



Ergonomic criteria for the success of designing commercial display windows: An applied study on commercial display windows in the Hashemite Kingdom of Jordan

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Abstract

The researcher studied the ergonomic standards related to the design of commercial display window advertisements, and the ergonomic standards related to the design space of commercial display windows, the architectural elements of commercial display windows, and the units and models used in commercial display windows.

Ignoring the role of ergonomic standards in the process of designing commercial display windows leads to reducing the effectiveness of the advertising role of the display window.

The research problem is summed up in trying to answer the following question: How can ergonomic standards be applied to the success of designing commercial display windows in local markets in the Hashemite Kingdom of Jordan?

Research objective: It aims to benefit from employing ergonomic standards in the design of commercial display windows to reach a more effective and attractive display window design. Monitoring and analyzing models of commercial display windows to determine their effectiveness and impact on the recipient.

Research methodology: The descriptive approach to present and analyze some of the models of commercial display windows in the international and local Jordanian markets, and the applied approach to design some of the models of commercial display windows employing ergonomic standards.

Research results: Display windows that contain a design idea that follow the ergonomic standards of the display window achieve a higher rate of attraction for the recipient, and that the design elements that are distributed on design principles in the space of the display window work to clarify and highlight the products displayed in their best form to the recipient so that he perceives them in full. Ease, and taking into account the distribution of products in the display window works to create a relationship between the recipient's viewing angles of the display windows at the level of the recipient's gaze directly in front of him, and that exploiting the architectural elements in the commercial display window has a major role in highlighting the general appearance of the display window.

Keywords: ergonomics, ergonomic standards, commercial display windows.

المعايير الأرجونومية لنجاح تصميم نوافذ العرض التجارية دراسة تطبيقية على نوافذ العرض التجارية في المملكة الأردنية الهاشمية

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الملخص

قام الباحث بدراسة المعايير الأرجونومية المرتبطة بتصميم إعلانات نوافذ العرض التجارية، ومعايير أرجونومية مرتبطة بالفراغ التصميمي لنوافذ العرض التجاري، العناصر المعمارية لنوافذ العرض التجارية، والوحدات والمجسمات المستخدمة في نوافذ العرض التجارية. إن إغفال دور المعايير الأرجونومية في عملية تصميم نوافذ العرض التجارية يؤدي إلى تقليل فاعلية الدور الإعلاني لنافذة العرض، فتتلخص مشكلة البحث في محاولة الإجابة عن التساؤل التالي: كيف يمكن تطبيق المعايير الأرجونومية لنجاح تصميم نوافذ العرض التجارية في الأسواق المحلية في المملكة الأردنية الهاشمية؟

هدف البحث: يهدف البحث إلى الاستفادة من توظيف المعايير الأرجونومية في تصميم نوافذ العرض التجارية للوصول إلى تصميم نوافذ عرض أكثر فاعلية وجذب. ورصد وتحليل نماذج من نوافذ عرض تجارية لمعرفة مدى فاعليتها وتأثيرها على المتلقي.

منهج البحث: اعتمدت الدراسة في البحث على المنهج الوصفي لعرض وتحليل بعض من نماذج نوافذ العرض التجارية في الأسواق العالمية والمحلية في المملكة الأردنية الهاشمية، والمنهج التطبيقي لتصميم بعض نماذج نوافذ العرض التجارية موظفا فيها المعايير الأرجونومية.

نتائج البحث: إن نوافذ العرض التي تحتوي على فكرة تصميمية تتبع المعايير الأرجونومية لنافذة العرض تحقق نسبة جذب أعلى للمتلقي، وأن العناصر التصميمية التي تعتمد في توزيعها على أسس تصميمية في فراغ نافذة العرض فإنه يعمل على إيضاح وإبراز المنتجات المعروضة بأفضل شكل لها للمتلقي بحيث يدركها بكل سهولة، وأن مراعاة توزيع المنتجات في نافذة العرض يعمل على إيجاد العلاقة بين زوايا رؤية المتلقي لنوافذ العرض على مستوى نظر المتلقي أمامه مباشرة وأن استغلال العناصر المعمارية في نافذة العرض التجارية لها دور كبير في إبراز المظهر العام لنافذة العرض.

الكلمات المفتاحية: أرجونوميكس، المعايير الأرجونومية، نوافذ العرض التجارية.

Introduction

Commercial display windows are as close as embodied advertisements that exhibits the products and services of the institutions by displaying the goods and products as much as they allow. In the recent years, the world has witnessed excellent technological developments that led to the emergence of new methods in designing the display windows. Such methods recommend to adhere to the ergonomic standards in terms of design. As per this standard, different techniques and materials are used to achieve the desired outcomes from the display window designs. This remains a crucial part in the advertising process for the organization, which leads to a change in both feasibility and effectiveness of the marketing mix. It also positive impacts and increases the sale of products and reaches a wide range of target audience.

The science of ergonomics has a major role in various domains in terms of designing the commercial display windows. Psychological ergonomics is also concerned with the analysis of perceptual and cognitive limits of the audience to achieve a rapid response to

the design. This is done so by studying the culture, tendencies, interests and motives of the target audience so that effective advertising messages can be developed and presented that can influence the target audience. Therefore, ergonomics seeks to achieve acceptance and satisfaction for the recipients, in addition to providing clarity about the nature of the product. In advertising, it intends to increase the confidence between the audience and the product by meeting the desires.

Research Problem

The research problem lies in neglecting the role played by the ergonomic standards in designing the commercial display windows, which leads to reduced effectiveness of display window-based advertising. Accordingly, the research problem is summarized and an attempt is made to answer the following research question.

How can ergonomic criteria be applied to the success of designing the commercial display windows in the local markets of Hashemite Kingdom, Jordan?

The Importance of Research

The importance of the research is that it intends to develop a method on how to employ the ergonomic standards in designing the commercial display windows.

Research objective

The research aims at

1. Benefiting from employing the ergonomic standards in designing the commercial display windows so that the display windows are highly effective, attractive and create a positive impact upon the recipient.
2. Monitoring and analyzing the commercial display windows' models to understand its effectiveness and impact on the recipient.

Research Hypotheses:

Based on the research question, the following research hypothesis is designed:

The efficiency of drawing customers to commercial display windows will rise if ergonomic guidelines are used in the design of those windows.

Research Methodology

The study depends on descriptive approach to display and analyze some of the commercial display windows' models followed in the local markets of Hashemite Kingdom, Jordan. Further, the study also applied the approach to design a few commercial display windows' models using ergonomic criteria.

Search Terms

1 – Ergonomics

The science of ergonomics (also known as human factors) applies theory, ideas, data, and methods to improve both human well-being and system performance. (International Organization for Standardization. ISO 26800. (2011)), (Karwowski, W. (2005)). It is concerned with understanding how humans interact with other system components. This field specifically encourages a holistic, human-centered approach to task, product, environment, and system evaluation, taking into account physical, cognitive, organizational, environmental, and other pertinent elements. (Karwowski, W. (2005)). The following are the typical fields of specialization, as noted by Karwowski. (Karwowski, W. (2005)):

1. Physical ergonomics is a field of study that focuses on how human anatomical, anthropometric, physiological, and biomechanical traits relate to physical exercise.
2. Cognitive ergonomics is the study of how mental functions—such as perception, memory, information processing, reasoning, and motor response—affect how people interact with one another and with other system components.
3. Optimisation of socio-technical systems, including their organizational structures, policies, and procedures, is the focus of organizational ergonomics.

As a result, the goal of ergonomics is to enhance interactions between people and machines and people and computers. (Bridger, R.S. (2003)). It must be utilized as a

preventive measure from the start, but it can also be successfully integrated into the redesign of an existing work system. (International Organization for Standardization. ISO 6385. (2016)). A wide range of the target population, or the people for whom the design is intended, specified according to pertinent criteria, should be considered while creating a work system. (International Organization for Standardization. ISO 26800. (2011)), (International Organization for Standardization. ISO 6385. (2016)). In this situation, ergonomics plays two roles: one is to understand intentional interactions between people and artifacts, paying particular attention to people's capabilities, needs, desires, and limitations in such interactions; the other is to contribute to the design of interactive systems by maximizing capabilities, minimizing limitations, and attempting to meet people's needs and desires. (Wilson, J.R. (2000)).

2 - Ergonomic Standards

Ergonomic standard is a term to express a standard set of measurements, used as a reference and is considered as an intermediate degree for a specific group of people. The ergonomic standards are meant to be standards that take into account, an average degree of a person and put them in the position of reference in all the design or implementation decisions under different work environments. (Rushdi, Ibrahim. (2022)).

International and national legislation, national standards, national guidelines issued by governmental agencies or voluntary standards organizations, and technology agreements between businesses and labor unions are just a few of the ergonomics standards and guidelines that are currently in use around the world. The progression of events between 1972 and 1990, included the formulation of standards, laws, and regulations as well as the appearance of visual display terminal conferences, inspection audits, and the publication of scientific publications.

National guidelines for ergonomics have evolved into international standards and laws. Other countries, like Australia, Canada, and the United States, are becoming more active in approving and participating in the development of ergonomics standards, despite the fact that Europe was and remains a leader in the standardization of the office environment and ergonomics regulations. Although ISO-9241 established several ergonomics guiding principles on which legislation may be based, this document was too abstract to serve as a quality model and did not specify the proportions of the workstation components, such as chairs and work surfaces. Despite the fact that there are still many unresolved ergonomics challenges, there is greater agreement than ever before regarding fundamental product design and user interface principles. (Woo, E. H. C., White, P., & Lai, C. W. K. (2016)).

3 - Commercial Windows Display

“The term commercial display windows is basically related to the windows or display windows of the commercial stores, which help the recipient to know the nature of the products or services that the commercial store (the establishment) provides, as it is considered as the most important part in the design of the stores, as it is the first place where the public meets With the brand of the store, and through it to form a certain impression about this brand”. (Shehata, Muhammad, and others. (2019). P. 364).

The avant-garde, the novel, and the spectacular in urban contexts, as well as the influence of modernism, are frequently the topics of historical research on window displays. This includes a focus on the department store of the turn of the century and its goal to "produce desire" through display, attractions, color, and light. (Bronner, S. J. (1989)). as well as the new, more straightforward aesthetics of functionalism, which when new marketing theories arrived challenged the lines between art and commercialism. (Suga, Y. (2006)). These studies are crucial for comprehending changes in retailing and consumer culture, but they also have certain drawbacks. First, they frequently ignore the wider dispersion of commercial display or the more typical shop windows in favor of only analyzing the most obvious cases. Even in the most rural towns

of northern Europe, so-called modern window displays started to appear in practically every store around the beginning of the 20th century, but this development has mostly been assumed rather than researched or explained. As a result, there are currently little insights into how this process altered and reshaped the modernism of displays. (Hoskins, L. (2011)).

Second, traditional narratives tend to focus on the outcomes rather than the methods; in other words, they are concerned with the finished window displays and, of course, the part they played in consumer culture and retail settings. This seems sense given that most historical sources on window displays feature images of fully-decorated, organized storefronts. The windows that are depicted are frequently ones that were thought to be possible norms for others. The 'backstage' efforts, as well as the knowledge and resources needed to create the window displays, both magnificent and less remarkable, are mostly left out. The gendered historiography of contemporary commercial fantasy worlds is impacted by these constraints as well. The development of "a ladies' paradise" has been attributed to notable male figures (as well as male window dressers, including the well-known Frank L. Baum) with the focus of scholarly attention on the huge department shops. (On Frank L. Baum. (1882)). The gendered history of window displays can be further problematized by concentrating on Lundkvist's family business rather than just on him, and by focusing on both the professionalization of window dressing and the dissemination of knowledge to smaller retailers. Spectacular and less spectacular ones.

Window Display

Window display plays a central, rather than a pivotal, role in marketing strategies followed by the retailers. The window displays are clearly designed with a purpose i.e., to attract the walk-in consumers and encourage more such walk-ins. Further, the in-store decorations are also located at various focal points that are designed to enhance a consumer's comfort and convenience while shopping and to provide a holistic shopping experience to them (Chaudhary, Prashant. (2016)).

Since they draw customers' attention and affect how they perceive a store's image, creative window displays and innovative displays have been found to have a favorable impact on shoppers (Cornelius et al., (2010); Lange et al., (2016)). This shows that a window display that is interactive might enhance customers' experiences at the moment of sale. According to earlier studies (Fiore and Kim. (2007); Turley and Milliman. (2000)), a store display is an atmospheric variable that can affect customers' internal reactions, behavioral responses, and shopping experience. Although it has been demonstrated that in-store e-atmospheres can improve customer experience and affect their responses favorably, this has yet to be proven in the outdoor retail environment (Poncin and Ben Mimoun. (2014)).

Ergonomic Criteria for Designing the Commercial Display Windows

The criteria for commercial display windows are divided into two types:

1. Ergonomic criteria is associated with the design of commercial display window advertisements:

The ergonomic criteria associated with the design and production of the advertisements are divided into three main aspects:

1.1. Typographic Criteria:

This criterion includes the text in both main- as well as sub-headings of the advertisement. The following criteria are involved in this section.

- Criteria to create the content for advertising

- A. The title format must be integrated with the rest of the components present in the ad in display window. This is inclusive of ad text, images, graphics, and slogans. This scenario helps in achieving the targeted effect.
- B. The title should be specific while vague or general formulas that may be used in any advertisement should be avoided.

- C. The title should summarize the most important selling ideas, included in the content of the advertisement. This motivates the recipient to read the advertising text (Ghobashi, Nevin Ahmed. (W.D). P. 18).
- D. Effective, positive and lively language must be used in the title which should be expressive in nature (Quray'I, Ahmed Musa. (2011). P. 178).
- E. The title should be unique in content with an attractive idea (Quray'I, Ahmed Musa. (2011). P. 178).
- F. The word count in the title should be limited and centered to attract more recipients (Quray'I, Ahmed Musa. (2011). P. 178).

- Advertising Criteria

- A. When editing the ad body, an element should be presented (Al-Zoubi, Ali Falah. (2008). P. 219).
- B. The advertising body should display the advantages and characteristics of goods or services in an integrated manner, which allows one to persuade the recipient of the advertised good or service (Al-Zoubi, Ali Falah. (2008). P. 219).
- C. The advertising body should address the problems, needs and interests of the recipients through an explanation and solution for those problems (Nevin Ahmed (Ghobashi, Nevin Ahmed. (W.D). P. 28).
- E. The ad body should contain simple and easy-to-understand words in order to suit the nature of the audience, to whom the ad is intended (Ghobashi, Nevin Ahmed. (W.D). P. 28).

- Criteria for Font Type

- A. Ornate fonts should be avoided in commercial window advertisements, because they confuse the recipient. Further, the recipient needs to put more effort to read the text which in turn strains them (Zakaria, Nanis Mohamed. (2007). P. 164 - 166).
- B. Should avoid using various font types in design which may conflict with the recipient's eye comfort (Zakaria, Nanis Mohamed. (2007). P. 164 - 166).
- C. Use a font type that is characterized by prominence and clarity to achieve the objectives of the advertisement and attract the target audience towards the goods/service offered.
- D. The type of font used should commensurate with the commodity or service advertised in the advertisement.

- Criteria for Line Length

- A. The length of the line must be balanced i.e., if it is too short, it interrupts the reading and loses the meaning. If its length is beyond the appropriate limit, then it causes the recipient to make mistakes and re-read, which in turn causes confusion for the recipient (Qutb, Maysoun Muhammad. (2003). P. 144).
- B. The preferred number of words per line should not be less than 7 words (Qutb, Maysoun Muhammad. (2003). P. 144).
- C. Making a difference at the starting point for each line should be avoided, as it is one of the stressful things for recipients to follow when reading. So, it is necessary to take the beginnings of the line into account (Qutb, Maysoun Muhammad. (2003). P. 144).

1-2 - Formal Criteria

It includes all the pictures, drawings, shapes and colors. The criteria followed in this section are discussed herewith.

Criteria Related to the Clarity of the Images and Graphics

- A. Taking into account, the placement of the images and graphics, so as to avoid the text lines and title from distracting the recipient (Qutb, Maysoun Muhammad. (2003). P. 148 - 149).
- B. The use of images and graphics that contain a movement direction, especially in personal images, so that the eye of the recipient leads into the advertisement of the commercial display window, and not outside it (Qutb, Maysoun Muhammad. (2003).

P. 148 - 149).

Criteria Related to the Content of Images and Graphics

- A. Pictures and graphics that attract the attention of the recipient must be used. Photographs are found to be highly attractive than the drawings (Nasser, Muhammad Jawdat. (1997). P. 124).
- B. Higher the number of images used in display window advertisements; more it is related to the subject. It automatically attracts the attention of the recipients, as it makes the recipient enter into a close relationship with the subject.
- C. The image should be used as a part of the content and not repeat the same content. Further, the images used should not be directly related to the content in order not to distract the recipient's attention from the main advertising content.

Formal Criteria Associated with Pictures and Drawings

- A. The pictures and drawings should take into account the usage of artistic images in terms of appearance of the details and clarity of the colors. It also takes into account that they contain an appropriate amount of shadow gradation (Agiza, Marwa Shebl. (2010). P.198 – 199 – 200 - 201).
- B. Using images and graphics that have the ability to create the required contrast by contrasting the images with floors and creating a fine balance and employing them with the rest of the other advertising elements so as to achieve a successful commercial display window (Agiza, Marwa Shebl. (2010). P. 198 – 199 – 200 - 201).
- C. Images with a strong and clear relationship among its elements must be used and it should not require much effort to identify them, and it should be made easier for the recipient to absorb them easily (Qurai'I, Ahmed Musa. (2011). P. 221).

Criteria Related to the Effect of Color on the Senses

- A. Colors exert an effect on the sense of third dimension in advertising design. Brighter and hotter the color is, the closer it will be, to the eyes.
- B. In terms of the effect of hot colors on the sense of space, the light colors can be seen to increase the space in contrast to the dark colors.
- C. Colors have an effect on the sense of weight. Stronger and darker the colors are, higher the sense of heaviness would be, than the light colors. Also, the hot colors are heavier than the cold ones.

Criteria Associated with the Impact of Color Upon the Recipient's Attention

- A. The advertising designer should take the psychological and physiological effects of colors into account, as it increases the recipient's attraction, perception, and understanding about the advertisement (Al-Alam, Safwat. (2004). P. 113 - 114).
- B. Using colors to focus on a specific part or element in the commercial display window advertisement such as the name, title, or image of the (Al-Alam, Safwat. (2004). P. 113 - 114).

Criteria Related to the Relationships Between Colors

- A. It creates a link between the elements of the design via colors, via the color compatibility of the elements or the usage of a dominant color in the design or the use of tight colors that helps the eye to receive the design elements (Agiza, Marwa Shebl. (2010). P. 211).
- B. Using a group of colors is considered to be one of the factors that helps the eye to rest. Higher the number of colors used, more specific their number would be and easier the recipient's perception would be (Agiza, Marwa Shebl. (2010). P. 211).
- C. The more harmonious the colors are, from a visual point of view, the more comfortable they provide, for the eye. Color harmony is one of the factors that gives the design, a kind of visual balance and also provides the recipient, a high sense of order (Agiza, Marwa Shebl. (2010). P. 211).

- Criteria Associated with Color and Symbolic Connection

- A. The color symbolic preferences of the recipients differ according to their social levels

that are related to the communication process (Al-Alam, Safwat. (2004). P. 116).

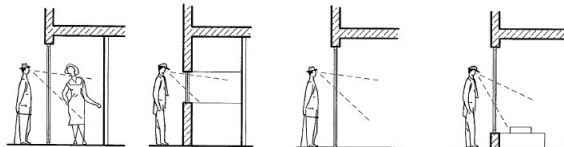
B. Each color used in the advertisement is associated with feelings, symbolized by the advertisements, in a symbolic relationship (Al-Alam, Safwat. (2004). P. 116).

2 - Ergonomic Criteria Associated with Commercial Display Windows:

The ergonomic criteria associated with commercial display windows are divided into three main aspects as discussed below.

2-1- Design Space for Commercial Display Windows (Display Windows Area):

The design space of the display window remains the volumetric space in which the display window is present. It is similar to a three-dimensional box that is opened on one side or more. It usually contains the structural walls that make up the display window, floor and the interior ceiling of the display window. The commercial display window is possibly placed at the external side. In other terms, it is present outside the walls of the store with limited area. The aesthetics, operational characteristics and other criteria (space and size, proportion and proportion, and balance) should be taken into account in order to coordinate the elements of the design space (Abu Zaarour, Rawand. (2013)).



Picture (1): Viewing angles of the recipient of display windows and their relationship to different window types.

2-2 - Architectural Elements of the Commercial Display Windows

These elements form the space of display window and its features. It further contains components and embodies its form and is also used for the purpose of supporting the devices and providing interactive platforms for recipients through audio, video and computer equipment. The architecture of the display window, in the walls, divides the space of the display window. It has panels through which the ideas and products are displayed. The furniture is designed for the display window and other structural elements that help in expressing and highlighting the design idea such as the ceilings, umbrellas, banners and hanging pictures, towers and completed uneven walls (Shehata, Muhammad, and others. (2019). P. 374).

2-3 – Units and models used in commercial display windows:

These systems are used in commercial display windows as devices through which the posters and images complement the design of the displayed window. Here, the designer of the commercial display window takes advantage of the wall spaces on its sides to display the posters that advertise the products and services of the store using different display systems to attract the recipients towards the display window. Such elements include mobile display systems, modular display systems, custom-made display systems, and backlit display systems (Shehata, Muhammad, and others. (2019). P. 374).

Analytical study

The researcher conducted an analytical study on three commercial display windows' models used by foreign and local merchandise to extract the most important results expected by the researcher.

The first analytical model



Picture (2): Tsum DEPARTMENT STORE, Kiev, Ukraine.

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Analytical spreadsheet first form	
window type	Closed-back viewing window
Formal criteria and visual components of the commercial display window	
The idea and the advertising message	Impact on the recipient using the design elements to achieve visual illusion
writings	Nothing
Pictures, graphics and colors	The display window design relied on making linear configurations of all kinds in a balanced pattern. It further used black and white in display window design to highlight the contrast between its background and the displayed product. The usage of these colors can be interpreted as a kind of expression to ease the recipient's connection to the display window. The usage of product colors in the range of blue and orange make it stand out.
Multimedia	nothing
Structural foundations for commercial display windows	
Design space for display window	The ratio and proportionality between the design elements in the display window and the total area of their sizes, blocks and voids, were taken into consideration.
Architectural elements of display windows	Both ceiling and the walls of the display window were used to distribute the design elements on it. The three-dimensional spherical pendants, hanging from the ceiling and the circular figures on the floor of the display window, were used to display the product.
Units and figures used in commercial display windows	Custom-designed display systems were used with overhead lighting.

The Second Analytical Model:



Photo (3): J La Roche Paris, Irbid City Centre, Irbid, Jordan (Photo by the researcher, Irbid City Center, Irbid, Jordan, 10/1/2023).

Analytical spreadsheet Second form	
window type	Closed-back viewing window
Formal criteria and visual components of the commercial display window	
The idea and the advertising message	Here, the display window has a general, simple form with a simple background with no design elements. However, it had a display platform with some models of the shop's products and there was no design idea in it.
writings	The brand name was written on the front of the trade show window at the top with a simple background.
Pictures, graphics and colors	There are no pictures, graphics or colors
Multimedia	Nothing
Structural foundations for commercial display windows	
Design space for display window	Both ratio and proportionality between the sizes, used to display the product, were not considered with the display window space. However, a simple arrangement was taken.
Architectural elements of display windows	Ceiling and walls of the display window were not exploited to distribute the design elements in a proper way that attracts the recipient. The cuboid-shaped models were used on the floor of the display window to showcase the product.
Units and figures used in commercial display windows	Modular display systems were used with simple elements that can be modified to any part of it with ease and overhead lighting was used.

Results of the analytical study

Based on the analytical study conducted using descriptive approach on the criteria to design the display windows for previous institutions, the researchers arrived at several results that are listed herewith.

1. The formal standards and visual components of the commercial display window along with the structural foundations of the commercial display windows should be considered as reference points in designing the commercial display windows.

The use of formal standards, visual components, and structural foundations for

commercial display windows remains the most important factor that form the actual mental image of the display window, towards the target audience. This is because the commercial display windows are one of the first and the most important points of direct contact between the institution and the target audience.

2. The commercial display windows that do not contain a design nor an advertising idea remains too simple to attract the recipient. The products should be usually displayed randomly and not monotonously. Further, when a product does not appear in its best form, then it may negatively affect the recipient.

Applied Study

The researcher carried out an applied study of the commercial display windows' models for some local brands, in order to apply the criteria that were studied previously.

The first application model of the commercial display window of Brand (GUCCI):



Image (4): An applied model of a commercial display window for Brand (GUCCI) designed by the researcher

Table of Analysis of the first applied model	
window type	Closed-back viewing window
Formal criteria and visual components of the commercial display window	
The idea and the advertising message	Influencing the recipient using the design elements to achieve visual illusion and be as close as possible to the recipient's feeling about the summer atmosphere.
writings	Nothing
Pictures, graphics and colors	In designing the display window, it relied on creating the formations with white background and in the center, the trademark and green foliage are placed in large size. This indicate the summer dress season. Some of the summer models were displayed in colors that are attractive to the eyes of the recipient and are more appropriate with the background of the display window. Further, it also highlights the contrast between the elements of the display window. The use of these colors can be interpreted as a kind of expression to ease the recipient and link with the display window. Further, they also used the product colors of red, orange and yellow in order for the product to stand out.
Multimedia	nothing
Structural foundations for commercial display windows	
Design space for display window	The ratio and proportionality between the design elements in the display window, along with the total area of their sizes, blocks and voids, were taken into consideration.
Architectural elements of display windows	Both ceiling and the walls of the display window were used to distribute the design elements whereas the ceiling was used to shed light on the products displayed in the display window.
Units and figures used in commercial display windows	Custom-designed display systems were used with overhead lighting.

The second application model for the commercial display window of PANDORA:



Image (5): An applied model of a PANDORA window, designed by the researcher.

Table of Analysis of the second applied model	
Window type	Closed-back viewing window
Formal criteria and visual components of the commercial display window	
The idea and the advertising message	It influences the recipient by using elements to achieve visual illusion since the design idea is inspired by the marionette puppet theater (considering that the display window is a theater window).
writings	Since the brand name is repetitive in the background of the display window, it confirms the name of the brand to the recipient and increases the possibility of seeing it from different angles.
Pictures, graphics and colors	In designing the display window, it relied on using a painting, as if the display window was a theater. White and black were used in the background of the display window whereas red and green colors were used in special models to display the product in order to show the contrast between the elements inside the display window and focus on the product through colors. These colors are used as a kind of expression to ease the linking process between the recipient and the display window.
Multimedia	nothing
Structural foundations for commercial display windows	
Design space for display window	Both ratio and proportionality between the design elements in the display window, along with the total area of their sizes, blocks and voids, were taken into consideration.
Architectural elements of display windows	The ceiling of the display window was used to illuminate the products and the background, and the walls of the display window to distribute the design elements on it. The presence of figures, in the form of boxes in the floor of the display window, was used to display and distribute the display figures that carry the products on them.
Units and figures used in commercial display windows	Custom-designed display systems were used with overhead lighting.

Results

Based on the association between the current research outcomes with that of the formal standards, visual components, and structural foundations of the commercial display windows of different institutions, in terms of designing their display windows, the researcher obtained different results which can be used as standards for the reference points.

1. The display windows that contain a design idea should follow the formal ergonomic standards and visual components of the display window such as pictures, drawings, colors and writings. These elements are highly attractive to the recipient and achieve a higher degree of attraction, thus increasing the demand for the store.
2. Design elements depend on their distribution on design principles (proportion, proportion, balance, symmetry, etc.) in the space of the commercial display window. It works to clarify the vision of the offered products and highlight them in their best form for the recipient so that they can perceive it with ease.
3. Taking into account, the distribution of products in the commercial display window works to find the relationship between the viewing angles of the recipient to the display windows at the recipient's viewpoints directly in front of him. It may be from different angles, whether at the bottom of the display window, the top of the window or the right or the left of the window.
4. Exploiting the architectural elements in commercial display window (ceilings, umbrellas, banners and hanging pictures, ... etc.) has a great role in highlighting the general appearance of the display window and explaining the products, offered to the recipient, in a beautiful and attractive way.
5. Both units and models used in the design of the commercial display window have a major role in presenting the products displayed in the window in their most beautiful form. This helps the recipient to see them better and understand their details.

Recommendations

The researchers recommend the commercial display windows designers to take into account the use of ergonomic criteria (formal standards, visual components, and structural foundations of commercial display windows) whenever designing the commercial display windows. This is to ensure that the design brings an emotional connection between the institution and the target audience. Because, the display windows are one of the first and the most important points of direct contact between the institution and the recipient.

Moreover, researchers recommend the expansion of horizons of scientific research and studies related to the study of ergonomic standards in general and make use of the benefits gained from the results in the field of designing the commercial display windows.

Conclusion:

This research included a study of the ergonomic standards for designing commercial display windows in the Hashemite Kingdom of Jordan. The research problem was summarized in answering the question of how to apply these standards to commercial display windows in the Hashemite Kingdom of Jordan. The goal of the research revolved around benefiting from employing these standards to reach more suitable designs. effectiveness and attraction to recipients, monitoring and analyzing models of display windows to determine the extent of their effectiveness and impact on recipients, and using the descriptive approach to present and analyze some of the models of commercial display windows in international and local Jordanian markets, and the applied approach to design some of the models of commercial display windows employing ergonomic standards. Keywords: ergonomics, ergonomic standards, commercial display windows.

The researcher studied the ergonomic standards associated with the design of commercial display advertisements (typographic standards and formal standards), And ergonomic standards related to the commercial display windows (the design space of the commercial display windows (display window space), the architectural elements of the commercial display windows, and the units and models used in the commercial display windows).

The results of the analytical study indicated that considering the standards as reference points in the basics of designing display windows, and that the use of these standards in display windows is one of the most important factors that form the actual mental image of the display window towards the recipient, is that display windows that do not contain a design, an advertising idea, or any of the standards are incomplete. It is attractive to the recipient. The products displayed are usually random and not monotonous, in which the product does not appear in its best form and thus may negatively affect the recipient. The results of the applied study indicated that display windows that contain a design idea that follows the ergonomic standards of the display window achieve a higher rate of attraction for the recipient, and that the design elements that are distributed on design principles in the space of the display window work to clarify and highlight the products displayed in their best form to the recipient so that they are perceived by them. With ease, taking into account the distribution of products in the display window works to create a relationship between the recipient's viewing angles of the display windows at the recipient's level of sight directly in front of him, and that exploiting the architectural elements in the commercial display window has a major role in highlighting the general appearance of the display window and making the displayed products more clear, and that the units and models used In designing the display window, it plays a major role in presenting the products displayed in the window in their most beautiful form so that the recipient can see them and understand their details. The recommendations indicated directing commercial display window designers to take into account the use of ergonomic standards (formal standards, visual components, and structural foundations for commercial display windows) during design, in order to come up with a design that affects the process of emotional connection between the institution and the target audience, considering that display windows are among the first and most important points of direct contact between The institution and the recipient. By expanding the horizons of scientific research and studies related to the study of ergonomic standards in general and benefiting from their results in the field of designing commercial display windows.

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