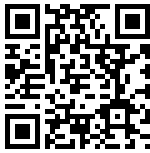


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Technological Progression of Graphic Design in Pakistan: A comprehensive Examination of Industry's Evolution

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ABSTRACT The field of graphic design has gone through a process of continuous evolution and expansion with innovations in technology over the years, which transformed and developed a new perception of this field both for the public and for the graphic designers as well. This paper attempts to study the changing trends and evolution of the field of graphic design in Pakistan in light of the advancements happening in the field of technology. The emergence of evolving technology has given graphic designers new avenues to change the face of how design is perceived by introducing new possibilities for creative outcomes.

INDEX TERMS advancement, communication, digital innovation, graphic design, technology

I. INTRODUCTION

The idea of what visual communication or graphic design means has been in flux over the years, due to the changes and advancements in technology, along with the evolving design methods. McCoy describes the birth of visual communication design as “a spontaneous response to the communication needs of the industrial revolution in capitalist market-based economies.” According to Swanson, visual communication design “should be about meaning and how meaning can be created... it is about expression and the mass dissemination of information”. The field of graphic design has been gaining new meaning and momentum in Pakistan over the last 50 years, with advancing technology being the most important factor contributing to its evolution [1].

My father, born in the year 1938, was from the generation of people who saw the world changing rapidly with the changes and advancements in technology that have happened within the last decade and resulted in completely changing the outlook of the world around us. I recall him saying during a drive: “Growing up, we always used to wonder listening to news

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regarding satellites being sent; it never occurred that this very technology “the satellites” will make being connected so easy.”

Meanwhile, being born in the late 70s, I grew up in a world in which hippies-ism had subsided; radicals had managed to attain the status of being idolized, the voices on the radio got a visual presence, future became in color (television) and media was on its raise; taking our parents to this another world; and we (obviously) drove with them. Pakistan was playing between the cards of being liberal and moving ahead with the modern world, or staying conservative (dupatta or no dupatta), (pious and not so pious). Yet education was provided to everyone and had an important role to play; in our local context, we saw it happening through newspapers, Urdu digests, television, and radio. But with time, new mediums and technology started getting introduced over the years.

This was the period when finding connections, and being connected became the mantra of the modern world, that was facilitated by the ever-evolving face of technology. In Pakistan, the need to be in contact with the nation and the rest of the world became vital. At those times different forums like print media (posters, ads, and publications), were highly explored and were added to our cultural communication, in a written form. Pakistani artists of that era cleverly merged the Western design layout principles with local imagery, and this resulted in giving us a unique visual platform, showcasing our identity in modern trends [1].

We were an agricultural nation and adopted the Industrial Revolution ethos while trying to find an identity, and attempting to break from the so-called rural thoughts; (as others looked at us). In our late 70s and early 80s the existing newspapers and publishers were closely linked to advertising agencies, promising to provide all solutions under one roof; service design if you may. We were utilizing very few of the printing presses that were given to us as though a part of our dowry. If we trace back in history of how technology evolved in the field of communication and graphic design in Pakistan, this can be regarded as our first technological advancement [2].

II. EVOLUTION OF TECHNOLOGY IN PAKISTAN

Printing presses were already operational in the Indian subcontinent during the colonial time. An example is a 150-year-old printing press that was commissioned by Nawab Sadiq Muhammad Khan IV in 1863 as "Sadiq ul Anwaar Press Bahawalpur" for publishing the State's Official Gazettes. The

press was initially a "Lithograph" where only Urdu documents could be published. However, after a few months, when the press was ready to publish English documents, Bahawalpur State surpassed most of the states in British India and stepped into a new age of print media. Initially, the major work was the weekly publication of Sadiq Al Akhbar Gazette which was followed by the publication of annual administrative reports of various Departments. In 1905 the number of manual machines increased from 2 to 6. To improve the efficiency of the system, the machines between 1907 and 24, were made operational through a steam engine, due to which the press was renamed "Sadiq ul Anwaar Steam Press". The system changed in 1924, when the press was made to run on electricity and hence was called "Sadiq ul Anwaar Electric Press. Till the merger, of the State of Pakistan, the press was controlled and managed by the British Political Agents and Superintendence. After Bahawalpur's emergence in Pakistan in October 1947, the printing press was renamed as "Government Printing Press Bahawalpur" [3].

Taking this example in view, we get an insight into how we were using offset printing (also called offset lithography along with manual illustration while incorporating very basic photography, manual calligraphy, and layout design techniques. These were the latest technologies of the era, in our part of the south-Asian region. Our teacher, Sir Hamid Durrani (painter turned graphic designer), told us that in 1980s this was how they worked in the printing press. They used to take the negative of the photograph, expose it to the size as per the ad, get the calligrapher to write the manual text, and the layout designer used to place everything together for the final prints [2].

Even with the introduction of printing done through automatic machines, the printing of magazines, books, and newspapers was still done by the artist who was also creating the illustrations, while the calligrapher was responsible writing the words, and a responsible layout designer was given the responsibility to do the lay-outing.

Zuraiz ur Rehman Niazi claims that "by the end of the 1980s, almost all the industry had started to use color film stock. After a decade, in the late 1990s, new digital cameras and technology started to flow into the industry which gave birth to several new production houses" [4].

The emergence of digital technology in the late 80s revolutionized the minds of the people of Pakistan even more. Computers and software became

a trend. In Pakistan, the approach remained limited, some advertising companies invested in digital technology. Pakistani advertising agencies started using computers on full scale for design and layout work in the mid-90s. This was a time when computers were becoming more affordable and widely available, and some limited graphic design software was gaining popularity, and productivity went off the roof.

III. TECHNOLOGICAL CHANGES IN THE FIELD OF GRAPHIC DESIGN

Pakistani advertising agencies embraced a range of other digital technologies at a very slow pace, such as the usage of the internet (remember when I quoted my father); the satellites sent in his time were now being used.

This digital technology trend has made graphic designers think beyond the illustration, manual-calligraphy, and manual-lay-outing. We have everything packaged in software for us on a computer. We can claim this to be our mid-technological era where life is dominated and driven through technology as the foremost and important medium.

As technology changed, in tandem with technological advancement, the status of a designer changed; we became graphic designers. Recently, computers had become very common and the advancement in the software made it easy for anyone to use the tools provided by the excess software from home. This progress in software development and computing allowed and continues to allow Pakistani designers to explore the endless possibilities of digital platforms, beyond traditional methods and approaches.

Visual communication design/er is not a new term to be used; this was witnessed with the evolution of web design. It happened after a giant leap that changed the face of the world in 1991 with the introduction and development of the World Wide Web and its design by Tim Berners-Lee, with assistance from Robert Caillau (while both were working at CERN). This led to the start of an interest in designing websites and browsers. As a result, the computer operating designers had to adapt their skills to create work that is optimized for the web. The Internet, in the form of international USENET newsgroups, was introduced in Pakistan in 1993. It was meant to provide dial-up and e-mail service to the public and support projects related to education and other areas. The web gave us the opportunity to learn

something new, such as web development and computing. With the help of visual designers, Pakistan entered its new phase of operations. In terms of education, the institutes teaching only advertising and its branches had to venture and boarded their limits in introducing, using, and visualizing web designing [4].

As time passed, several changes occurred and evolved how web designing was happening and being perceived in Pakistan, as newer versions and visual design elements started being incorporated into the process. An important aspect that was responsible for the evolution of different types of web design interfaces was not only the content but also the introduction of new devices that were being used to view the content of the web. While web designing and digital platforms were gaining weight, digital printing in Pakistan took off in the late 1990s and early 2000s. This was driven by advancements in printing technology, which made it possible to produce high-quality, full-color prints at a lower cost than traditional offset printing. Digital printing gave access to every household, a platform with designing tools and printing tools.

Today, digital printing is a popular choice for many some agencies, particularly for short-run or short-shelve projects such as posters, brochures, flyers, and stationery. And is a favorite amongst the educational institutes. It offers several advantages over traditional printing methods, including faster turnaround times, lower costs, and the ability to print variable data, and variable sizes.

Parallel to this advancement in digital printing as a technology, design software and access have become very common. Our thought processes or innovation have paused here. We have become very skilled in downloading software, using software, and making a parallel universe journey. We somehow became a bit fearless, to be honest.

Then came the most interesting usage of all time, the emergence of mobile technology, which changed the viewing sense of the consumer. Designers are now creating works that must be optimized for smaller and other screens to create. Optimizing renewed focus and some new design principles, such as simplicity and clarity in design.

Our pathway from radio to screens and other digital technologies, such as social media, search engine marketing, and mobile advertising, has opened new advertising channels, allowing businesses to reach target groups more

specifically and effectively. Organizations had already recognized the significant influence that visual communication has on establishing their brand image and engaging their desired audience in a captivating way. With the new channels, the small businesses, also started adapting their visual communication services. According to Urooj Hussain, Associate Director of Digital, at Brainchild Communications, “Consumers are more likely to trust a brand with a social media presence. According to a Forbes consumer study, 82% of consumers are more likely to trust a company with a digital media presence. It adds to transparency, two-way communication, engagement and in some cases, social responsibility as well.”

With the evolving face of consumerism over the years, the use of psychographics also became a tool for the field of marketing to be used widely to understand the demographics and purchasing habits of consumers. This knowledge of buyer persona was vital to be conveyed by the graphic designers in the visual format. With the constant change in Pakistan in the context of political scenarios, religious extremism, and evolving culture, it became the holy grail for the local graphic designers to include sensitivity to these ideas when creating designs for the masses [5].

IV. CREATING CULTURAL RELEVANCE

By leveraging the talents of proficient graphic designers with a profound understanding of Pakistani culture, brands can adeptly convey their messages in a way that establishes a profound connection with their targeted audience. Additionally, graphic design has transformed into an indispensable instrument for articulating societal issues and advancing positive change in Pakistan. Nonprofit organizations and government entities regularly engage graphic designers to construct visually engaging campaigns that raise awareness about various societal dilemmas. The innovative amalgamation of imagination and purpose has consistently demonstrated its effectiveness in galvanizing public support and catalyzing meaningful societal advancement [6].

In the local cultural context, it is important to envision graphic design services as a form of expression that involves more than just putting words on paper; it also involves thoughts, feelings, and opinions that can be discussed, understood, and refined. The aesthetics of graphic design in Pakistan should stand as a strong visual representation of what is relatable to the masses while attempting to educate them by including information

that is contextual and relevant. Keeping in mind the current trends and styles, while also attempting to use this medium for educating the masses is what adds excitement to the process of graphic design.

V. IMPACT OF TECHNOLOGY

Different methods and ways in which technology has impacted and established the field of graphic design have led the upcoming designers to adapt their skills and approaches to keep pace with these changes. The emerging ideas, level of creativity, and expansion in the works of graphic designers have found many creative ways. The availability of freely accessible resources has enabled individuals to improve their skills by utilizing online tutorials, courses, and collaborative communities. This has contributed to the successful flourishing of graphic design in Pakistan, with a multitude of talented individuals discovering their artistic potential in the digital realm.

Zaidi observes that over the past 15 years, owing to the computer, "a lot of people learn the design programs and run small, successful design studios with small printing presses becoming a one-stop shop to get stationery, brochures, et cetera designed and printed. A few years ago, there was graffiti on walls in Karachi advertising courses in which you could become a graphic designer in 3 months" [7]–[9].

Graphic design, or visual communication design, has evolved into a ubiquitous and highly sought-after profession, with designers readily embracing new technologies. Its not merely a matter of designers becoming proficient in using software tools but they have also incorporated computer science techniques into their skills set as well [1], [10].

In todays digital age, graphic designers are expected to do more than just create visually appealing artwork. They now use knowledge and different principles or techniques of computer science to enhance their design work. For example, they might utilize algorithms and data analysis to create data visualizations, incorporate interactive elements into their designs, or optimize images and graphics for web and mobile platforms. Coding and the emergence of artificial intelligence have also contributed to giving graphic designers new avenues to change the face of how design is perceived by introducing new possibilities for creative outcomes. This fusion of graphic design and computer science allows them to produce more dynamic and effective visual communication solutions.

In essence, the field of graphic design has expanded beyond traditional artistic skills, and designers have become adept at harnessing the power of technology and computer science to create innovative and impactful visual content. This shift reflects the ever-evolving nature of the profession and its ability to adapt to the current demands of the digital world.

A valid example was noted by the authors and creators of the Vinci paper, advertising posters that are commonly utilized mediums for conveying information and promoting products. Designing these posters can be a time-consuming and challenging task for designers due to the plethora of design elements and layout options available in the market. In response to this challenge, they have introduced an intelligent system aimed at automating the creation of advertising posters.

To illustrate, Vinci takes a user-supplied product image and taglines as input. It then utilizes a sophisticated generative model to align the product image with a curated set of design elements and layout options, resulting in the production of aesthetically pleasing posters. What sets Vinci apart is its integration of online editing feedback, which empowers users to fine-tune the posters and tailor them to their specific design preferences.

Through an extensive research process that encompassed a series of user studies and a Turing test, the authors discovered that Vinci is capable of generating posters that are comparable in quality to those crafted by human designers. Furthermore, they found that incorporating online editing feedback into the system significantly enhances the efficiency of customizing these posters to meet users unique requirements.

VI. CONTEMPORARY ADVANCEMENTS IN TECHNOLOGY

The graphic design landscape is poised for transformation in the foreseeable future, the emerging technologies, such as augmented reality (AR), virtual reality (VR), and meta-reality have vividly helped humans. These advancements are believed to contribute significantly to influence the field of graphic design, prompting to embrace and explore this evolving frontier. These cutting-edge technologies hold the potential to revolutionize graphic design in various ways.

Augmented Reality (AR): AR technology superimposes digital elements onto the real world, offering new avenues for graphic designers. They can create interactive marketing materials or packaging designs that come to life when viewed through a smartphone or AR glasses. For instance, a product

label might reveal additional information or animations when scanned with an AR app [8], [11].

Virtual Reality (VR): VR opens possibilities for immersive graphic design experiences. Designers can craft entire virtual environments or 3D visualizations for product presentations. Imagine a real estate developer showcasing properties through a VR tour with lifelike, immersive graphics.

Meta Reality: Meta reality, often referred to as the next phase of digital reality, merges the physical and digital worlds seamlessly. Graphic designers can leverage this technology to create innovative user interfaces, interactive art installations, or marketing campaigns that seamlessly blend reality and virtual elements.

These technological advancements challenge graphic designers to adapt and expand their skill sets. It has become vital for the graphic designers, especially in Pakistan to keep pace with the changing scenarios in terms of advancements in technology, and their practical possibilities in the field of graphic design. Today's graphic designers will require expertise in creating 3D graphics, understanding user interactions in virtual spaces, and ensuring designs both visually appealing and functional within these immersive environments [9], [12], [13].

VII. THE NEGATIVE AND POSITIVE ASPECTS

An in-depth insight has made it justified by saying that the future of graphic design is brimming with exciting possibilities as it embraces AR, VR, and meta-reality. Designers are on the cusp of exploring new dimensions and pushing the boundaries of creativity in a digital world that's becoming increasingly integrated with our physical reality.

However, it is also necessary to keep in mind and consider the adverse consequences of these advancements, offering some points for fellow thinkers to ponder. Let's reflect on what might have been forfeited in the graphic design journey with the technological advancements.

1. ****Misuse of Images**:** With the ease of digital image manipulation, it has been observed that the misuse of images has significantly increased, including deceptive photo editing and the spread of false information through manipulated visuals.

2. **Paper Consumption**: The shift to digital media has reduced the demand for printed materials, which has implications for the paper industry and environmental sustainability.
3. **Originality**: The internet's vast repository of readily accessible images and design templates has made it challenging to maintain originality in graphic design. It has become easier to replicate the existing designs inadvertently [10], [14].
4. **Visual Vocabulary**: With the rise of digital designing tools, the strength to develop a unique visual vocabulary has been spatially impacted. The availability of pre-made design elements can stifle creativity and limit the development of personal design styles.
5. **Authenticity and Cultural Identity**: As we embrace the journey of global design trends, there is a concern that we may lose some of the authenticity and cultural identity in our work. It is essential to balance global design influences along with the preservation of local cultural aesthetics.
6. **Manual Photography**: Traditional manual photography, such as film development, has become less common due to the prevalence of digital cameras. This shift has implications for the craft and materials used in photography.
7. **Scripted Urdu**: The widespread use of digital communication has led to a decline in the use of scripted Urdu, as people increasingly communicate in Romanized Urdu online.

On the brighter side, along with the negative impact that we have just discussed, there are several positive aspects as well such as:

1. **Increased Accessibility**: Technology has democratized graphic design, allowing a broader range of creators to participate and excel in the field.
2. **Online Forums**: The internet has provided a platform for graphic designers to connect, share knowledge, and collaborate on projects through online forums and communities.
3. **Adaptability**: Graphic designers have shown a willingness to adapt to new technologies, constantly evolving their skill sets to keep pace with industry advancements [11], [15].

VIII. CONCLUSION

The field of graphic design has gone through a process of continuous evolution and expansion with the changing trends and innovations in technology over the years. It has now crossed the boundaries of being limited to just traditional artistic skills; however, designers over the years have adapted technology, and in the present time graphic designers have learned to harness the power of technology and innovations in computer science by incorporating them as a part of their designing process. Graphic design in Pakistan is also rapidly evolving as designers are learning and implementing the usage of the latest technology in their work. This shift over the years has proved the dynamics and possibilities of graphic design concerning advancements in technology, and how necessary it is to adapt according to the changing demands of the digital world. As a result, the creation of creative and innovative visual content that can have a wider impact can be observed. In essence, while there are challenges and losses associated with technological advancements in graphic design, there are also opportunities for growth, collaboration, and adaptability. Striking a balance between embracing new tools and preserving the integrity of design principles is key to navigate the evolving landscape successfully.

A. TECHNOLOGICAL ADVANCEMENTS: A BRIEF OVERVIEW FOR READERS UNDERSTANDING

The printing press: The invention of the printing press in the 15th century made it possible to mass-produce printed materials, leading to the rise of graphic design as a profession.

Lithography: In the 18th century, the invention of lithography made it possible to print images in high-quality color, revolutionizing the field of graphic design.

Photography: The invention of photography in the 19th century made it possible to create high-quality images that could be used in graphic design.

Desktop publishing: In the 1980s, the introduction of desktop publishing software like Adobe InDesign and QuarkXPress made it possible for designers to create print-ready documents on their computers.

Digital technology: The rise of digital technology in the 1990s, including the development of the Macintosh computer and software programs like Adobe Photoshop and Illustrator, revolutionized the field of graphic design.

Web design: The emergence of the internet in the 1990s led to the creation of a whole new field of graphic design: web design. Designers had to learn new skills to create work that was optimized for the web, including HTML, CSS, and JavaScript.

Mobile technology: The rise of mobile technology in 2000 and 2010 has led to a renewed focus on simplicity and clarity in design, as designers create work that is optimized for small screens.

Augmented and virtual reality: New technologies like augmented reality and virtual reality are likely to have a significant impact on the field of graphic design in the coming years, as designers find new ways to create immersive and interactive experiences for their audiences.

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