would only provide a superficial understanding of user behavior, as compared to looking at smaller interactions that lead to the e-commerce experience.

Smaller setbacks such as out-of-stock products or inconsistent product representation in the case of perishable products were important opportunities for improvement found by the designer in this process. The designer converted key inferences into insight statements by delving deeper into granular details about user behavior. The statements were created by classifying the object of interest, user behavior towards it, and the reason behind the behavior. The resulting insights were eventually converted into actionable how-might-we statements. These statements provided the designer with definite guiding points before proceeding into the

development phase. From the important affinity maps created, the designer was able to extract 22 insight statements. A few statements displayed common reasoning behind the user behaviors. Hence, these statements were combined and edited to create a wider opportunity for a design solution under the actionable question. Defining the project scope also required filtering the most important statements or opportunities to address. It would be impractical to address all challenges in one solution, hence the designer prioritizes the most crucial ones as shown on the right. Creating actionable statements helped the designer define the exact goals behind the brainstorming process, and look at micro interactions in the app with greater detail. The statements helped the designer define constraints within which ideation would be much more innovative and quicker.

An overall look at the existing design problem would provide difficulties for the designer to create an exact path for identifying and fixing gaps faced by users. Furthermore, a simple visual overhaul of the existing app would be of limited impact as compared to redefined navigation and functionalities made available to the user. User data collection and analysis followed an explorative approach, which was further funneled down into key insights for the designer to work on. To create a general overview of app pros and cons for the project sponsor, the designer defined the findings into key drives and blocks. Once the sponsor was able to understand the key issues that would need to be addressed in the redesign, they were more receptive to the UX strategy presented. DMart offers the lowest prices for goods in the market + all-year-round discounts. DMart has a physical presence- users can check certain products in-store as well before making repeat purchases. The convenience of finding different types of goods under one roof. Bulk purchases are more convenient on the DMart platform due to the larger quantity of packs available. Widespread serviceability as it has multiple pickup points + stores. Convenience of logistics, as bulk buys do not need to be handled by the user carrying multiple bags. Time saved from going in-store to look for and pick out different goods needed.

The process of creating UX strategy keys was a company standard followed at ZEUX Innovations. The strategy keys were presented as part of an overall 'playbook', which provided the sponsor with an overall glimpse of the problem discovery and definition process. Furthermore, the keys serve as standard rules to be followed during the redesign process, keeping the designer on track and focused on changes and improvements that would need to be implemented. The app should match category and product placement according to user expectations, which would create an intuitive and easy-to-navigate flow for users. Basic decluttering hygiene and systematic nomenclature for product types could solve the very basic issues of product discoverability on the app [15]. While some amount of organization is needed, the abundance of products available should also be made visible to users in a controlled manner. A key sign of an organized in-store experience is designated shelves for product types, which show a variety of products systemized carefully. The same shelving system should be translated onto the app as well. Furthermore, current categorization in the app uses ambiguous nomenclature which may confuse users while searching for products required. For example, a 'specials' section contains miscellaneous items such as eye care products, electronic appliances, home gym equipment as well as gardening requirements. The mix of products follows a random arrangement, which is misleading. The designer would need to keep in mind intuitive ways to categorize products for the user, possibly following Hick's Law of UX.

Based on the finalized actionable insight statements, the designer underwent an ideation sprint to brainstorm quick ideas and sketches for individual statements. Ideas were overlapping across a few statements due to their multifunctionality, but the designer generated a few ideas that addressed unique problems, such as understanding product freshness. The tools used for ideation were brainstorming, low-fidelity wireframe sketching, and mashup. Furthermore, the process was completed in a collaborative environment as well. The researcher requested inputs

from employees and designers at ZEUX Innovations to gain a fresh perspective on the problem defined. The images below show part of the ideation process completed. The following pages display the low-fidelity wireframes the designer created as part of visualizing each idea. A few impactful ideas generated have been mentioned on the right. Once the designer was able to generate enough ideas that indicated paths to possible final solutions, the conceptualization phase commenced. At ZEUX Innovations, the designer followed the company's approach of creating three final concepts presented as part of the UX 'Playbook' to the project sponsor, giving them width and scope for choice. The concepts are created to fall under a spectrum of innovation.

They range from unified, incrementally innovative, and disruptively innovative. Concepts were created by matching ideas with similar functionalities together and creating a narrative behind each. Unified concepts fall on one end of the spectrum, wherein limited innovation has been implemented. The concept follows a simple route of a general cleanup of information presented on the app, UI standards, and adding key features that would aid the user. Incrementally innovative concepts fall in the middle of the spectrum. A few innovative features have been introduced, which may provide a unique experience to users. The incremental concept follows the user's requirement to experience the in-store shopping process while online. The product categories and range available have been displayed through a store map which users can view. The general visual layouts followed on the subcategory and product pages aim to emulate in-store aisles and shelves, which create a sense of familiarity for the user. The app also contains the other basic functionalities a user would expect, such as a cart and general product information. Finally, the disruptive concept created aims to break away from all prior app expectations a user may have, without compromising on any functionality provided to them.

Disruptive concepts help a designer push the boundaries of acceptable changes and features on a redesign, look at the most basic user function that needs to be addressed, and create a quick way of meeting it. The disruptively innovative concept created follows an in-store shopper 'chatbot' system. It acts similarly to a user's at-home house help, by providing them routine reminders for their essentials restock and suggesting the correct quantities required based on past purchases. It also acts similarly to guiding someone while they shop on your behalf in-store, by giving them purchase instructions and asking for suggestions and things in stock. The feature would rely heavily on AI-generated products and list suggestions and mapping preferences using past consumer data. The AI technology would also be required to automate and tailor chatbot responses to a user's requests and needs.

After stakeholder interactions and negotiation, the team came to a consensus of essentially following a design similar to the first concept, while implementing features and functionalities from others as well. The designer wished to create a balance between innovation and a complete overhaul, as users' expectations from a home essentials delivery app would create unfamiliarity and confusion. This would especially hold if the designer would take forward concepts 2 or 3 without any additional options, as they leave little room for the user to switch back to ways of shopping, they are already comfortable with. The decision was made to avoid presenting a learning curve to users. Furthermore, the stakeholder wished to implement omni-channel experience options in the app to highlight DMart's physical presence. While the presented concepts did not show any such option, the designer drew features from the ideation stage to be added to the final solution. The following pages show important screens designed for each concept.

4.6 Limitation:

The final solution created would produce immense benefits for DMart's E-Commerce presence. However, certain limitations must be kept in mind while evaluating the usability of

the product. The first limitation posed during the process was technological constraints to be kept in mind while evaluating possible concepts. The app development would need to be completed keeping in mind the ability to convert elements from the final prototype to coded HTML. Certain features such as real-time product checks, 3-dimensional views, and holographic product previews would fall outside the technology available to deliver the final solution. The designer also had to keep in mind the fact that the redesign process would be implemented for a mobile platform, hence the technology available for the same would need to be considered. Secondly, the user group to be designed for would need to be kept in mind. The general audience for the app may not be receptive to drastic changes introduced, or unfamiliar technology such as AR-VR trial features. With a larger user group, these features could be of importance. However, the effort required to implement the same would outweigh the overall gains generated, hence the final evaluation resulted in the designer going forth with other options available. As users grow to become more acclimated to such functions in the future, the company could introduce app updates with such functionalities available to them. Finally, DMart's existing logistical and financial restraints were to be kept in mind while choosing options to be made available to users. Logistical restraints would eliminate the possibility of same-day delivery in their e-commerce service. Financial restraints would make it difficult for DMart to onboard employees for features such as real-time in-store shoppers. In the future, should the platform find ways to broaden the scope of its service, such features could be taken into consideration.

4.7 Future Scope:

DMart's entry into the e-commerce market could be seen as one of many signs of growth for the company in upholding its service standards and fulfilling user needs. The study could be widened to consider a full-service approach for its e-commerce wing and streamline processes such as delivery packaging and customer troubleshooting. While the considerations mentioned fell outside the current study scope, the same could be considered in a wider service evaluation of the experience. User Experience is not limited to end customers, and key stakeholders such as employees and delivery partners in the process could also benefit from a reevaluation of their functions and interactions with the company's backend applications. Inventory management systems could be streamlined to aid in-store staff and managers in keeping stock of available products easily. The same could also be translated into an improved in-store wayfinding system. Standard stock-keeping protocols and tagging systems could be maintained to keep consistent shelving spaces for specific products. The result would benefit users as well as they would navigate in a physical outlet to search for their shopping requirements. A broader look at hypermarkets and stores across India could help streamline the entire home essentials shopping process, by implementing the same design strategy and functions. Physical-first, as well as digital-only platforms, could consider some of the design interventions mentioned in this book for their services.

5. CONCLUSION

The DMart Ready app redesign process followed a user-centric and iterative approach. Sponsor and user feedback was taken at important stages so the designer could keep in mind the multiple requirements to be met. The final solution indicates a growing need for e-commerce applications to leverage user research and feedback for an improved overall experience. Improvements in the digital and end-to-end service experience would generate significant returns on investment for companies such as DMart. With its well-established physical presence, the company's app should create a benchmark for good UX practices to be implemented in the digital commerce industry. With a growing customer base, e-commerce applications for home essentials would transform the shopping landscape in the future. To keep

up with advancements and maintain its profits, a digital redesign for its e-commerce app would help DMart leverage future growth in online transactions and increase its net profit. Standard practices to be kept in mind should include providing users with necessary product information, allowing flexibility when it comes to product specifications such as freshness, and helping them make informed decisions. Smart suggestions, pre-curated shopping lists, and comparative features help users with the decision fatigue they may experience while shopping and increase their efficiency, leading to faster checkouts and order fulfillment. The overall experience would lead to a reduction in drop-offs and user frustration. Omni-channel experience features such as in-store navigation and self-checkout would also benefit DMart in establishing an improved in-store experience. The main setback of time consumed during the shopping experience could be eliminated with such features. Implementing these solutions in a digital experience would require less effort but produce a great benefit to DMart customers. The result could be a conversion of in-store customers to online shoppers as well, as it would lead to increased downloads of the mobile application.

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CHAPTER 13

CONTRIBUTION OF E-COMMERCE IN HEALTHCARE SYSTEM

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ABSTRACT:

This paper aims to address the various significant challenges faced by dialysis patients belonging to the economically weaker section of India, and how it negatively impacts their quality of life. Dialysis is a life-saving treatment for patients with end-stage renal disease, but it also comes with various lifestyle challenges, including limited access to healthcare resources, financial constraints, social stigma, dietary challenges, and mental health issues. These challenges can lead to a decrease in the quality of life of these patients. The purpose of this paper is to design a solution for EWS dialysis patients to help alleviate these challenges and improve their quality of life. Through a literature review, this paper examines the challenges, existing solutions, and their limitations, identifies research gaps, and proposes a new approach to solve the challenges faced by these patients. The proposed solution aims to streamline the healthcare coordination process and improve overall patient experience, ensuring timely treatment for dialysis patients. This solution has the potential to improve the overall efficiency and quality of care provided, ultimately enhancing the quality of life for EWS dialysis patients.

KEYWORDS:

Chronic Kidney, Dialysis Patients, EWS Dialysis, Healthcare, India.

1. INTRODUCTION

Chronic kidney disease (CKD) is a growing public health concern worldwide, affecting an estimated 800 million people. CKD leads to the gradual loss of kidney function over time, ultimately leading to end-stage renal disease. End-stage renal disease, also known as kidney failure, is a serious and chronic health condition that requires an ongoing medical intervention, which is dialysis. Dialysis is a process that involves the artificial removal of waste and excess fluids from the body when the kidneys are no longer able to perform this function. It is a life-sustaining treatment for patients with ESRD, but it comes with various challenges that affect the quality of life of patients. In India, a significant portion of the population belongs to the economically weaker section [1]. Altogether 18.2% of the total population in the general category belongs to Economically Weaker Sections (EWS), about 3.5 crores. This includes individuals who face financial constraints and lack access to essential resources and healthcare services. There is a significant disparity between the number of new patients requiring dialysis due to end-stage renal disease and the available resources for dialysis treatment. The background of this paper's research underscores the critical need to address the various challenges faced by the economically weaker section of dialysis patients in India [2]. By understanding the unique circumstances and limitations they face, effective interventions and strategies can be developed to improve their quality of life and overall healthcare management.

The problem statement of this paper project aims at dialysis patients from the economically weaker section of India, facing various significant challenges that negatively impact their quality of life. The economic vulnerabilities of these patients often result in barriers such as affordability, availability, and awareness, which limit their access to quality healthcare services, including dialysis. This leads to many challenges that affect their physical, emotional, and social well-being, ultimately reducing their overall quality of life. The economically weaker section is the section of the society in India that belongs to the un-reserved category and has an annual family income of less than 8 lakh rupees. This category includes people who do not belong to the caste categories of ST/SC/OBC, and who already enjoy the benefits of reservation. Financial constraints are a significant challenge for EWS dialysis patients. Many of these patients struggle to afford the costs associated with regular dialysis treatments,

including the expenses for dialysis sessions, medications, and related healthcare services. People traveling by foot, as a result, may not be able to receive adequate and timely dialysis treatment, leading to poor health outcomes and increased healthcare costs in the long run [3]. The financial burden of dialysis treatment can also cause stress and anxiety for these patients and their families, further deteriorating their quality of life.

In addition to financial constraints, limited access to resources further exacerbates the challenges faced by economically weaker section dialysis patients. Lack of reliable transportation to dialysis centers, inadequate availability of nutritious food, and limited social support systems can further impede their ability to manage their healthcare effectively. The lack of awareness about available healthcare services and support programs may also limit their ability to access necessary resources and information for their dialysis treatment, adding to the challenges they face. Furthermore, social and psychological issues can arise due to the economic vulnerabilities faced by these patients. Stigma and discrimination related to their socioeconomic status may impact their self-esteem and social interactions, leading to isolation and reduced social support [4]. Additionally, the stress and anxiety associated with financial constraints and the burden of managing the treatment may affect their mental health and emotional well-being. The problem statement highlights the critical need to address the lifestyle challenges faced by EWS dialysis patients in India. By identifying and understanding these challenges, effective interventions and strategies can be developed to improve the quality of life and healthcare management of these vulnerable patients. The findings of this research will contribute to the existing knowledge in healthcare management and provide insights that can inform policies and practices aimed at reducing healthcare disparities among economically weaker section dialysis patients in India [5].

To summarize, the goal of this paper is to design a solution that addresses the challenges faced by economically weaker section dialysis patients in India. It will involve a comprehensive review of existing literature and research on dialysis, healthcare disparities, and socio-economic factors that impact the healthcare outcomes of EWS patients in India. The research will be conducted using a mixed-methods approach, incorporating both qualitative and quantitative research methods. Qualitative research methods such as interviews, hospital visits, and case studies will be used to gather in-depth insights and perspectives from dialysis patients, their families, and healthcare professionals. Quantitative research methods, such as surveys and data analysis, will be used to collect and analyze data related to the socio-economic characteristics, healthcare utilization patterns, and health outcomes of economically weaker section dialysis patients. Based on the findings from the literature review and research data, appropriate interventions and strategies will be developed to address the identified challenges. The proposed interventions will be evaluated for their effectiveness in improving the quality of life & healthcare management of these patients.

The research will encompass a comprehensive literature review, qualitative and quantitative research methods, and the development of interventions and strategies to address the identified challenges. This research will be conducted in select regions of India, specifically Bangalore, and Mumbai, with a focus on economically weaker sections of the population. The findings and recommendations of the research will apply to similar settings in other regions of India facing similar socio-economic challenges and will involve data collection from dialysis patients, their families, and healthcare professionals to gain insights into their experiences and perspectives. There are certain limitations to this paper's research. Firstly, the research will be conducted in select regions of southern India, Mumbai, and Bangalore specifically, and the findings may not be generalizable to other regions with different socio-economic contexts. The research may also face limitations in terms of sample size and representativeness, as access to dialysis patients in economically weaker sections of India may be limited. Despite this, the

paper aims to provide valuable insights into the challenges faced by dialysis patients belonging to the economically weaker section of India and propose feasible and effective interventions to improve their quality of life. The research findings will contribute to the existing knowledge base in the field of healthcare management and also serve as a foundation for future research and interventions in this area.

2. LITERATURE REVIEW

The literature review in this paper aims to provide a comprehensive overview of the existing research related to dialysis and the challenges faced by the economically weaker section of dialysis patients. It covers existing literature and research on end-stage renal diseases, healthcare disparities, and socio-economic factors that impact the healthcare outcomes of EWS patients in India, and several other topics, including the impact of dialysis on the quality of life of patients, and emphasizing the various significant challenges faced by economically weaker section of dialysis patients that reduce their quality of life.

2.1 About Dialysis:

Zawierucha *et al.* [6] described that Hemodialysis uses a lot of resources. Because of how it works, it's really important to have the right amount of dialysis fluid go through the dialyzer to get the results we want. The most common way to make dialysis fluid is by using a liquid concentrate that comes in containers or plastic bags for the dialysis machine. Another option for dialysis centers is to produce dialysis concentrates by blending dry or semidry premixed compounds with a system that dispenses the dialysis fluid. How much dialysate you need depends on different things like the type of machine you use for dialysis, how long the session is, and how much flow your doctor tells you to use. New hemodialysis machines have parts that can automatically slow down the flow of dialysis fluid to match the patient's blood flow. They also use less dialysis fluid when getting ready and after it's put back into the patient. Using the options provided by manufacturers wisely can help to save more acid concentrate and water. The amount of concentrates being delivered to the dialysis center is the most important thing that affects how much it costs to bring them from the company to the customer. This cost can have an impact on both the finances and the environment. The energy market crisis and very expensive fuel are making transportation costs a big part of the cost of making goods. Suppliers have to pay for this, and it makes the price of goods go up. Choosing the right way to deliver the concentrate during dialysis can save money and make it work better. The things we do in the dialysis unit can save a lot of money and help the environment by reducing our carbon footprint.

Chan *et al.* [7] described that worldwide, more and more people are having regular dialysis, but the way it is started varies a lot in different places. Several things like having enough resources, why someone starts dialysis, when they start, how much the patient knows about it, the type of dialysis they use, and specific factors in different countries all have a big impact on how patients feel and how well they do. As kidney disease gets worse around the world, it's becoming more recognized that it's important for patients to be involved in deciding what kind of care they want and what treatments they should have. In January 2018, KDIGO (Kidney Disease: Improving Global Outcomes) had a meeting to talk about when to start dialysis, what kind of dialysis to use, how to get it, and how much to use. Here is a short recap of the talks at the conference. The authors will discuss what we don't know yet, what people disagree on, and what we should focus on for future research. During the conference, they talked about how dialysis treatment should be more personalized and not the same for everyone. It should consider what each patient wants and needs, while still making sure it's done safely and at a high standard. Finding and including patient-focused goals that can be checked as signs of good quality in different healthcare systems is important for making sure everyone has the same

chance of getting better. This means that everyone involved in health care, like patients, doctors, and people who pay for health care, need to agree on what the goals are and be rewarded for reaching those goals. Children suffering from a severe kidney condition can opt for either hemodialysis or peritoneal dialysis as a treatment. P. Mattei [8] finding a method for children to undergo hemodialysis can be challenging. However peritoneal dialysis can be done at home and gives them more freedom to be active. Inserting a catheter is usually safe and simple, but for these fragile children, the catheter is very important and needs to work well for a long time. There are important details to think about. Following evidence-based guidelines has led to a reduction in peritonitis and technical complications. The modern surgical approach has resulted in improved longevity and effectiveness of both the operation and the catheter.

2.2 Theoretical Framework:

The theoretical framework or conceptual model is an important aspect of any research study as it provides a foundation for understanding the research problem and guides the analysis and interpretation of the findings. In the case of studying the challenges faced by economically weaker sections of India's dialysis patients and their impact on quality of life, several relevant theories or models can be considered.

Hirth *et al.* [9] study wanted to look at what causes the cost of dialysis to be different in different places in the United States. The research studied how different patients, treatments, payment rules, and facilities affect the cost of dialysis using information from different sources like patient records and facility surveys. The research showed that the type of illness and how much money is spent on it are not strongly connected. What makes a difference is how the illness is treated, like the type of dialysis membrane and how long the treatment lasts. Places that have limits on how much they can pay their workers have to spend more money. Hospital units spend more money, in part because of how costs are divided within the hospital. Big stores in many places showed they could save money compared to small stores. The research shows that we need to look carefully at different types and sizes of healthcare facilities to make sure payment policies are fair and to stop the healthcare market from getting messed up.

Balhara *et al.* [10] study looked at how not getting hemodialysis (HD) treatment affects how often people go to the emergency room. It focused on the reasons why people might miss these treatments and how much it costs. People who came to the emergency room after missing their hemodialysis appointments were compared to people who were good at going to their hemodialysis appointments. Patients stayed in the emergency department for a long time, about 17 hours on average, and 76% of them had to be admitted to the hospital for an average of 6 days. Even though people had similar income levels, more patients used public transportation to get to their dialysis appointments. Although economic stability, education, health literacy, and family support didn't show big differences, people did report having trouble moving, physical limitations, and feeling a lot of pain and sadness. This study shows that it's important for communities to work together to find out why people are not going to the hospital when they need to. Authors need to figure out why this is happening and make sure people get the right treatment. This will help reduce the number of times people go to the emergency room for no reason.

Hundemer *et al.* [11] retrospective cohort study, spanning 2010 to 2021, explored the impact of social determinants of health on the transition from chronic kidney disease (CKD) to kidney failure in 1,070 Kidney Clinic patients receiving multidisciplinary care at the Ottawa Hospital. The results show a significant association between social determinants and suboptimal conversion outcomes. Patients without a high school diploma have a higher risk of starting inpatient hemodialysis than those with a college degree. Unemployment was associated with an increased likelihood of initiating inpatient hemodialysis, a decreased likelihood of creating

prior access, and a decreased likelihood of prior kidney transplantation relative to active employment. Being single was associated with a higher risk of initiating inpatient hemodialysis and a lower risk of establishing preventive access compared with being married. These results highlight the essential role of social determinants, including education, employment, and marital status, in the quality of the transition from CKD to CKD.

Neumann *et al.* [12] study focuses on the impact of social relationships on health outcomes of hemodialysis (PD) and hemodialysis (HD) patients as part of the Alternative Therapy Options project Kidney. By surveying 353 propensity score-matched patients (HD=200, PD=153) at baseline and 1-year follow-up, the study assessed their social networks and support for help. a Self-centered network generator and Berlin social support scale. Nonfamilial networks have decreased over time, while the number of relationship types has increased. Larger social networks are correlated with higher involvement-seeking preferences and lower levels of anxiety. Closer relationships are associated with better psychological health. PD patients have larger networks, more types of relationships, and increased social support than HD patients. These differences may be related to autonomy and self-care related to treatment modality. Early identification and engagement of social support providers can have a positive impact on patient care and quality of life.

Brown *et al.* [13] discussed that the multicenter, cross-sectional study, health-related quality of life (QOL) of people aged 65 years and older on hemodialysis (HD) and peritoneal dialysis (PD) was examined. Check. The 140 participants were comparable on various demographic and clinical factors, including age, sex, dialysis duration, and cognitive function. Regression analyses showed that symptom count significantly influenced all quality-of-life assessments, highlighting the central role of patient perception of symptoms in determining mental health and physical. Importantly, modality (HD or PD) emerged as an independent predictor of disease penetrance, with greater penetrance reported in the HD group. Although comorbidity scores were higher in the HD cohort, overall quality of life remained similar or even better in those with PD. These results strongly argue in favor of considering PD as a viable option to improve the quality of life of elderly individuals adapted to dialysis.

2.3 Challenges faced by the patients:

Challenges are an inherent part of the daily lives of dialysis patients in India. These challenges can be broadly categorized into several subtopics, including physical challenges, social challenges, psychological challenges, economic challenges, and healthcare access challenges. Understanding and addressing these challenges is crucial to improving the quality of life of dialysis patients in India.

Chronic kidney disease (CKD) significantly affects individuals' lives, hindering civil rights, including work and daily activities. The study looked at the prevalence of CKD in Brazil, India, Nigeria, Portugal, and South Africa, showing variations ranging from 5.8% to 252%. Despite these differences, a standard approach to health care rights for CKD patients is still applied in these countries. Legal analyses highlight constitutional protections of the right to health care, but challenges remain in ensuring full access to the benefits of renal replacement therapy, kidney transplantation, and social assistance. Buosi *et al.* [14] study, which involved legal experts, emphasized the importance of addressing sociocultural and budgetary issues for effective legal regulation. With a focus on prevention and treatment, research supports public policies that support patients with CKD, providing information and ensuring access to renal replacement therapy to meet growing demand. Overall, this study aims to bridge health science and legal perspectives for better CKD patient care and quality of life.

K. Chugh [15] discussed that the challenges associated with renal replacement therapy (RRT) in developing countries, especially India, are diverse. Despite clearly identified benefits, RRT remains limited due to limitations in economic, human, and technical resources. With 26% of India's population living below the poverty line, access to RRT is hindered by economic challenges. An overloaded health system, combined with financial constraints, leads to delays in medical examination for patients with advanced kidney failure. Hemodialysis, although popular, is expensive, and private hospitals charge a fixed price, while public hospitals rely on disposable equipment provided by patients. Peritoneal dialysis is underutilized due to financial barriers. Kidney transplantation, the ultimate long-term solution, faces challenges, including transportation problems, despite legislative efforts. Infection, malnutrition, and cardiovascular causes contribute to increased morbidity and mortality in hemodialysis patients. The Human Organ Transplantation Act Amendments of 2009 aimed to address certain challenges associated with organ transplantation, emphasizing the important role of public policies in improving access and outcomes for patients. organ transplant recipients, end-stage renal failure.

Bassi *et al.* [16] study aimed to evaluate the feasibility of data collection and monitoring in routine dialysis practice to inform the establishment of a dialysis registry in India. A total of 119 hemodialysis patients were enrolled, and data on clinical characteristics, socio-demographics, outcomes, and out-of-pocket costs were collected using an electronic tool. After one year, 32% of patients continued on hemodialysis, 29% died, 25% received a kidney transplant, and 13% discontinued dialysis. The study highlighted the challenges in collecting financial information, tracking patients transferred out of the main unit, and determining causes of death that occurred outside the hospital. High rates of catastrophic medical spending have been documented, highlighting the economic burden on patients. The resource-intensive nature of data collection and the difficulties encountered in gathering complete information highlight the complexity of establishing a dialysis registry in this setting.

Scholes-Robertson *et al.* [17] study, spanning eight countries, explores patient and caregiver perspectives on access to renal replacement therapy (KRT) for chronic kidney disease (CKD) in rural communities. Analyzing 18 studies with 593 participants, the study identified five themes: uncertainty in accessing medical services, fear of being away from family and home, travel burden, and costs high, sacrificing the life-changing experiences of guilt and anxiety that come with being in care. Patients in rural areas face significant challenges, including transportation, financial burdens, and separation from family, which impact their health and outcomes. These findings highlight the need for targeted strategies to improve access, reduce the burden of obtaining appropriate KRT, and address the profound challenges faced by CKD patients in rural communities. must face to face.

2.4 Interventions & Solutions:

EWS dialysis patients in India face significant challenges, including financial constraints, limited access to healthcare, social stigma, dietary restrictions, etc. These challenges can have a profound impact on their physical, psychological, social, and economic. In this part, we will explore existing interventions and solutions that have been implemented or proposed to address these challenges and improve the outcomes for EWS dialysis patients in India.

Many maintenance dialysis patients experience financial difficulties. Existing studies are primarily cost analyses aimed at quantifying financial hardship in monetary terms, but assessment of their impact is also warranted. Ng *et al.* [18] aimed to explore the definition of financial hardship and its relationship with symptom burden in dialysis patients. The literature search was conducted in November 2020, using six electronic databases. Studies published in English examining the association between financial hardship and symptom burden were

selected. Two reviewers independently extracted data and assessed studies using the JBI critical appraisal checklist. Fifty cross-sectional and seven longitudinal studies were identified. Studies use income level, employment status, health care finances, and financial situation to assess financial hardship. Although the relationship between reduced income, unemployment, and overall symptom burden has been established, evidence suggests that some symptoms, including depression, fatigue, pain, and sexual dysfunction, are more likely to be related to changes in financial situation. Our results suggest that a poor financial situation can harm physical and psychological health. However, there needs to be a clear definition of financial hardship. Improving this assessment in dialysis patients may encourage early intervention and minimize the negative impact of financial hardship.

The Reducing Disparities in Access to Kidney Transplant Access (RaDIANT) community Hamoda *et al.* [19] study focuses on improving kidney transplant referral rates at selective dialysis facilities in Georgia. This process evaluation, conducted at the end of the intervention, included a survey of 65 participating dialysis facilities. Approximately 508% reported high fidelity to the requirements of the RaDIANT intervention, emphasizing staff and patient education. Most institutions found the intervention helpful, with 90.8% are willing to continue at least one intervention component beyond the study. Financial education, especially addressing financial barriers to implantation, emerged as a proposed innovative solution. Although there were differences in accuracy, the mean difference in baseline rates before and after the intervention showed no significant effect. The study highlights the feasibility of maintaining some components of the intervention and suggests that future modifications should focus on financial education and address aspects considered time-consuming or unsustainable.

Ji *et al.* [20] Results from the first year of the End-Stage Kidney Disease Treatment Options (ETC) model, a national randomized clinical trial in the United States, aimed at increasing home dialysis rates by providing financial incentives for facilities and clinicians in administration. The trial included 302 hospital referral regions (HRRs), including 91 in the ETC group and 211 in the control group. Among 18,621 patients eligible to start dialysis, the rate of home dialysis in the first 90 days was 20.6% in the control group and 0.12 percentage points higher in the ETC group (not significant). Secondary outcomes did not show significant differences. These findings raise questions about the effectiveness of financial incentives, highlighting the need for further evaluation as incentives increase in subsequent years.

Adeyemi *et al.* [21] descriptive study aimed to investigate the psychosocial impact of chronic kidney disease (CKD) and dialysis on hemodialysis patients at LAUTECH University Teaching Hospital, Osogbo. Using purposive sampling, volunteer participants with chronic kidney disease and on hemodialysis were included in the study. Results showed significant psychosocial impacts, with the majority of respondents reporting feelings of anxiety, difficulty adjusting to dialysis, financial stress, and neglect of important life activities. live due to dialysis therapy.

There was a significant relationship between patient perception and the impact of dialysis therapy on family activities, support persons, income, and behavioral compliance. The study highlights the need for increased financial support and interventions to address the psychosocial challenges faced by CKD patients on hemodialysis.

3. METHODOLOGY

3.1 Study Design:

These are the individuals who are directly affected by the challenges and issues related to their economic status and quality of life. They may have first-hand experiences and insights about the impact of economic constraints on their access to healthcare, quality of care received, and

overall well-being. Involving dialysis patients as primary stakeholders can provide valuable perspectives on their lived experiences and enable you to understand their needs, preferences, and challenges. Caregivers and family members of dialysis patients will play a significant role in the care and support of patients. They would have insights into the economic challenges faced by dialysis patients and the impact on their family dynamics, financial burden, and social support.

Engaging with caregivers and family members can provide a holistic understanding of the challenges faced by economically weaker sections of dialysis patients and their families. Healthcare providers, including nephrologists, nurses, social workers, and other relevant healthcare professionals, are critical stakeholders in providing direct care to dialysis patients. They may have insights into the challenges faced by economically weaker sections of dialysis patients, the impact on their health outcomes, and potential interventions or solutions. Involving healthcare providers will provide valuable insights into the clinical aspects and feasibility of proposed interventions.

Dialysis centers and hospitals that provide dialysis services to economically weaker sections of patients would also be primary stakeholders. They would have information about the resources, infrastructure, policies, and practices related to the provision of dialysis services to economically disadvantaged patients. Engaging with dialysis centers and hospitals can provide insights into the operational and logistical aspects of dialysis care for economically weaker sections of patients.

3.2 Research Plan and data collection:

The research plan will utilize a mixed-methods approach, combining qualitative and quantitative methods to gather comprehensive data on the challenges faced by the economically weaker section of dialysis patients in India. Primary data will be collected through qualitative methods such as observation methods and in-depth interviews with the patients, healthcare providers, experts, and researchers. Secondary data will be collected through the analysis of existing literature, reports, and documents.

3.3 Observation and In-Depth Interviews:

Conducting observations of EWS dialysis patients in their natural environment, such as dialysis centers, hospitals, or communities, can provide valuable insights into their experiences and behaviors. Conducting an AEIOU framework helps capture real-time information on how EWS dialysis patients navigate their challenges and interact with their environment, shedding light on their lived experiences and the impact of the challenges on their daily lives. Conducting in-depth interviews with EWS dialysis patients, healthcare providers, government officials, and other experts can be a valuable method to gather qualitative data. These interviews can be semi-structured keeping the patient's mental state in mind, allowing for open-ended questions and probing to explore the challenges they face in detail. These In-depth interviews provide an opportunity to capture the lived experiences, perspectives, and insights of stakeholders involved in the issue, and can help uncover nuanced information that may not be captured through other methods.

3.4 Research Method and Data Analysis:

Netnography is a research method that involves the study of online communities or social media platforms to understand social behaviors, interactions, and cultural practices. It can be a valuable method to gather data and insights into dialysis patients and their quality of life. Reddit, as a popular online community and discussion platform, can provide valuable data for research purposes. Using it involves examining and analyzing data generated from the platform to gain insights, trends, and patterns related to a specific research topic. After collecting

primary data through the above methods, qualitative data from interviews, and observations can be analyzed using thematic analysis, where recurring patterns, themes, and trends are identified and interpreted.

4. RESULTS AND DISCUSSION

4.1 Contextual Inquiry:

Contextual inquiry is a research method that involves observing and interviewing users in their natural environment, typically where they use a product or service. It can be a valuable research approach to gain insights into the real-world experiences and behaviors of patients in their healthcare settings. By implementing an AEIOU framework, we can observe and interact with patients in their actual treatment environment, allowing us to capture their interactions, challenges, and behaviors in the context shown in Figure 1. In the context of the paper on developing a patient-centered solution to address the challenges faced by economically weaker section dialysis patients in India, the AEIOU framework was used to identify pain points and challenges faced by patients during their dialysis journey, understand the patient's relationship with various stakeholders and objects, and design a solution that considers the unique needs and circumstances of each user.

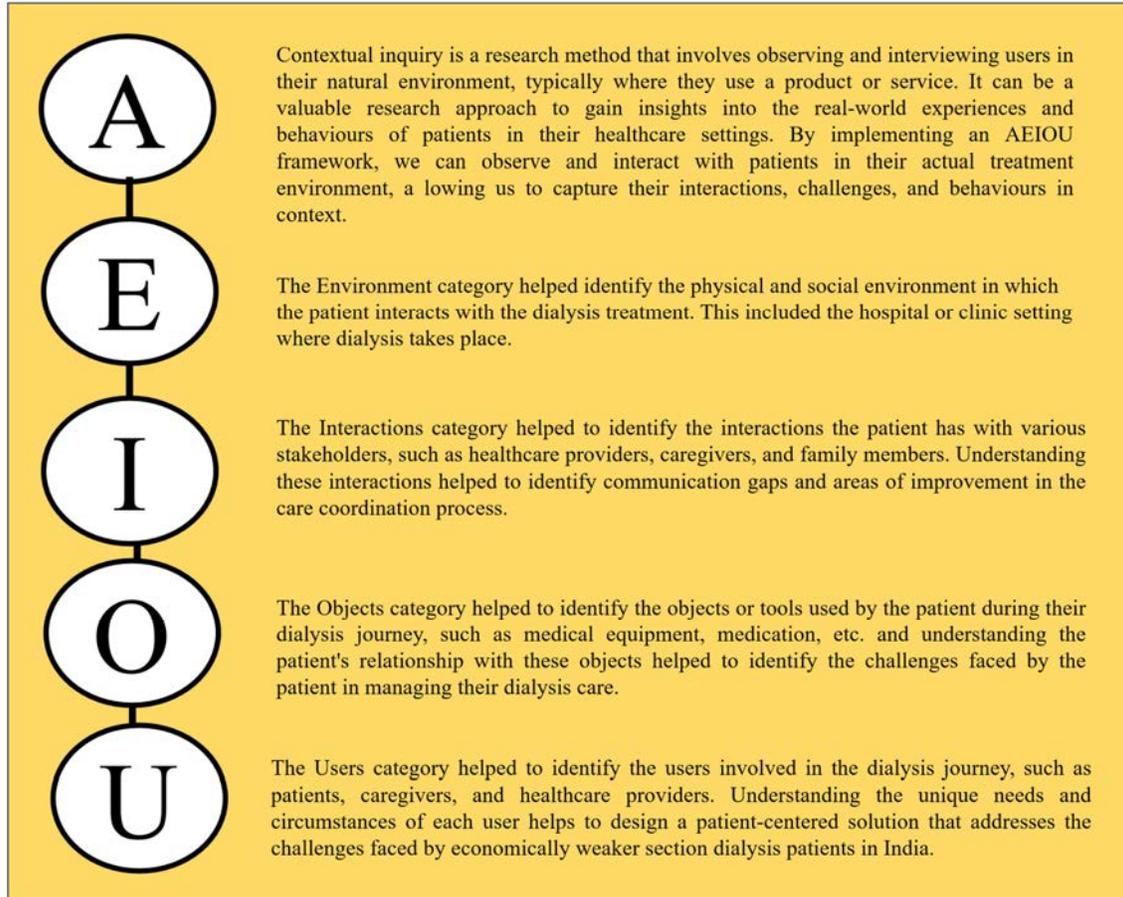


Figure 1: Representing the overview of the Contextual Inquiry research method.

4.2 Netnography:

Reddit was an invaluable resource for conducting netnographic research on the challenges faced by dialysis patients in India. By exploring various subreddits related to renal disease, we

were able to gain insights and understand the issues faced by patients daily. The anonymity provided by Reddit allowed for more candid responses, providing a more accurate reflection of the challenges faced by dialysis patients shown in Figure 2.

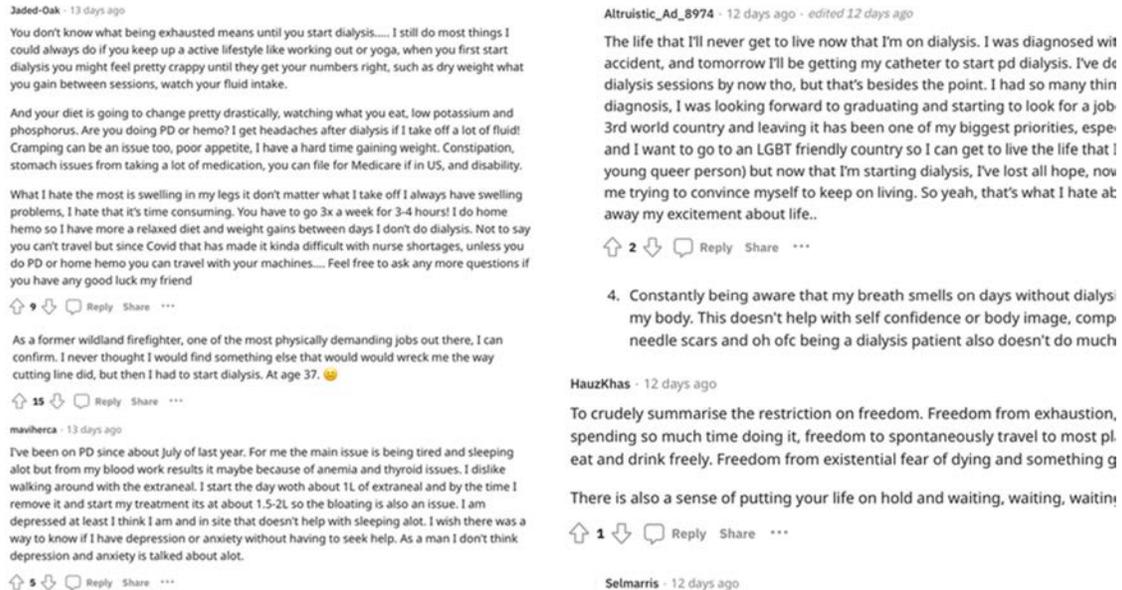


Figure 2: Representing the result of Reddit in the netnographic research.

4.3 Interview results:

Conducting interviews with users, patients, and experts can provide valuable insights and data for the economically weaker sections of India's dialysis patients and their quality of life. Conducting interviews with dialysis patients helped capture their perspectives, experiences, and challenges related to their condition, treatment, healthcare access, and quality of life. The objective was to identify the challenges faced by the economically weaker section of dialysis patients and also help you establish trust and rapport with patients, gain a deeper understanding of their experiences, and develop a patient-centric perspective in the project. A total of 8 patients were interviewed from government hospitals and centers, with similar demographics, in terms of age, medical history, lifestyle, and the challenges they face daily. Having patients with similar demographic characteristics helps identify common patterns or trends indicating the challenges that are prevalent among them, as well as the unique insights and perspectives specific to this subgroup.

4.3.1 Expert Interviews:

Conducting interviews with experts, such as healthcare professionals, specifically nephrologists, patient counselors, caregivers, researchers, and dietitians who can provide valuable insights and expertise related to the topic. Their knowledge, experiences, and perspectives on the challenges and opportunities in the field of dialysis care and interventions for economically weaker sections of patients can also provide valuable input on the feasibility, relevance, and effectiveness of potential interventions or recommendations that we propose. These expert interviews aimed to gather valuable insights from professionals with expertise in different areas related to dialysis treatment and care. A doctor who specializes in the diagnosis and treatment of kidney diseases, including dialysis. The insights gained provide a medical perspective on the challenges and issues faced by the economically weaker section of dialysis patients in India. The insights gained from this interview provided a unique perspective on the psychosocial challenges faced by EWS dialysis patients, such as the impact of the disease on

mental health, coping mechanisms, emotional support needs, and strategies for improving the quality of life of patients. As an expert in the field of dialysis research, the insights gained from the researcher’s interview provided a broader perspective on the current state of research, emerging trends, and potential interventions to address the challenges faced by EWS dialysis patients. The insights provided insights into the dietary challenges and requirements of economically weaker sections of dialysis patients, such as dietary restrictions, adherence to dietary guidelines, and strategies for optimizing nutritional status during dialysis treatment.

4.4 Define Phase:

The next step in our paper is the define phase. In this phase, we will use the insights and data gathered from our user interviews and secondary research to identify the core problems faced by economically weaker section (EWS) dialysis patients in India. We will define the problem statement, which will serve as the foundation for our design solutions. The findings from the interviews laid the foundation for further analysis, synthesis, and recommendations in the subsequent chapters of the research. The insights gained from the interviews have informed the development of personas, user journey maps, and affinity clusters, which have helped in organizing and analyzing the data in a user-centric manner. to understand the needs, behaviors, and characteristics of different user groups, providing a human-centered perspective and allowing us to empathize with the users, making it easier to design solutions that meet their specific needs. Based on the multiple user interviews conducted and understanding the characteristics of most patients who visit the center/hospital to receive treatment, a persona was created that represents the target users of this paper. By creating a persona like Rajesh Pawar, the unique needs and circumstances of the end-users can be understood better to build empathy towards them, prioritize solutions, and conduct user testing and validation shown in Figure 3.

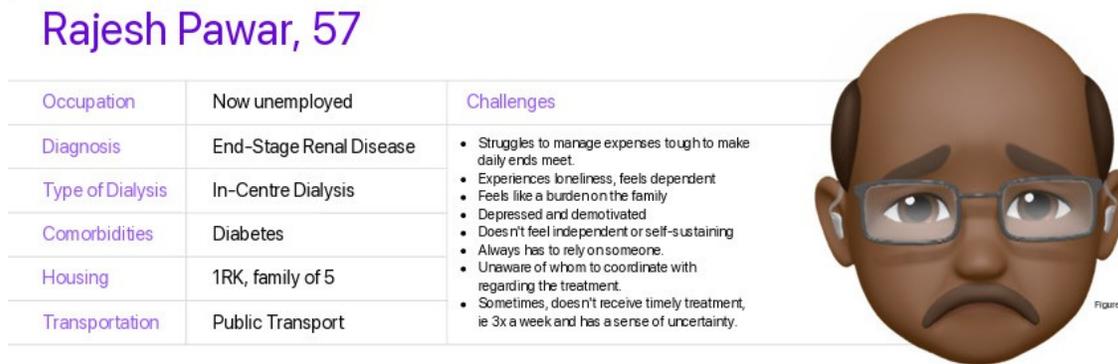


Figure 3: Representing the result of the challenges faced by the patients.

The user journey map was created after observing the dialysis care process and interacting with multiple EWS dialysis patients. The map represents a week in the life of an EWS dialysis patient, highlighting the various challenges they go through. This week-long journey map is a powerful representation of the hardships that EWS dialysis patients face in their daily lives. By looking at the journey map, it is easy to see the severity of the challenges that these patients go through, only to be able to live a life. Knowing that this week-long journey loops for the rest of their life helps to empathize with the patients and motivates further action to improve their quality of life. By understanding the patient's experience, needs, and challenges, as designers we can develop solutions that are more effective, relevant, and empathetic. This user journey map helps to prioritize the features and solutions that are most important to the patient, which can lead to higher adoption and satisfaction rates. By organizing and grouping the data into themes, insights, and pain points, we were able to identify the most significant findings and develop patient-centred solutions that address their problems. The insights generated from

affinity mapping helped us to gain a deeper understanding of the patient's needs, experiences, and challenges. This understanding allowed us to develop solutions that are more aligned with their needs and further evaluate and prioritize the most significant challenges that EWS dialysis patients face. Dialysis patients may require coordination with multiple healthcare providers and specialists, including scheduling appointments or managing paperwork, which can be complex and overwhelming, especially when there's already a shortage of these resources. Dialysis treatment requires a significant time commitment, often multiple times per week, which can disrupt patients' daily routines and schedules. Dialysis patients from diverse backgrounds may face language and cultural barriers in understanding and navigating their care. Not everyone can understand English and even simple terminology can be overwhelming. Dialysis sessions can be lengthy and physically draining for patients, and it's not even remotely an enjoyable experience. Dialysis patients may have physical limitations due to their health condition, which can impact their ability to perform daily activities, which makes them feel like a burden on their caregivers for always being dependent on someone. Many dialysis patients face challenges in accessing transportation to and from dialysis centers, especially if they are economically disadvantaged.

EWS dialysis patients in India face significant mental and emotional challenges due to the chronic nature of their disease, including anxiety, depression, and social isolation, which are often overlooked in their care. Many patients from the EWS especially may have limited support systems, such as family or social support, due to various reasons, like migration, financial constraints, or social isolation, which can impact their ability to manage and cope with the challenges they face. Many dialysis patients also may feel isolated and lonely due to their condition, which can impact their mental health. Dialysis patients often face dietary restrictions and may require special diets to manage their condition, which is something our target users find hard to manage and follow, both due to financial constraints as well a lack of knowledge. Dialysis patients need to be educated about their condition and trained in self-care practices, such as monitoring their blood pressure, fluid intake, and medication management. Despite the critical role of nutrition in managing dialysis, patients face significant challenges in maintaining adequate and appropriate dietary intake, which exacerbates their already compromised health status.

4.5 Healthcare coordination:

Healthcare coordination is the need of the hour to ensure the efficient and effective delivery of healthcare services. In today's world, where technology is rapidly advancing, healthcare providers are expected to keep up with the times and adopt new and innovative ways of delivering care. Unfortunately, the healthcare industry in many countries, including India, is facing a significant shortage of trained personnel and resources, leading to a gap in the quality of care provided.

One of the key challenges in healthcare coordination is the lack of communication and collaboration between healthcare providers, leading to delays in diagnosis and treatment, missed appointments, and other inefficiencies that ultimately harm patients. This is especially critical for economically weaker sections (EWS) of the population who rely heavily on government hospitals and dialysis centers for their care. Additionally, the lack of awareness of other centers with available beds leads to overcrowding in a single hospital and a reduced patient-to-provider ratio, which further exacerbates the problem. All these factors lead to a decline in the quality of care provided and a decreased level of patient satisfaction. Therefore, healthcare providers must find new and innovative ways to improve healthcare coordination, streamline processes, and provide better care to their patients, especially those from vulnerable

populations. By adopting new technologies and approaches, healthcare providers can bridge the gap in healthcare coordination and provide better, more efficient care to their patients.

4.6 Future Scope:

As we wrap up the research and design process for EMPWR+, it's important to consider the potential future directions and opportunities for this project. The following section outlines some of the potential areas of growth and development for EMPWR+ in the future.

4.6.1 Scaling Up:

The first area of potential growth for EMPWR+ is to scale up the service and expand to other regions in India. This would involve co-collaborating with more hospitals and dialysis centers to ensure that EMPWR+ can reach a larger number of EWS dialysis patients. It would also require additional funding and resources to ensure that the service can be maintained and scaled effectively.

4.6.2 Integrating with other Healthcare Services:

Another area of potential growth for EMPWR+ is to integrate with other healthcare services and providers. For instance, EMPWR+ could partner with diagnostic labs, pharmacy chains, and other healthcare providers to offer a more comprehensive suite of services to EWS dialysis patients. This could involve creating a seamless network of healthcare providers that can work together to offer more holistic care to patients.

4.6.3 Implementing New Technologies:

As technology continues to evolve, there are many potential opportunities to integrate new technologies into the EMPWR+ service. For example, wearable devices could be used to track patient health and provide real-time feedback to healthcare providers. Similarly, artificial intelligence and machine learning could be used to analyze patient data and predict potential health issues before they arise.

4.6.4 Expanding to Other Populations:

Finally, there is potential for EMPWR+ to expand its services beyond EWS dialysis patients to other vulnerable populations in India. For example, the service could be adapted to support patients with other chronic illnesses, such as diabetes or heart disease. Alternatively, the service could be adapted to support elderly patients who may have difficulty accessing healthcare services. In conclusion, there are many potential areas for growth and development for EMPWR+. By focusing on these areas, we can continue to improve the quality of life for not just EWS dialysis patients, but other patients in India and ensure that they receive the timely and effective care that they deserve.

5. CONCLUSION

This paper aims to address the challenges faced by economically weaker sections (EWS) of India's dialysis patients and improve their quality of life in some way. Throughout the project, through extensive primary research, including user and expert interviews, and secondary research, we were able to identify the significant challenges faced by these patients, including physical, psychological, financial, social, dietary, and healthcare access challenges. The research highlighted showed that there is a significant need for improving the healthcare coordination and experience of these patients.

The proposed concept, EMPWR+, aims to simplify healthcare coordination and improve the quality of life of these patients by ensuring timely treatment and reducing the burden on them. The implementation of EMPWR+ has the potential to not only improve the quality of life of

EWS dialysis patients but also other patients. It can help them receive timely treatment, manage their medical condition, and cope with the challenges they face. While the proposed concept is still at an early stage, it has the potential to grow and make a significant impact on the healthcare sector in India. Further research and development can be done to refine and expand it.

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