



SHIFTING DEMAND FOR GRAPHIC DESIGN EMPLOYMENT IN THE AGE OF ARTIFICIAL INTELLIGENCE: THE CASE OF TÜRKİYE, 2020–2025

YAPAY ZEKÂ ÇAĞINDA GRAFİK TASARIM İSTİHDAM TALEBİ DÖNÜŞÜMÜ: 2020–2025 TÜRKİYE ÖRNEĞİ

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Abstract

The integration of artificial intelligence into production processes has raised concerns about its potential negative impact on employment. To determine which effect—increased productivity or reduced employment—produces more dominant results, an analysis of sectoral data was necessary. This descriptive, quantitative study examines the concurrence between the widespread adoption of generative artificial intelligence and changes in employment demand in the graphic design sector. To evaluate employment demand trends in the era of artificial intelligence, official job posting data from seven graphic design professions from 2020 to 2025 were examined. The findings indicate that while the number of job postings increased at a low rate in three professions, it decreased significantly in four. In most occupations, the decline occurred after 2022, when three significant generative artificial intelligence applications were released. Although no causal relationship has been established, a shift in employment demand in the graphic design field appears to have occurred concurrently with the adoption of generative artificial intelligence. The general finding suggests that, rather than experiencing a uniform contraction, graphic design professions have undergone internal differentiation. While the number of operator and technician positions has decreased, design positions appear resistant to this transformation.

Keywords: Graphics, Employment, Generative Artificial Intelligence.

Öz

Yapay zekânın üretim süreçlerine dahil olması, istihdamın olumsuz etkileneneği yönünde senaryolar gündeme getirmektedir. Verimlilik artışı ve istihdam daralması şeklindeki çift yönlü etkiden hangisinin daha baskın sonuçlar yarattığını görmek için sektörel verilerin incelenmesine ihtiyaç duyulmaktadır. Bu araştırma, üretken yapay zekânın yaygınlaşmasıyla grafik alanında istihdam talebinin değişimi arasındaki eş zamanlılığı inceleyen betimsel nicel bir araştırmadır. Grafik alanındaki yedi mesleğin 2020–2025 yılları arasındaki resmî iş ilan verileri incelenerek yapay zekâ çağında istihdam talebinin yönü analiz edilmiştir. Bulgular; yedi meslekten üçünde iş ilanı sayılarının düşük düzeyde artarken, dört meslekte yüksek oranda düştüğünü göstermektedir. Mesleklerin çoğunda düşüş, üretken yapay zekâ uygulamalarından en etkili üç örneğin piyasaya sürüldüğü 2022 yılı sonrasında kaydedilmiştir. Nedensel bir ilişki kurulmamakla birlikte, üretken yapay zekânın yaygınlaşma süreci ile eş zamanlı olarak grafik alanındaki istihdam talebinde yön değişimi yaşandığı görülmektedir. Genel bulgu; grafik alanındaki mesleklerin tamamında homojen bir daralma yerine, alan içi farklılaşma yaşandığı yönündedir. Operatörlük ve teknisyenlik pozisyonlarının hacmi küçülürken, tasarımcılık pozisyonunun dönüşüme dirençli olduğu görülmektedir.

Anahtar Kelimeler: Grafik, İstihdam, Üretken Yapay Zekâ.



INTRODUCTION

Until recently, the utilization of artificial intelligence (AI) applications was confined to large-scale tasks. However, they have become increasingly prevalent in recent years. Initially, AI was employed for relatively simple tasks, such as text translation. However, it has since evolved to the point where it can handle complex tasks, including simultaneous interpretation. AI has demonstrated the capacity to execute a wide range of complex tasks, including research, coding, writing, drawing, and analysis. Consequently, the adoption of AI in professional fields is increasing at a rapid pace.

AI may have a transformative impact on knowledge-intensive professions comparable, in some respects, to the impact that the Industrial Revolution had on labor-intensive occupations. Just as steam power and mechanics made tasks performed by physical labor much easier, AI can now replace mental activities. In this context, AI technology can be viewed as an assistant that makes workers' jobs easier. However, the types of knowledge and skills required for jobs are changing radically. According to an IBM survey, over 120 million workers globally are projected to need retraining within the next three years (Kelly, 2020). As AI technology continues to advance, it has the potential to automate and transform many jobs traditionally performed by humans. The impact of AI on professions can be explained by Schumpeter's concept of creative destruction. This term refers to a state of continuous change and renewal created when new technologies, products, or business models replace older ones. Examples of this include more efficient production methods, new jobs, and market opportunities (Uctu et al., 2024, pp. 296-297).

The possibility of AI shifting the employment balance against people is fueling negative views of AI. The idea that AI will replace workers and render them obsolete is often discussed. A related article in *The Guardian* noted that AI systems could replace journalists, suggesting that AI tools would outperform human journalists in gathering information (Yerushalmy, 2023). *Le Figaro* reported that AI agents will replace some layout, editorial, and management staff (Philippot, 2023). Numerous speculative scenarios suggest that 300 million people, including those in office administrative support, law, architecture, engineering, financial operations, management, sales, healthcare, art, and design, could lose their jobs with advancements in AI technology (Kelly, 2023).

While it is certain that professions will increasingly be guided by AI, it is important to address issues such as which job functions are open to AI, what the future holds for these jobs, and which jobs will remain relevant or become obsolete. As AI advances, even occupations involved in AI development may experience substantial changes in required skills and job responsibilities. A study analyzing over 55 million job postings published in the U.S. between August 2022 and July 2023 found that knowledge workers' roles are the most exposed to changes caused by AI (Hering, 2023, p. 5). Jobs based on one-on-one human interaction and physical labor, such as beauty services, personal care, nursing, and childcare, are not at risk, while AI poses a significant risk to jobs in information technology, mathematics, and software development. While AI performs relatively well in technical skills and jobs, it performs quite poorly in areas requiring intuition, judgment, and/or face-to-face, hands-on work. In fields related to graphic design, such as art, entertainment, media, and communication, it was concluded that AI demonstrates a high level of proficiency. Studies have shown that jobs with a higher likelihood of being performed remotely have a higher potential for exposure to AI (Hering, 2023, p. 8). It is also noteworthy that professions based on skills, such as writing and design, are more susceptible to the impact of AI (Eloundou et al., 2024, p. 28; 41).

Theoretical Background

AI is a technology that aims to create computational systems that mimic human perception, cognition, and actions. It is an overarching concept encompassing many subfields, such as machine learning, image recognition, and natural language processing. Generative artificial intelligence (GenAI) refers to algorithms that are trained to predict data sequences based on training data. The two most common types of sequences that these algorithms generate are text and images. Large language models are a subset of GenAI that focuses on text and image generation. These models are unique because they are trained on massive datasets. This training grants them greater capabilities than previous applications (Myer & Zayas, 2024). These models have the potential to perform all mental tasks (Makridakis, 2017, p. 47), including creative tasks such as design and art production.



GenAI is both a subset of and an evolution in AI technology. While traditional AI relies on predefined algorithmic rules, GenAI can create new content. It can generate creative outputs such as text, images, and audio by accessing massive datasets using techniques like machine learning and computer vision. It can then create new compositions from visual, written, and audio digital works within its scope of access. These generated images are synthetic. For instance, photorealistic images can be produced without the traditional photographic process of pressing the shutter button and recording the image onto a light-sensitive surface.

AI-based image generation technology has gained significant momentum since 2020. The release of the Generative Pre-trained Transformer (GPT-3) in 2020 brought about a major qualitative leap in text-to-image generator capabilities, ushering in the era of large language models. The success of GPT-3 led to the development of CLIP, a groundbreaking model designed to link text to images. DALL-E was released in 2021 and ChatGPT in 2022. That same year, two of the most talked-about applications in this field, Midjourney and Stable Diffusion, were released. In 2023, Adobe, a design software company, released Firefly. These applications are the best-known examples of AI image generators.

Since the 1956 Dartmouth Conference, which is widely regarded as the genesis of AI technology (Kline, 2011, p. 5) periods during which investment and research in the field have declined have been referred to as the *AI winter* (Floridi, 2020, p. 2). It is recommended that the terminology be built upon, with the term *AI spring* being utilised for the year 2022. The year 2022 is significant in the context of generative AI technologies, as it marks the point at which these technologies began to be adopted by the general public on a wide scale. It is noteworthy that OpenAI's ChatGPT model attained 100 million users within a mere two months following its launch. Khan et al. (2024, p. 1) evaluated the 2022 ChatGPT launch as a substantial advancement in human-machine interaction and observed that its popularity was increasing rapidly. Mesko (2023, p. 1) reports that ChatGPT was made available to the public in November 2022 and reached over 100 million users within two months. The rapid expansion of GenAI to a wide user base following its dissemination to the general public is a noteworthy development in this context. This development has resulted in heightened sectoral awareness and acceptance. It can thus be posited that 2022 represented a notable juncture at which generative AI underwent a substantial technological and social progression.

These applications' revolutionary nature lies in their ability to generate images from text. To accomplish this, a written description is fed into the model. Based on the text, which includes characteristics describing the subject, context, atmosphere, mood, and artistic style, the algorithm generates various images. The more details the written description includes, such as the image's artistic genre, similarity to a specific artist's style, use of light and shadow, and level of detail, the more accurate the results become. This text input is called a prompt. A new job description centered on generating creative results from AI algorithms using written prompts has already emerged. Prompt designers/engineers shape the model's output, ensuring that the AI responds in a meaningful and consistent manner. They are skilled operators who can engage in dialogue with GenAI by writing prompt texts. This technical expertise is set to emerge as a major professional specialism in the future (Ciaramitaro & Costa, 2024, p. 2).

Applications allow people without design experience to generate high-quality, illustrative, or photorealistic images using only text prompts. In other words, competent visualisations can be created using AI simply by writing prompts, without any experience or training in drawing or design. Vartiainen and Tedre (2023, p. 6) argue that text-to-image tools like Dall-E and Midjourney apply the "*low floor, high ceiling, and wide walls*" principle. Users have a very low entry barrier because they can achieve desired results with almost no training (low floor). With training, the quality of the results can be scaled up to commercial-grade and even award-winning levels (high ceiling), and they can be used for a wide range of applications. Virtually every design type, artist, and illustrative style can be replicated using only text input.



GenAI makes it possible to create all kinds of visuals, including static and dynamic images, videos, animations, and drawings in various illustrative styles. It can also generate photographs. Text can be edited and compatible fonts can be selected. Numerous composition alternatives can be generated in minutes. Currently, GenAI appears capable of managing the entire design process independently. However, it is important to define the different dimensions of the process. Graphic design is a field where creativity and functionality are both crucial. It requires the ability to create aesthetic arrangements through technical knowledge and skills. Drawing skills, knowledge of visualization techniques, proficiency in digital programs and tools, typographic layout skills, and the ability to harmoniously integrate these elements into a single composition are all required. The design process consists of stages requiring different types of skills and effort. These stages include defining the problem, conducting research, collecting visual and written data, creating draft sketches, detailing these sketches using visualization methods such as illustrations, photographs, and graphics, preparing photographs for the design if necessary, combining typography and visuals into a composition, and preparing the work for print or presentation. In the pre-computer era, drawings, paintings, and typographic layouts were prepared using traditional techniques, and photographs were developed in a darkroom. Since the 1990s, when digital design techniques became popular, specific design programs have been used for each of these processes. Photographs are prepared in pixel-based programs, while typographic layouts and drawings are created in vector-based programs.

While some stages require creativity, others are technically oriented or require specific program knowledge. For instance, retouching photographs and adjusting their colors is considered the operator's responsibility rather than the designer's. This stage requires precise technical execution rather than creativity, skill, or problem-solving. In fact, such tasks can be performed automatically within design programs. "Creative tasks generally require some degree of original thinking, extensive experience, and an understanding of the audience, while production tasks are, in general, more repetitive and predictable, making them more amenable to being performed by machines (Anantrasirichai & Bull, 2021, p. 601)". This particular example, which is specific to the field of graphic design, is referred to as a *task-based automation* approach. Production processes are subdivided into discrete tasks, with some of these tasks being exclusively performed by human labour, while others can be delegated to automation (Aydm, 2021, p. 276). This approach posits that the generation of a creative advertising idea is an endeavour that cannot be delegated to automation. Machines are considered superior in terms of efficiency rather than creativity.

The first examples of AI in graphic design were logo and corporate identity generators. However, GenAI applications are general-purpose, making it possible to create all kinds of visualizations. For instance, complex graphic design products, such as posters, can be produced. Guo et al. (2021) developed an intelligent graphic design system called Vinci to create advertising posters. AI features have also been integrated into design software. These features include Generative Fill and Generative Expand in Photoshop, which automatically remove distracting elements and generate backgrounds. These features allow designers to complete tasks that previously required significant time and effort quickly and automatically. Generally, designers are comfortable using AI for minor interventions. (Reese, 2020, p. 84) states that people want robots to perform dirty, dangerous, boring, unloved, demeaning, overwhelming, and repulsive tasks.

However, the use of AI in creative work that requires decision-making and choice remains controversial. In a study by Tang et al. (2024, p. 4), participants agreed that AI accelerates the creative process by providing inspiration and quickly generating visuals to explore new directions and ideas. However, due to inconsistent quality and errors, participants stated that they placed less trust in AI when creating the final design. In a study comprising interviews with creative professionals working in design, illustration, motion graphics, and user experience (Adobe, 2018, p. 25), designers were asked what purpose they intended to use AI for in their creative processes. The lowest percentage of designers' expectations for productive AI applications is directed toward generating creative variations (42% in the U.S.-Europe and 72% in Japan). Designers in the U.S. and Europe expect applications to reduce tedious tasks the most (89%), while designers in Japan expect applications to assist with image search the most (91%).



Although designers express low demand for GenAI in their designs, the industry is seeing significant demand for AI usage, evident in job postings. Many studios are establishing departments dedicated to creating state-of-the-art tools that integrate computer vision, machine learning, and foundational models. A study by CVL Economics provides data on the percentage of professionals in the design and entertainment sectors, including film, television, animation, music, sound recording, and gaming. Twenty-five percent of the participants reported having one or more GenAI program(s); 47% reported being in the early stages of implementing or planning to implement a GenAI program(s); 13% reported planning to implement GenAI within the next three years; and 1% reported not planning to implement GenAI within the next three years. A mere 15% of the participants indicated that they would not adopt these technologies. They have articulated concerns regarding the present state of GenAI programs and are currently awaiting the resolution of these issues. The remaining approximately 85% of respondents reported that they are currently engaged in AI-related work or are planning to do so. These results suggest that GenAI is being adopted within the industry. The early adoption of GenAI by design agencies was driven by a strategic imperative to maintain their competitive edge and position within the industry, even during the early stages of the technology's development (CVL Economics, 2024, p. 22).

Sectoral demands have also impacted the qualifications of the workforce. Between 2020 and 2022, the number of job postings that listed the ability to use AI tools as a desired skill increased by 122%. In a survey of professionals in the arts, design, and entertainment sectors, when asked, *Which skills and capabilities have become valuable due to the increased use of GenAI?*, 45% of participants cited *creativity*, 42% cited *machine learning*, and 38% cited *domain knowledge* (CVL Economics, 2024, p. 25; 31). These findings suggest that machine learning has become a necessary skill for graphic designers and that the sector has adapted to this change. Demirci et al. (2025, p. 8098) examined the effects of GenAI on employment by analyzing job postings published by employers in online labor markets. The findings of the study indicate that the introduction of image-generating AI technologies led to a 17.01% decrease in the number of job posts for graphic design relative to manual labor-intensive jobs.

The adoption rate of GenAI in creative fields and its impact on employment are important factors to consider. Professions that integrate AI and are experiencing employment growth are in a very advantageous position. For example, fields such as game design and UI/UX design feature a high level of AI integration and are seeing an uptick in employment. However, although AI integration in graphic design positions has increased by 117%, the demand for graphic designers has decreased by 3%. This decline can be attributed to businesses that previously outsourced graphic design services using GenAI, consequently reducing their labor needs. Another possible reason is that the same work is being carried out by fewer designers with the help of AI (CVL Economics, 2024, p. 26). According to the World Economic Forum's 2023 Report, new employment opportunities in graphic design will exceed job losses. However, it was projected that the profession would experience a global decline of 32% (2023, p. 30; 217). The next version of the report listed graphic design among the professions experiencing the fastest decline (World Economic Forum, 2025, pp. 19-26). The report noted that graphic design has low job creation potential and is undergoing transformation; it may require workers to transition to other fields. Compared to the 2023 report, which classified graphic design as a moderately growing profession, the current outlook is significantly more negative.

The anticipated adverse repercussions of AI on employment have been a subject of discourse in popular media outlets that specialise in the production of content for entertainment purposes and the prognostication of future professions. According to a website with a prediction engine that analyzes the frequently asked question, *Will robots take our jobs?*, graphic designers face a moderate risk from AI. For the study, a machine learning system was developed to train the model. Professions that were very easy or very difficult to automate were manually labeled, and the assumptions were supported by data obtained from user surveys. The system was then fed the skills, knowledge, abilities, and activities required by each profession, and the algorithm estimated how susceptible each profession is to automation. As of February 2026, when the study was conducted, it was estimated that graphic design would not be significantly affected by AI. This result was explained by the fact that graphic design is linked to fine arts and originality, which makes automation difficult. Social perception, consensus-building, and persuasion skills would also negatively impact the automation of graphic design. It has



been noted that the field will experience slower growth compared to other professions and offer broader job opportunities (Will robots take my job, 2025). That professions requiring human interaction will remain in human hands for a longer period (Hoque, 2024, p. 33).

In an experimental study designed to predict future employment and wages based on past data, Eloundou et al. (2024, p. 41) concluded that graphic design is one of the professions most exposed to GenAI and AI-powered software. "GPTs and GPT-powered software are able to save workers a significant amount of time completing a large share of their tasks, but it does not necessarily suggest that their tasks can be fully automated by these technologies." In a study by Hoque (2024, p. 31), designers speculated on how AI might change their work. The study concluded that graphic design is the profession most likely to change due to AI, at 46.1%. The percentages were 2.25% for urban design, 8.9% for architecture, 13.5% for planning, and 17.9% for interior design.

A study by Fleischmann (2024, p. 9) which surveyed graphic design students about their views on AI found that they do not consider GenAI as a threat to their future career goals. While 82% of students indicated they would accept GenAI replacing certain aspects of traditional design work, 12% view GenAI as complementary to traditional design work. Experienced designers believe that professional design will not be completely replaced by AI. In contrast, young designers are more pessimistic. Due to uncertainties about future trends and a lack of professional experience, young designers believe that AI could eventually replace human designers (Tang et al., 2024, p. 5). "Junior designers or interns used to work mainly in technical operations, and the need for junior design positions may decrease as AI is able to handle these tasks quickly. Designers need to shift to higher-order jobs, such as creative ideas, user experience design, and brand strategic planning (Cai & Jung, 2024, p. 261). For this reason, while established professionals are unlikely to lose their positions, entry-level designers may be affected by job losses. Employers who are less concerned with design nuances will prefer AI solutions to hiring or working with designers. "With in-house graphic design work often described as uncreative and dull, it becomes easy to envisage the attraction for industry of machine generated solutions for in-house, corporate, or other less creative graphic design environments and outputs (Meron, 2022, p. 4)". Given that freelance work and non-standard forms of employment are prevalent in creative professions, particularly graphic design, the impact of AI on employment may not be immediately apparent. The term *freelancer* is defined as an individual who is capable of working with multiple employers and/or on a project basis, regardless of time or location. This enables them to secure work independently, transcending geographical boundaries. "The jobs most susceptible to consolidation, replacement, or elimination will be concentrated among entry-level positions (CVL Economics, 2024, p. 12)". All generations will be exposed to GenAI, but younger generations—particularly Generation Z, who are just starting their careers—will be more exposed to it. According to a research report compiled using LinkedIn member data, 49% of graphic designers on LinkedIn in the U.S. belong to Generation Z, and the field of graphic design has been identified as one of the *jobs that can be supported by GenAI*. This refers to roles where AI can eliminate a large portion of tasks, freeing up time for higher-value complementary skills (Kimbrough & Carpanelli, 2023).

While the global impact of GenAI on employment is being discussed, its impact on our country is inevitable. Turkish Employment Agency (İŞKUR) has reported on the effects of digitalization on various professions. The following changes are projected in the graphic design field:

- The demand for computer-aided graphic design operators will decrease.
- Graphic design and graphic artist professions are projected to be among the most in-demand during the digital transformation process, with increased employment in both roles (Akdemir, et al., 2024, p. 28).



Table 1. Registered employees in occupations affected by digitalization (Akdemir, et al., 2024, p. 38).

	2016	2017	2018	2019	2020	2021	2022	2023	2016-2023	2016-2023
Computer-aided graphic design operator	434	734	1.153	1.517	2.300	3.112	3.769	3.421		
Computer graphics operator	1.963	2.111	2.299	2.311	2.204	2.442	2.546	2.013		
Graphic Designer	38.140	45.024	54.457	60.042	70.455	92.151	119.923	115.172		
Graphic Artist	113.817	124.511	136.242	137.685	147.691	167.736	181.950	157.703		

According to the 2023 Labor Market Survey Report, the number of registered workers in graphic-related professions increased by between 25% and 600% from 2016 to 2022. However, a decline was observed in every profession in 2023. This situation indicates a striking change in employment.

To determine if the decline in graphic design employment is due to a general contraction, employment trends in other occupations were examined. Table 2 presents İŞKUR data on job vacancies by economic sectors for 2020, 2022, and 2024. These three years are presented to briefly examine the post-2022 decline-and-rise trend. Upon examining the number of job openings, an expected increase is observed in the *Information and Communication* sector. Additionally, a steady rise in employment demand is seen in *Financial and Insurance Activities*, *Health Care and Social Assistance*, and many other sectors not listed in the table. While demand in the *Education* sector declined after 2022, the *Culture, Arts, Entertainment, Recreation, and Sports* sector, which includes graphic design, also saw a decrease following 2022.

Table 2. Job postings by economic sectors (Turkish Employment Agency, 2020; 2022; 2024).

	2020	2022	2024
Information and communication	18.458	20.693	22.189
Financial and insurance activities	4584	8600	9764
Health and social work activities	26.907	38.664	55.666
Education	23.761	28.141	28.794
Culture, arts, entertainment, recreation, and sports	3466	6036	4339

METHODOLOGY

The impetus for this study was the observation that employment in Türkiye's graphic design sector has undergone a decline that is not observed in other economic sectors. The decline in the number is illustrated by Tables 1 and 2, which show a particularly pronounced decrease after 2022. The extant literature supports the hypothesis that GenAI plays a significant role among the variables that emerged during this period and could influence employment. This descriptive, quantitative study examines how employment demand in the graphic design sector has changed during the widespread adoption of GenAI. However, the study does not assert a causal relationship between the rise in GenAI usage and the decline in employment demand. The objective is to establish a correlation that will serve as a basis for further exploration of causality.

The following criteria were used to select and classify occupations: In the list of occupations published by İŞKUR (Meslekleri Tanyalım, 2026), it can be seen that *Graphic-Multimedia Designer* occupations are classified under the section beginning with code 2166: *Graphic Artist* (2166.01), *Graphic Designer* (2166.06), *Graphic Technician* (2166.07), and *Graphic Design Technician* (2166.08) were included in the scope of this study. Professions such as animation, illustration, and web design—which fall under the same code group—were not included in the study because they represent distinct specializations, even though the term *graphic* appears in their names. Similarly, professions such as graphic arts teaching and instruction were also excluded from the scope of the study. *The Computer Graphics Operator*



(2651.01) in the *Creative Artists and Performing Artists* occupational group, *Graphic and Photography Technician* (3431.09) in the *Photographers* unit and *Computer-Aided Graphic Design Operator* (4419.09) in the *Other Office Support Workers* group were included. As can be seen in the definitions of the aforementioned occupations, their job descriptions are closely related and their work areas overlap.

- Graphic Artist: A person who designs brochures, posters, catalogs, books, magazines, and corporate identity materials in a print-ready format.

-Graphic Designer: A person who designs text and visual elements within artistic criteria for publication in communication channels such as logos, posters, large-scale street posters (billboards), press advertisements, packaging, books, magazines, promotional videos, and animated films.

- Graphic technician: A person who applies images, emblems, patterns, etc., to industrial products such as books, magazines, newspapers, packaging, catalogs, posters, and brochures.

- Graphic design technician: A person who designs services and products to be promoted and prepares them for printing.

- Computer graphics operator: A qualified individual with the knowledge and skills to create shapes and images on a computer, perform typographic layout, and prepare documents for printing.

- Graphic and photography technician: A person who provides technical support during the design of visual content, the taking of photographs, and their digital editing; and prepares layout and design drafts for printed or digital materials.

- Computer-aided graphic design operator: A person with the knowledge and skills to design and create graphic products such as text, emblems, logos, business cards, letterhead, invitations, brochures, posters, book covers, calendars, labels, packaging, and magazines using both manual and computer-based methods.

The occupations are listed according to the İŞKUR occupational list. The three occupations with an increase in job postings are grouped in the first category, while the four occupations with a decrease are grouped in the second category, and the list is arranged accordingly.

The study utilizes official data from İŞKUR, which was obtained through official requests to the institution, as its sample. This data was obtained through a request for information submitted to the Presidential Communication Center (CİMER) under the Law on the Right to Access Information No. 4982. The analysis is predicated exclusively on data regarding job vacancies from İŞKUR, with no incorporation of job postings from alternative networks. İŞKUR data was chosen because it is publicly available, standardized, and official. It has been determined that a system compliant with European Union Statistical Office (EUROSTAT) standards is used to calculate labour market statistics, and that job vacancy rates—rather than the number of job vacancies—are calculated using data collected in each of the four quarters of the year (İşgücü Piyasası ve İstatistik Dairesi, 2026, p. 2). Therefore, it is hypothesised that duplicate job postings were eliminated from the annual total of job postings obtained from the institution, and that the researcher was provided with the filtered numerical data.

The study focuses on seven occupations classified by İŞKUR under the *graphic* term. These occupations are *graphic designer*, *graphic technician*, *graphic design technician*, *computer-aided graphic design operator*, *graphic artist*, *computer graphics operator*, and *graphic and photography technician*. The analysis period covers the years 2020–2025. The data set under scrutiny encompassed the six-year period from 2020 through the end of 2025. The data sets presented herein illustrate the aggregate number of job postings on an annual basis. 2022 is considered an important year when productive AI applications began to spread globally. Comparative analyses were conducted based on this date. As part of the data analysis, percentage changes in annual job posting numbers were calculated. The dataset was subjected



only to descriptive analysis. The periods before and after 2022 were comparatively evaluated. Variables such as post-pandemic macroeconomic fluctuations were excluded from the study.

The objective of this study is to address the following research questions:

Research Question 1: What has been the change in demand for job postings in graphic design-related professions in Türkiye, as reflected in data from the Turkish Employment Agency (İŞKUR), from 2020 to the end of 2025?

Research Question 2: What shift in trend has been observed in job posting demand in the period following 2022 in comparison with the previous period?

RQ3: In what ways do variations in this change occur across the sub-categories that comprise the graphic design field?

This study is among the first to quantitatively examine changes in employment demand associated with the rise of GenAI in creative professions in Türkiye, using official labour market data.

FINDINGS

Data were collected and analyzed within the scope of the defined research questions.

As illustrated in Table 3, the number of job postings in the graphic design sector recorded by İŞKUR from the beginning from 2020 to the end of 2025 is documented.

Table 3. Number of job postings in graphic design-related professions between 2020 and 2025

	2020	2021	2022	2023	2024	2025
Graphic designer	725	913	1140	995	819	870
Graphic technician	9	3	29	16	6	17
Graphic design technician	25	45	47	43	27	26
Subtotal	759	961	1216	1054	852	913
Graphic artist	1160	1411	1485	1237	939	798
Computer graphics operator	22	9	17	20	5	2
Graphic and photography technician	8	16	33	24	11	3
Computer-aided graphic design operator	61	92	57	48	52	18
Subtotal	1251	1528	1592	1329	1007	821
TOTAL	2010	2489	2808	2383	1859	1734

An analysis of job posting numbers reveals that, in 2020, *graphic artist* was the most in-demand profession, followed by *graphic designer*. By 2025, *graphic designer* took the top spot while *graphic artist* dropped to second place. The lowest demand in 2020 was for technician occupations; by 2025, the lowest demand was for one technician and one operator occupation. Employment in operator occupations decreased significantly.

To provide a clearer picture of the numerical changes in job postings, the data presented in Table 3 has been visualized in Tables 4 and 5. Table 4 presents a graphical representation of the data for the three occupations that exhibited an increase in job posting numbers from 2020 through the end of 2025. As demonstrated in Table 4a, the number of job postings for *graphic designers* increased from 725 in 2020 to 870 in 2025, representing a 20% increase of 140 postings. A total of 17 job postings for *graphic technicians* were recorded, marking an 88% increase compared to the preceding 9 postings (see Table 4b). Finally, a 4% increase was documented in job postings for *graphic design technicians*, rising from 25 to 26 with a difference of 1 posting (see Table 4c). With the exception of the technician profession, the employment growth rate is at a minimum level.



Table 4. Graphic design professions with an increase in job postings

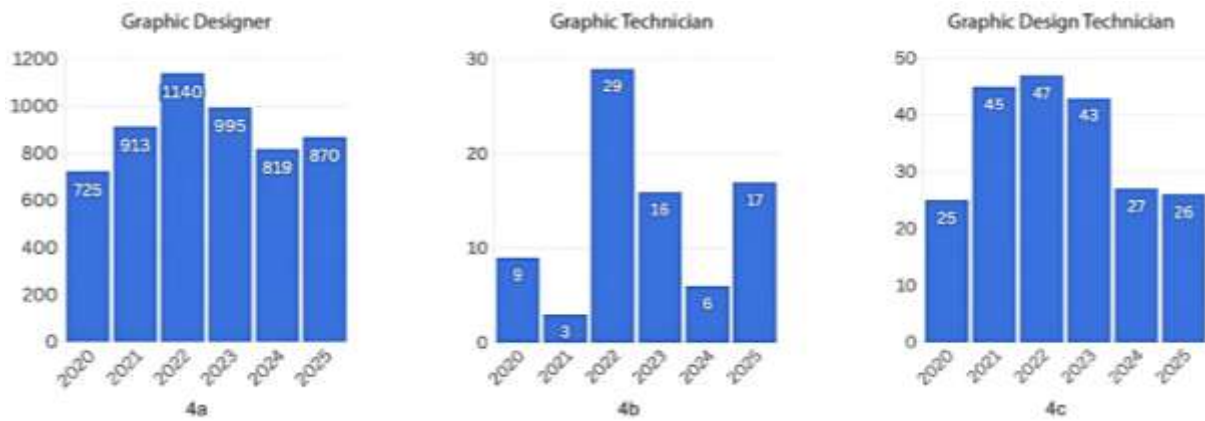
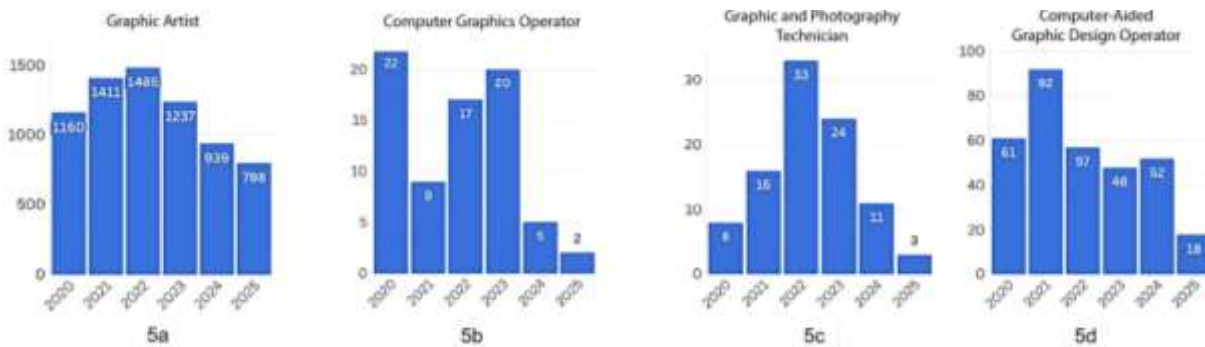


Table 5 contains data on four occupations for which job postings decreased from 2020 through the end of 2025. A decline of 31% was observed in *graphic artist* job postings, representing a reduction of 362 postings from 1160 in 2020 to 798 in 2025 (see Table 5a). As demonstrated in Table 5b, there was a significant decrease in the number of job postings for *computer graphics operators*. Specifically, the number fell from 22 in 2020 to 2 in 2025, marking an absolute decrease of 20 postings and a relative decrease of 90%. As demonstrated in Table 5c, there was a 5-posting difference in job postings for *graphic and photo technicians*, from 8 in 2020 to 3 in 2025. This represents a 60% decrease. As demonstrated in Table 5d, there was a 70% decline in job postings for *computer-aided graphic design operators*, from 61 in 2020 to 18 in 2025. The decline in job postings was particularly pronounced across all occupations, with the exception of *graphic artists*.

Table 5. Graphic design professions with a decrease in job postings



An irregular pattern of decline and increase is observed in the professions of *graphic technician* and *computer graphics operator* between 2020 and 2025. During the 2020–2022 period, a general increase at similar rates is observed in other professions. Both operator occupations declined from 2020 to 2022, but significant increases were observed in *graphic designer*, *graphic technician*, and *graphic and photography technician* occupations. However, the trend reversed after 2022. Even in the three occupations that showed growth, a loss of momentum is notable after 2022. This pattern may indicate a structural change in employment demand within the graphic design sector beginning around 2022. The results of the analysis reveal a shift in employment demand in the graphic design sector, which coincided with the widespread adoption of GenAI. The findings suggest that rather than a uniform contraction across all graphic design professions, differentiation has occurred within the professions.

From 2020 through the end of 2025, there was a general decline in the number of job postings across the entire field, from 1010 to 1734. An increase in the number of job postings was observed in three of the seven occupations. However, the number of job postings decreased in four occupations. The three occupations that demonstrated an increase in numbers rose from a total of 759 to 913. The average increase in job postings was 37%. In the four occupations where a decline was recorded, the total number



of job postings fell from 1251 to 821. The mean decrease was 63%. After 2022, a downward trend in employment demand occurred alongside the widespread adoption of GenAI applications. Declines in employment demand were recorded at the following rates: 23% for *graphic designers*, 41% for *graphic technicians*, 44% for *graphic design technicians*, 46% for *graphic artists*, 68% for *computer-aided graphic design operators*, 88% for *computer graphics operators*, and 90% for *graphic and photography technicians*. The number of job postings for *computer-aided graphic design operators* began to decline after 2021. A decline in the *computer graphics operator* profession was observed after 2023. A downward trend in employment demand for the remaining five professions began after 2022. In other words, the overall decline in employment demand began after 2022, though this does not apply to all professions.

Discussion

The sharpest declines were recorded among *computer-aided graphic design operators*, *computer graphics operators*, and *graphic and photography technicians* after 2022. A decline in employment in technical and operational professions is expected, as noted in the report prepared by Akdemir et al. (2024, p. 28). Higher decline rates are expected in positions characterized by technical and repetitive tasks. For this reason, a decline is likely to be observed in the aforementioned occupations. However, no decline in employment has been recorded for *graphic technician* (9 in 2020, 17 in 2025). *Graphic design technician* job postings has increased from 25 to 26 between 2020 and 2025. It can be argued that this difference does not represent a genuine increase.

Employment in the *graphic artist* occupation is expected to decline (from 1160 in 2020 to 798 in 2025). However, demand for *graphic designers* remains nearly the same (increasing from 725 in 2020 to 870 in 2025). Demand appears to be more resilient in creative and decision-making positions, such as *graphic design*. This finding aligns with international literature indicating that the substitution effect of GenAI remains limited in roles with complex task structures that require human-specific competencies.

This study demonstrates that official employment demand in the graphic design sector declined during the same period in which GenAI adoption became widespread. Compared to the increase in job openings in other sectors, the rise in employment demand for a few occupations in this sector is not indicative of a genuine increase.

The significance of these findings lies in their empirical grounding in official labor market data, offering a country-specific perspective that is largely absent from the existing literature. Most prior research on GenAI's employment effects has relied on predictive models, scenario analyses, or data from online freelancing platforms (Demirci et al., 2025; Eloundou et al., 2024). By contrast, this study draws on İŞKUR's official job posting records—a standardized, institutional dataset—providing a concrete and verifiable account of employment demand shifts within a national context. Türkiye's case is particularly informative. The findings thus contribute to filling an important geographical and methodological gap in the literature on GenAI's labor market effects.

Employment is changing not only in terms of quantity but also in terms of quality, indicating a structural shift in sector-internal dynamics. The majority of the decline in employment demand is in operator occupations, indicating a decrease in demand for these roles. The research findings confirm the literature's prediction that the need for these jobs will decrease. The finding that machines excel in efficiency rather than creativity (Anantrasirichai & Bull, 2021, p. 601) directly relates to this situation. The entry-level position for graphic designers remaining above its baseline value indicates the limited substitution effect of automation in positions requiring human-specific competencies, such as creative decision-making and client communication. This finding provides a concrete example of roles defined in the literature as resistant to transformation. Routine, repetitive tasks, such as those in operator roles, are well-suited for automation. As demonstrated in a study by Tang et al. (2024, p. 4), designers believe AI can inspire and accelerate the creative process, yet it lacks the efficiency to produce the final design. This perspective stems from experience and may be linked to the preconception that delegating creativity or decision-making authority to automation is a mistake. In order to develop an optimal solution, hybrid models in which AI systems and humans work together are being discussed. This approach, termed



intelligence augmentation, does not aim to replicate human thought processes but rather to engineer tools that enhance human cognitive performance (Evans-Greenwood et al., 2017). For instance, designers working with generative AI can generate new ideas by critiquing suggestions from algorithms, thereby fostering a complementary collaboration between humans and AI.

The internal differentiation observed within the graphic design field constitutes one of the study's most substantive contributions to the literature. Unlike aggregate-level analyses that treat graphic design as a monolithic category prone to uniform decline, the present findings reveal that employment trajectories vary considerably depending on the nature of tasks performed within each occupation. This aligns with the task-based framework proposed by Eloundou et al. (2024), who distinguish between routine, codifiable tasks and those requiring judgment, creativity, or interpersonal interaction, and who predict greater labor displacement in occupations with a higher proportion of automatable tasks. The present study confirms this prediction at the occupational level within a single creative field. At the same time, the findings partially diverge from more sweeping projections found in the literature. The World Economic Forum's latest report classifies graphic design among the fastest-declining professions globally (2025, pp. 19-26), and Demirci et al. (2025, p. 8098) report an 17.01% decrease in graphic design job postings on online freelancing platforms following the introduction of GenAI. While both the international literature and the present study indicate downward pressure on employment, this study introduces an important nuance: the contraction is concentrated in operator and technician roles, while demand for graphic designers engaged in higher-order creative and conceptual work has remained comparatively stable. This distinction suggests that the substitution effect of GenAI operates selectively, targeting the more routine and technically defined dimensions of creative labor rather than displacing the field as a whole. This finding is consistent with the CVL Economics Report (2024, p. 12), which states that entry-level roles are the most vulnerable to replacement, and with Cai and Jung (2024, p. 261), who observe that junior designers are typically assigned technical tasks that are more susceptible to automation. It is evident that young employees and those in junior positions are vulnerable to the risks posed by automation, and the same is true of freelancers. Freelancing, a prevalent form of employment in the graphic design field, facilitates the connection between workers and clients through web-based digital labour platforms. In a study by Kaytan & Erdoğan (2025, p. 113), it was noted that workers providing services on such platforms face issues such as irregular payments and a loss of autonomy due to platform rules.

The year 2022 appears to mark a notable change in employment trends, although further statistical testing would be necessary to confirm the existence of a structural break. This convergence is noteworthy for tracking the implications of the widespread adoption of GenAI on the labor market. However, to conclude that the decline in employment is directly linked to the increased use of GenAI, multi-variable and longer-term analyses are required, such as sectoral expectations, workers' views, and experiences. One limitation of the study is its reliance on official job posting data from İŞKUR only, which excludes freelance work and non-standard forms of employment. Given the prevalence of freelance work in the graphic design sector, actual employment dynamics are likely not fully reflected in official data. Additionally, the analysis does not account for external factors, such as changing work conditions and economic fluctuations following the pandemic. Consequently, it is not possible to distinguish how much of the observed changes are attributable to productive AI versus these external factors. A five-year dataset provides a limited timeframe for assessing the long-term employment effects of technological transformation. Future research will require longer-term, multivariate, and mixed-methods studies to overcome these limitations.

CONCLUSION

Research findings carry meaningful implications for both labor policy and professional practice. At the policy level, the observed concentration of decline in operator and technician positions signals a need for targeted retraining programs and updated vocational curricula that equip current and prospective workers with competencies aligned with an AI-augmented design environment. The convergence of this study's results with the broader literature on GenAI's selective labor displacement (CVL Economics, 2024; World Economic Forum, 2025) strengthens the case for differentiated policy responses that account for occupational heterogeneity within creative fields, rather than treating the sector as a uniform



category. At the professional level, the persistence of demand for graphic designers suggests that adaptability—particularly the capacity to integrate GenAI tools while deepening creative, conceptual, and client-facing competencies—will increasingly determine career resilience. This is consistent with the finding of CVL Economics (2024, p. 31) that creativity, machine learning, and domain knowledge have become the most valued skills in the sector following the widespread adoption of GenAI. More broadly, the study’s approach—using official labor force data to trace occupation-level variation in employment demand over a defined technological transition period—offers a replicable methodological model that may be applied to other creative professions and national contexts in future research.

Whether employment demand will continue to decline in Türkiye or globally remains to be seen. It is probable that companies will encounter challenges such as layoffs or workforce reductions due to the implementation of GenAI. Employees who maintain their positions will also be required to undergo training to incorporate AI-driven production methods into their professional practices. The integration of GenAI functionality in contemporary design software versions indicates that these programs will either incorporate augmented GenAI capabilities or undergo substantial modifications in the future. Demir (2018, p. 181) posits that for individuals engaged in creative pursuits, adaptability – defined as the capacity to adjust to diverse tasks and environments – is a skill that is just as crucial as creativity itself. The continuous demand for new skills and the expansion of roles within creative fields is driven by technological advancements and market pressures. The considerable increase in AI usage emphasises the importance of ongoing learning in creative fields and the transformation of skills in creative work. In the context of rapidly evolving technologies, there is a growing imperative for the development of learning strategies, the renewal or enhancement of professional skills (reskilling/upskilling), and adaptation through these means (World Economic Forum, 2020, p. 3).

The present state of AI technology offers a preview of the future of work. While the adoption of rapidly evolving technologies is a possibility, the development of differentiating factors is also feasible. The mounting pressure on technical and entry-level positions to transform indicates that, as technical design tasks are increasingly delegated to automation, the significance of conceptual design tasks will concomitantly rise. Consequently, GenAI has a transformative impact on creative disciplines, broadening the profession's definition and compelling designers to become more strategic decision-makers.



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