

## A visual guideline of designing info-graphic (case study on social media during the Pandemic lockdown)

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### **Abstract:**

During the “COVID-19 Pandemic lockdown”, the rise of dependency over social media platforms for communication, led to dissemination of fake news and misleading information. Backed up with the lack of consistency of effective crisis communication, trust and risking protective measures adherence by the public. Also, the neglect of achieving the “laws and principles” of visual perceptions of info-graphics published by the Egyptian MoHP (Ministry of Health and Population) and it’s affiliated councils, as a tool to inform the citizenry of the government measures surrounding the “COVID-19” policy.

### **The aim of this research:**

Is to analyze the visual communications tools of the “Ministry of health” on the social media during the pandemic, and to measure the effectiveness of adherence to the public. This paper will create a new model of data visualization, combining the principles of psychology, usability, graphic design and statistics to convey complex information addressing the public comprehensively.

### **Research problem:**

- In spite of Info-graphics is a powerful tool to illustrate complex information. There are, debate about its visual approaches.
- The “visual problem” with info-graphics is due to the misuse of visual elements in the graphic when presenting information.

### **Research hypothesis:**

- The main “visual problems” in designing the info-graphics will lead to a poor interest or engage with the audience.
- Using a clear model of data visualization will help to solve the design problems such as: usage of irrelevant colors, wrong choice of format (horizontal and vertical), overused pictographic icons, and off topic visual elements.

### **Research Methodology:**

In this research we will use a descriptive-analytical approach that presents the use of info-graphics by MoHP and its affiliated councils on social media during the pandemic of covid-19. Also we will design and examine a rebranding model for their means to achieve better results regarding both, visual and knowledge literacy.

**Keywords:**

- Info graphic, visual communication, visual literacy, COVID-19, data visualization, Ministry of Health and Population (MoHP), National population council (NPC).

**المخلص:**

أثناء الإغلاق الوبائي لـ COVID-19 ، أدى تزايد الاعتماد على منصات التواصل الاجتماعي للتواصل ، إلى نشر أخبار مزيفة ومعلومات مضللة. مدعومًا بنقص الاتساق في التواصل الفعال للآزمات والثقة والمخاطرة بالتزام الجمهور بإجراءات الحماية.

كذلك ، إهمال تطبيق قوانين ومبادئ التصورات المرئية للرسومات المعلوماتية الصادرة عن وزارة الصحة والسكان المصرية والمجالس التابعة لها ، كأداة لإعلام المواطنين بالإجراءات الحكومية المحيطة بـ COVID-19 سياسة. الهدف من هذه الورقة هو تحليل الأساليب والاتصالات المرئية لوزارة الصحة أثناء الوباء وقياس فعالية الالتزام بالجمهور. ولإنشاء نموذج ناجح لتصوير البيانات ، يجمع بين مبادئ علم النفس وقابلية الاستخدام والتصميم الجرافيكي والإحصاءات لنقل المعلومات المعقدة التي تخاطب الجمهور بشكل شامل. سنقوم في هذه الدراسة بإجراء تحليل نوعي ومناهج لاستراتيجيات وسائل التواصل الاجتماعي الخاصة بوزارة الصحة والسكان والمجالس التابعة لها ووسائل الاتصال المرئي أثناء وباء كوفيد-19 وتقديم إعادة تسمية لوسائلها لتحقيق نتائج أفضل فيما يتعلق بكل من المعرفة المرئية والمعرفية. فيما يتعلق بالأسباب السكانية والصحية.

**الكلمات المفتاحية:**

الانفوجراف، التصور المرئي للبيانات، محور الأمية المرئية

**Introduction:**

The 21st century led to the rising dependency on the Internet and search engines by the majority in order to keep their knowledge updated. This development of knowledge in line with technological advances also affects the development of human thought for adaptation in life, beside the problems in information that are currently being discussed around the world.

We cannot ignore the effect of the “mass media”, which is very important in providing good and correct information. The media as one of the pillars of information distribution has a big responsibility to convey information; in this case the best way is by presenting it with an info-graphic model of information on the development of (Covid-19) which is always up to date presented by MOH in Egypt.

A variety of simple simulations been given to the public today regarding visual information such as (symbols or logos) that are spread through various media. Given that communities are currently receiving simple visual stimuli within their environment, many institutions use the services of “info-graphics” to illustrate important and complex information to meet their institutional needs. It often happens. Even using info-graphs is to improve the image of a company by using it as a medium to increase promotion. Info-graphs are currently one of the

professions that are being needed both in terms of “delivering news and in delivering information” of a commercial nature. [1]

### **Info- graphics:**

To present information with graphics it will increase the perception and understanding, thus our ability to process or recall information is superior if we learn with visual inputs.<sup>[2]</sup> Although, in the modern world, the growing consistency of knowledge and data with having easy access to the data can cause a person to revel, who requires an accurate selection of new information Therefore, one of the useful and effective methods, which can solve the problem, is “info-graphics”.<sup>[3]</sup> “Information graphics” or “info-graphics” use images and data visualizations (pie charts, bar graphs, line graphs) to present data in an engaging way. According to researches Information is more likely to be readable if it was learnt from an “info-graphic” than from text alone.<sup>[4]</sup> Peter Sullivan coined the term "info-graphic" in The Sunday Times in the 1970s, 1980s and 1990s. The newspaper asked to use more "info-graphics". By 2000, designers were using "Adobe Flash animations" used across the web to create "info-graphics" for various games and products. The “info-graphic” design is made from “graphic information, representing information in a graphic way this includes, knowledge or data words, which aimed to show knotted information fast and clearly”<sup>[5]</sup>. We can name it as “data visualization, information design or architecture” of information based on its aim or target. The creation process of “info-graphic” became popular in social media in a form of static images or a simple web interface, in order to cover any number or subjects.

The aim of “info-graphic” can be assorted into three objectives: (1) persuade by giving information in public, (2) entertain or inform the audience (3) earning the readers’ attraction, so, the readers can identify the reason to read the info-graphic. Also, “Info-graphics” can be used as a hopeful learning tool in instruction. This way will lead to the following: (a) enhance translation of information, (b) present concepts and idea, (c) improve the ability to think about difficult information, and (d) improve information recall and retention.<sup>[6]</sup> All the definition of “info-graphics” suggest that a good “info-graphic” should be present a story, process, an idea and define the difficult information clearly along with creative and catching design, so, any subject is possible to be designed by using “info-graphics”.<sup>[7]</sup>

### **The principles of info- graphic design:**

(1) Target Audience Design: Before you start, decide whom your "info-graphics" will reach. By presenting an easy-to-read context and removing unnecessary information, the work will be easier for the target audience to read. (2) A powerful title that attracts readers. Creating an "info-graphic" title is like a "breaking news headline", which contains important points of information and is much shorter than a complete "article headline". (3) Present the story. Effective "info-graphics" often use lines/arrows and charts to guide the reader through the information (4) and to emphasize the key message. You can emphasize important messages by increasing or decreasing the size of images, increasing or decreasing the size of text, and using contrasting colors. So we can say, "Info-graphics are used to provide an overview of research, but are not meant to replace reading a full research paper." (5) Balance Sheet Data. It's important to balance data visualizations, images, and words. (6) Limit the number of colors / texts and charts or animations as needed.<sup>[8]</sup>

Types of “info-graphics”: the most popular types of info-graphics are: “Statistical, Informational, Timeline, Process, Geographic, Comparison, Hierarchical, List, and Resume”.

### “Visual literacy”:

According to Mirzoeff “human experience is now more visual and visualized than ever before”<sup>[10]</sup>. Latest studies show that we live in a visual age that renames our social processes, and communication, our ways of vision and interpretation. Those applications that have changed our engagement including the “Internet, smart telephones, social media, mobile applications, video games, virtual reality and augmented reality” are visually oriented. In fact people on the Internet are facing too many visual images that increased the need for visual literacy. “The move from page to screen and from word to picture due to the improvements in communication advances has too caused changes within the concept of literacy”.

We are able characterize “visual literacy” as “the capacities to characterize visual, fathom their messages, utilize a visual dialect and make unused meanings”[11]. Agreeing to the research of Felten (2008), visual proficiency incorporates “how to translate, the way to plan or create, the use of social based pictures, the use of objects and visual resources”. [12] Yenawine (2015) characterizes visual education to be “the ability of finding the meaning in any images”. [13] So visual proficiency is “a aptitude that can be learned and progressed like a dialect. Seeing is some time recently talking and words within the advancement handle of humans”.

“Visual literacy” is the aptitudes to create implications from everything ready to see, to discover the sense in everything able to see. Visuals are created depending on natural conditions counting: (past experiences, culture, and instruction level, social and financial levels). So in the event that we combined cognitive information, memory and encounters we are going make a meaning around what is seen and stored within the intellect. In 1995 Irvin Shake states, “The brain doesn’t perform a straightforward indistinguishable recording of the world but makes a one of a kind picture of it” [14]. Within the research of Avgerinou (2003) as appeared in (figure 1) the capacities of visual proficiency can be: learn – educate- created and made strides. [15]

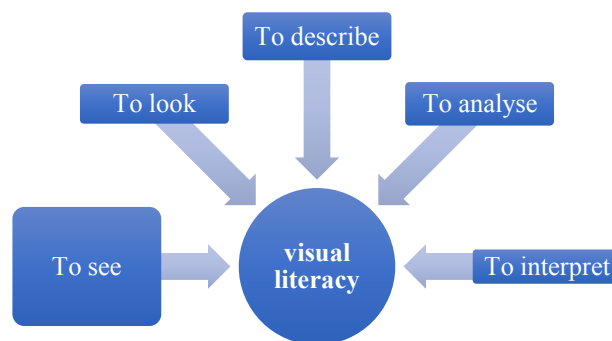


Figure (1): visual literacy

### **“The Relation between visual literacy and info-graphic”**

As discussed before about the definitions of “visual literacy” it includes the components of design, creation and interpretation of visual images. According to the designer’s point of view,

the subject has to be considered from the perspectives of both the designer and the user when evaluating the “info-graphics” as a form of “visual literacy” [16].

The "info-graphic" designer makes the visual choices for the data visualization, graphics, color, font, and map. These choices reflect the designer's culture. A significant factor influencing the creation of graphics is culture. Despite all of these prerequisites, the user's level of visual literacy is crucial for the development of an info-graphic's ability to effectively communicate. The term components needed to display complex information and numerical values are called "graphics".

The ability to use prior knowledge and connect it to new information is crucial when it comes to the concept of literacy in "info-graphic". The info-structure graphics and design as a whole, which involve visual literacy, constitute the "information," not the info-substance or subject. For instance, the elements utilized in "info-graphic", such as (illustration, graphic, typography, data visualization, and map), are widely applicable, have meaning of their own, and require interpretation of visual language. Understanding "info-graphic" charts, tables, diagrams, and maps typically requires prior exposure to them as well as the development of specific reading skills.

Another type of "info-graphic" is the interactive “info-graphic applications” that can be included offline or online in the user interface of a software program or a mobile application. The user can actively shape the content that is displayed by choosing the information, executing searches, and other actions. In this regard, the stage of assessing the meaning structures in the interactive info-graphics is significantly influenced by the ability to better utilize the potential of the digital world with respect to visual literacy.

#### “COVID-19”<sup>[17]</sup>:

Coronavirus or known as “Novel Corona Virus or nCoV”, according to the World Health Organization (WHO) stands for "coronavirus disease that was discovered in 2019" like a large family of Corona Virus (CoV), and thereafter known as “Covid-19” in official global terminology. The virus grabs the world's attention and that of Indonesia as well. This virus is distinct because it can multiply in living cells in addition to inanimate objects, is contagious, and is both deadly and lethal. Early in 2020, this virus began to spread over the province of Wuhan, and the Chinese authorities declared it to be a fatal illness.

The Covid-19 has also gained popularity for improving the idea of "clinical governance," as the dissemination of printed guides or presentations that are overly direct frequently fails to effectively socialize clinical guidelines. To increase adherence to recommendations, interventions must be chosen utilizing a range of strategies, including clinical audits, the creation of reminder systems, and the use of clinical leadership.<sup>[18]</sup>

We cannot ignore idea of mass media in providing all kinds of information. The media as one of the columns of data dissemination have an awesome obligation to communicate data in a

relative way; one is by showing it with an "info-graphic" show of data on the advancement of Covid-19, which is continuously up to date.

#### **“Data visualization”:**

Data visualizations are "some kind of visual elements that help us see and understand data, perfectly in a way that gives us a quick insight." Data visualization translates complex ideas and concepts into a simple visual context. Patterns, trends and relationships that may go unnoticed in the text are displayed at a glance in effective data visualization. Mathematics is at the forefront of using effective data visualization and “info-graphics” to communicate research and policy findings. Information visualization offers the ability to see events and the connection between them in new and different ways and to reveal other invisible patterns. According to the study of Kim T. & Carl (2010) describes the visualization of information in their paper as: follows: “The expanded access of data help us to categorize visualizations by its different purposes, which are affecting on people’s ways of thinking, believing and further acting”.<sup>[19]</sup>

“When visualization of data and graphic design engage, each resource fills its absent properties with the advantages of the other; graphic design strengthens his arguments with objective and real data, while data visualization emphasizes visual aesthetics and adopts principles of graphic design”. “Data visualization and information graphics” are meant to visually display intense and sophisticated information about a particular topic in a more understandable way. It has a direct effect on the credibility and persuasiveness of info-graphics because it provides clear and objective information based on numerical data.

#### **“Ministry of Health and Population” (MoHP):**

The Ministry of Health is the ministry in charge of health in Egypt. Its headquarters is in Cairo. The Ministry's responsibilities are the following: (1) bargains with wellbeing and populace approach expense in agreement with the approach of the state. (2) Work on the recording of wellbeing information and perform measurable and financial thinks about to be analyzing this information and extricate data for emergency arranging and follow-up. (3) Give centralized wellbeing administrations; counting central research facilities for medicate issues, enrollment, and preparing of staff. (4) Sedate quality control. (5) Viable administration amid wellbeing emergencies. (6) Administrations, wellbeing centers and populace administration. (7) And coordination between wellbeing exercises at the neighborhood level in all territories.

#### **“National population council” (NPC):**

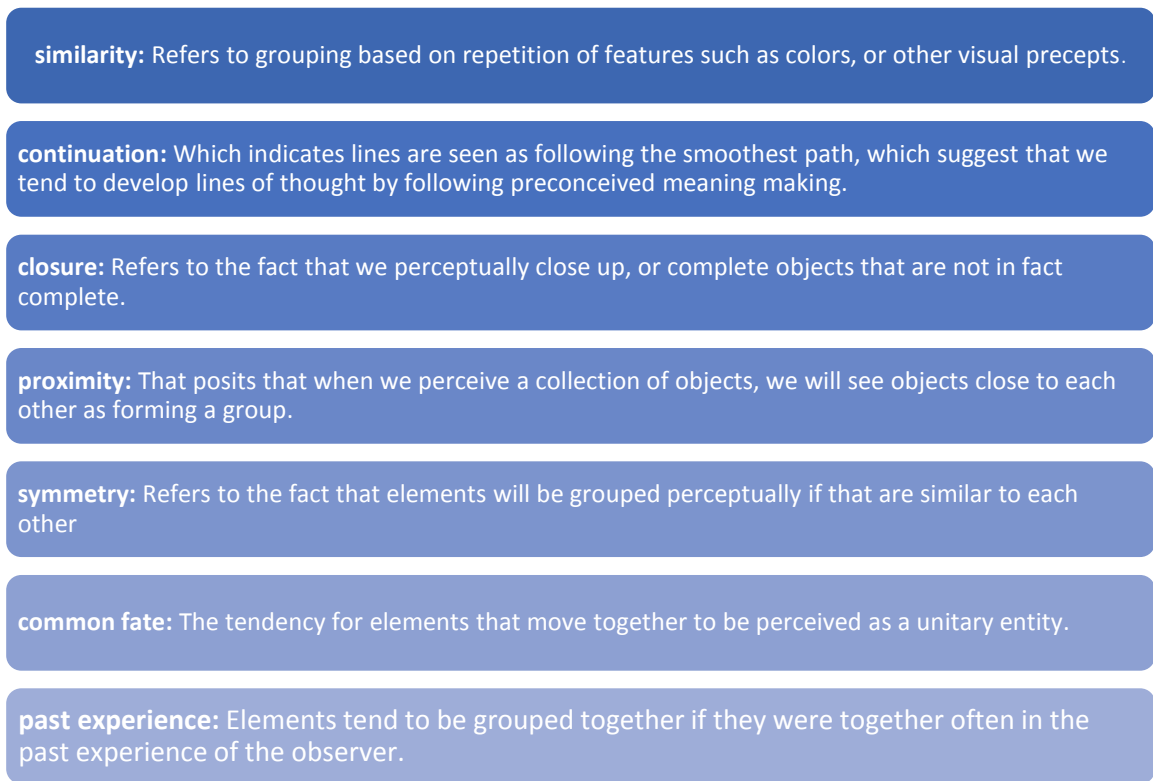
In Egypt, the Committee centers on fortifying the investigate capacity of people and educate and giving arrangement examination and specialized help to bolster educated approach choices at the national level on family arranging, regenerative wellbeing, and youth issues. The Board conducts investigate to make strides the quality of regenerative wellbeing administrations and anticipate spontaneous and closely divided pregnancies and works to get it and address the wants of youth and young people to assist them make effective moves to adulthood.<sup>[20]</sup>

**Info-graphics through gestalt theory:**

Info-graphics is a “visual appearing of data, information in a special and practical way that helps avoid misunderstanding in communication to enhance data presentation and knowledge discovery”.[21] In spite of the wide spread of “info-graphics” usage in the past years, yet it is still not widely used in the public health sector, as designing a compelling info-graphic retaining the visual knowledge of the audience is inadequate.

The Plan standards of “info-graphics” depends on the Gestalt Hypothesis, made by Wertheimer, Kofka and Kohler in 1938, the utilize of the “gestalt theory” on two primary angles, (1) the figure ground division which could be a visual framework organizing a visual scene into figures and their foundations. (2) The other viewpoint is the conciseness or setup, which is the strategy a visual recognition interlinks into one another in a consistent and brief way in which the diverse visual elements make sense with each other within the aim of the statute.[22]

The theory contains a number of laws under which the visual perceptions operate<sup>[23]</sup>, as described in figure 2.



**Figure 2: The gestalt theory**

**Methodology**

This research was developed to analyze the methods and visual communications of the Ministry of health during the pandemic, and design info-graphic applying the gestalt laws, visual perception, dissemination and design principles, This research uses qualitative approaches; it is based on the formulation of the problems selected in the study, so the researcher explores the

focus of the problem, along with literature studies and documentation of the required data sources.

The strategy utilized is investigate and advancement, based on analysis existing products (MoHP during the pandemic over Social Media platforms) and to create new products (National population council (NPC)). The development research procedure is guided by the ADDIE Model through 5 stages; Analysis, Design, Development, Implementation and Evaluation.

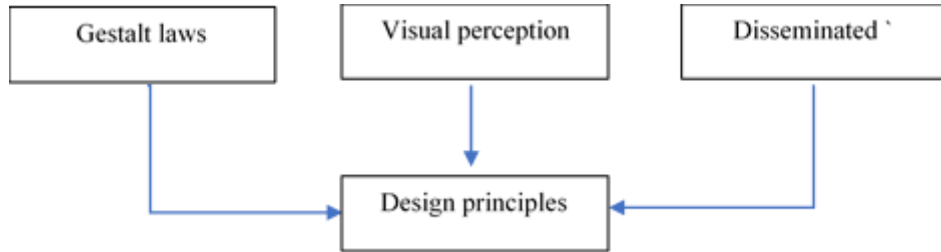


Figure (3): design process

The Design principles used in this research consist of 10 principles based on the main three categories (gestalt laws, the visual perception and the disseminated knowledge)

Gestalt Laws	Visual Perception	Disseminated Knowledge
Visual hierarchy	Visual elements	<ul style="list-style-type: none"> <li>• Awareness</li> <li>• Acceptance</li> <li>• Consciousness</li> <li>• Credibility</li> </ul>
Negative space		
Leading lines		
Color and contrast	Content	
Proximity		
Focal point		
Similarity	Knowledge	
Message		
Agreeableness		
Consistency		

Table 1: The Design principles

**First:** the analysis of the MoHP during the pandemic over Social Media platforms. As described in table 2: we will try first to analyses the info-graph designed by the MoHP based on the gestalt theory.





		
Gestalt Laws	Visual Perception	Disseminated Knowledge
<p><b>Visual hierarchy:</b> using vertical and horizontal alignment with equal spacing between each image.</p> <p><b>Color and contrast:</b> using 2 tones of blue and red colors disliked the foreground from its background.</p> <p><b>Proximity:</b> the elements arrangement deprived the design of its proximity rendering it relatively dysfunctional</p> <p><b>Focal point:</b> the lack of a focal point in the design enhanced the distortion of the message</p> <p><b>Similarity:</b> the repetition of radial shapes was unsuccessful due to its lake of prioritizing data presented according to the audience</p> <p><b>Message:</b> the bluntness of the data presented was unsatisfying</p> <p><b>Agreeableness:</b> the design is incomprehensible</p> <p><b>Consistency:</b> the perfunctory of the disseminated data deprived the design of it's consistency</p>	<p><b>Visual elements:</b> Depending on a grid of radial shapes with incomplete circles with equal sizes created a sense of ungroup and the tilted line created an inception of misbalance The typography was unsuccessful The layout Implies a strong feeling of stress</p> <p><b>Content:</b> Percentage of information inside the info-graphic are irrelevant to the audience interest with no clear correlation between the numbers presented</p> <p><b>Knowledge:</b> The level of complexity of the disseminated data was a prim factor for the distortion of the message.</p>	<ul style="list-style-type: none"> <li>• Awareness Couldn't be achieved for the distorted communication process</li> <li>• Acceptance The complexity of the data affected the comprehension of the message negatively</li> <li>• Consciousness: The distortion of the message lessened the audience realization of the pandemic graveness</li> <li>• Credibility: The sophistication of the message enhanced the feeling of data fraud.</li> </ul>

Table 2: The analyses of the MoHP info-graphic

**By examining the hypotheses:**

1. The main “visual problems” in designing the info-graphics will lead to a poor interest or engage with the audience.

By reviewing the MoHP info-graphics during the pandemic over Social Media platforms we can verify that: (1) the Awareness message couldn't be achieved for the distorted communication process. (2) The difficulty of the information influenced the comprehension of the message contrarily. (3) The distortion of the message lessened the audience realization of the pandemic graveness. (4) The sophistication of the message enhanced the feeling of data fraud.

2. Using a clear model of data visualization will help to solve the design problems such as: usage of irrelevant colors, wrong choice of format (horizontal and vertical), overused pictographic icons, and off topic visual elements.

By reviewing the MoHP info-graphics during the pandemic over Social Media platforms we can verify that: (1) Using vertical and horizontal alignment with equal spacing between each image. (2) Using 2 tones of blue and red colors disliked the foreground from its background. (3) The elements arrangement deprived the design of its proximity rendering it relatively dysfunctional. (4) The problem with the “focal point: in the design enhanced the distortion of the message. (5) The repetition of radial shapes was unsuccessful due to its lake of prioritizing data presented according to the audience. (6) The bluntness of the data presented was unsatisfying. (7) The perfunctory of the disseminated data deprived the design of it's consistency.

**Second: The Design Procedures:**

The process commenced by putting the proposed design principle for evaluation of the face and content validity. The design principle is tested for validity in accordance to gestalt theory laws and visual perception for approval, and then the information of the disseminated knowledge is tested for achieving the factors of awareness, acceptance, Consciousness and credibility.

- Establishment Scriptwriting and Storytelling (Analysis)

The scriptwriting process is carried out as an initial step in finding the main idea that will be translated into a visual poster. In this stage, the process carried out is to create a main theme that will be translated into sub-themes, and then it will be poured into the elaboration of information about each theme raised.

The NPC official Page on Facebook has very poor organic reach with completely irrelevant content to the major causes and interests to the program. There was no consistency nor planning for the NPC's Digital presence and the page went dormant for months during the COVID-19 pandemic lock down messing a great opportunity to strengthen their social media presence and audience engagement. The page lacks moderation and management with the absence of any kind of content creation



Image (1)

- Visual design literacy (Design)

The visual design literacy includes: both in terms of choosing colors, fonts, design styles, and visual elements that can be utilized as references so as to simplify the design concept process. This step is basically a visual guide that will facilitate the process of further visual implementation.



Image (2)



Image (3)

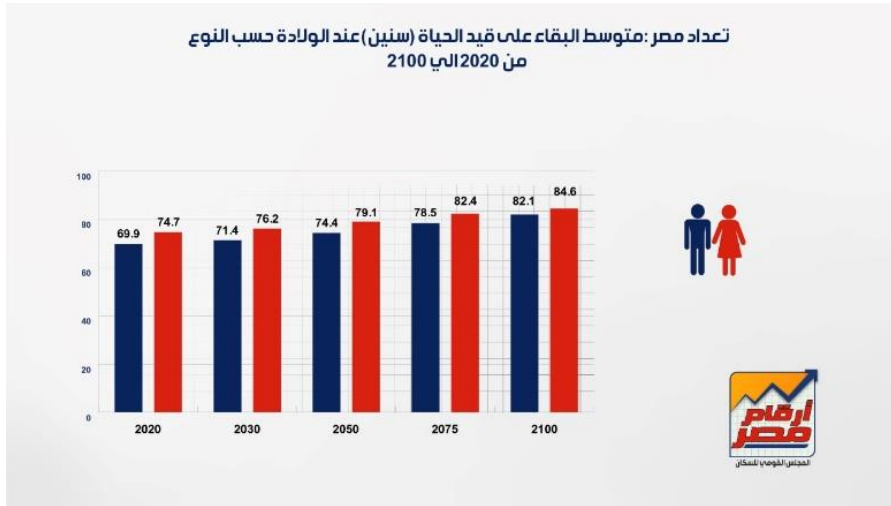


Image (4)

• Alternative Visual Concept (Development)

After going through the stages of drafting script writing and visual design literacy, the visual concept is compiled in the following stages: a) Look for visual reference info-graphics. b) Arranging a grid layout that includes the position of graphic elements such as (text, images and diagrams) to be visualized in the media.



Image (5)

• The Implementation

In this stage, several visual choices are made which will renew and implemented into the final design. The final design uses diagrams techniques that can be generally understood in terms of visual gestures and gender and age selection in each design, so that the message will be more easily understood and liked by the audience.



Image (6)

• Public Response (evaluation)

Gestalt Laws	Visual Perception	Disseminated Knowledge
<p><b>Visual hierarchy:</b> A balanced layout of chart and typography and better use of color as a key element of design</p>	<p>Visual elements: Depending on animated 3d charts preserving the similarity and equity of the design principles, a balanced relation between the charts and typography enhancing the feeling of trust focusing on the presented subject.</p>	<ul style="list-style-type: none"> <li>• Awareness: the undistorted communication process helped achieving the desired awareness regarding the title to the info-graphic.</li> <li>• Acceptance: The simplified data enhanced the comprehension of the message</li> <li>• Consciousness: The successful communication process magnified the audience realizations for the subject of the info-graphic</li> <li>• Credibility:</li> </ul>
<p><b>Negative space:</b> The negative spacing boosted the design unity</p>		
<p><b>Leading lines</b> Merging the lines with charts enhanced the design acceptance</p>		
<p><b>Color and contrast</b> The implementation of a contrasting color library enhanced the relation between the design's foreground and background and also enhanced the audience acceptance.</p>	<p>Content: is Audience oriented in regards of their interests and Queries</p>	



<p><b>Proximity:</b> The unity of objects and colors enhanced its proximity and goals</p>		<p>The comprehensive data visualization amplified the credibility of the disseminated data presentation drawing more public engagement</p>
<p><b>Focal point</b> Creating an object of focus in the info-graphic enhanced the communication process,</p>		
<p><b>Similarity:</b> was achieved by conserving the equity of shapes objects and colors created a strong perception of unity and identity</p>		
<p><b>Message:</b> The design enhanced the content determination by presenting subject oriented data</p>	<p>Knowledge: A minimal level of complexity to the presented data is the key factor for knowledge acquisition regarding the info-graphic subject</p>	
<p><b>Agreeableness</b> Comprehensive design</p>		
<p><b>Consistency</b> The design equity fortified its consistency</p>		
 <p>Image (7)</p>		 <p>Image (8)</p>

Table 3: evaluation of public response

## Conclusion:

With the consideration that we received a simple visual stimulus in the surrounding environment, currently many institutions often use the services of info-graphics to describe of the important information and complex in nature to suit the needs of their institutions. Info-graphic can be a solution for presenting data other than text that can be applied to social media. However, the selection of images, fonts and words must also be precise and interesting, so the followers or viewers are interested in reading more in detail.

The media used as a means of this research and development is social media. Social media has the ability to reach the user community immediately, both individually and in the community. With this very broad reach, social media is an effective means of conveying messages related to awareness behavior in maintaining health and safety during the pandemic.

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