

INDUSTRIAL INTERIOR ARCHITECTURE STYLE AS INTERIOR ARCHITECTURE INSPIRATION GUIDE

استلهام النمط الصناعي كمرجعيه تصميميه للعمارة الداخلية

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ABSTRACT

*Interior architecture design methodologies differentiate a lot from time to time and from environment to another due to its wide range of styles, trends, and techniques. Among these varieties the research selects the style of industrial interior architecture which represents one of the essential styles of design with its distinguished characteristics and advantages. It considers one of the main referential techniques that impact the entire field of interior architecture. Based on this background the paper intends to discuss the positive reflection of using industrial interior architecture as inspiration style for other interior architecture styles. The paper will include: A brief about the style origin and history. Digital revolution impacts, advantages and disadvantages. The paper **core** will focusing on: **How** these features and characteristics can be reflexed on other interior architecture designs styles specially the field of residential spaces? **How** can industrial architecture style concept play the role as interior architecture referential pattern through the accurate selection of its elements, principles and tendencies? The paper will be **aware** about the compromisation between other styles identity and the degree of inspiration freedom.*

KEYWORDS

Industrial Interior architecture, Interior architecture, inspriation;

المخلص

تتباين أساليب وتقنيات التصميمات المعمارية وتصميمات العمارة الداخلية كمحصلة لما تمتلكه من نماذج وتقنيات وتوجهات متعددة تختلف وتتأثر باختلاف البيئات والعامل الزمني. وتمثل عمارة المنشآت الصناعية أحد الركائز الأساسية في مجال التصميم المعماري لما لها من صفات ومزايا فريدة. فالتصميم المعماري للمنشآت الصناعية يعد أحد النماذج الرائدة في مجال التصميم المعماري وتصميم العمارة الداخلية، حيث تتأثر به جميع مجالات الإنشاء والعمارة والعمارة الداخلية. وبناء على هذا المفهوم سيناقش هذا البحث المردود الايجابي والاستفادة من نمط العمارة والعمارة الداخلية للنمط الصناعي. يتضمن البحث: مختصر حول نشأة وتاريخ عمارة النمط الصناعي. الملامح والصفات الفاعلة التي تمنح النمط شخصيته. الجوانب الإيجابية والسلبية للثورة الرقمية وتأثيراتها. وسيركز البحث في اتجاهه الرئيسي حول: كيفية تعظيم الاستفادة من معطيات نمط التصميم المعماري الصناعي في تعزيز وتطوير انماط العمارة الداخلية الأخرى وخاصة النمط السكني؟ كيفية اتخاذ نمط التصميم المعماري الصناعي كأحد المرجعيات الفعالة من خلال صحة اختيار وتحليل وتوظيف عناصره وإساليته وتوجهاته؟ وسيراعي البحث الاعتبارات التصميمية المختلفة التي تخص كل نمط من انماط العمارة الداخلية وبما يحقق التوازن بين خصوصية كل نمط وبين الحرية والمرونة في اختيار العناصر والأفكار التي تعظم نتائج عملية الاستلهام.

الكلمات المفتاحية

العمارة الداخلية للمنشآت الصناعية ، العمارة الداخلية ، إستلهام؛

1. NTRODUCTION

One of the main causes that lead to effective design is the sources that support and inspire designers to innovate a constructive vision about their designs. According to this notion the research will investigate the capability of Industrial interior architecture design as one of remarkable inspirational source. This vision of the research formed due to: its unique characteristics and among other styles of interior architecture, according to the functional classification (residential buildings - commercial buildings - educational buildings - healthcare buildings - Administrative buildings -cultural buildings). Industrial interior architecture style has a strong connection with digital revolution through using robots, numerical control and digital automation. Normally when the title of industrial interior architecture design mentioned the initial thinking of our mind goes first to the industrial projects or industrial products. Although this sensation is true, interior architecture designs like all other styles of design depending on industrial products as main part of its design ingredients. On the other hand, industrial projects consider one of the leading models of management and planning. According to this background our research main target is to select and utilize the effective ideas, factors and elements of the entire Industrial interior architecture design domain to be an effective input for other types of interior architecture designs. (Figure 1) Demonstrate the research approach and the overall relation between industrial interior architecture style as inspiration sources and other types of interior architecture styles classified by function.

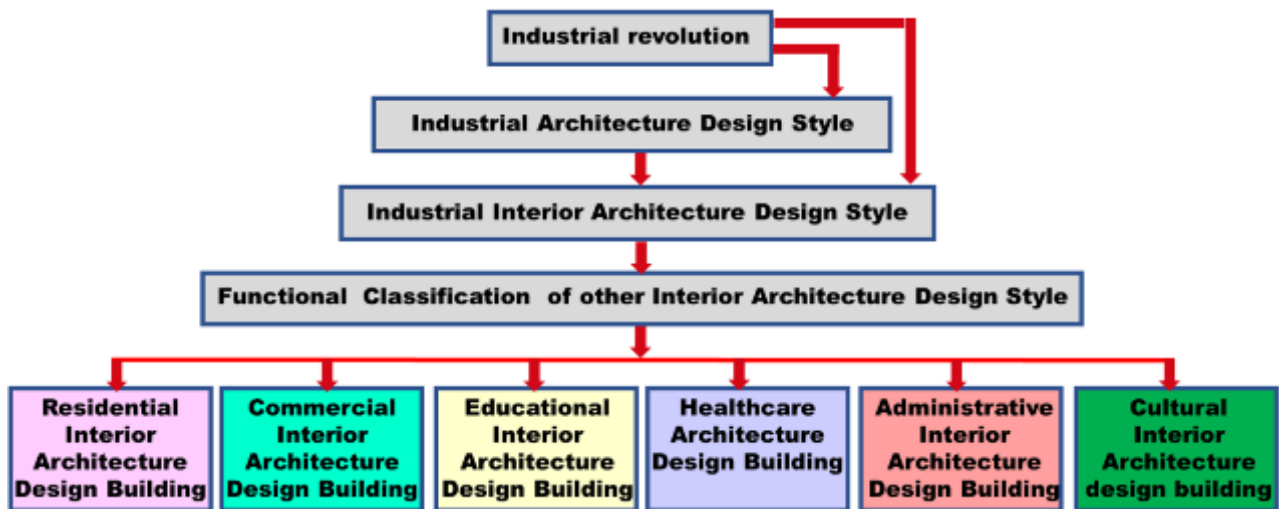


Figure 1: The research approach about the inspiration process path.

1.1 PROBLEM STATEMENT

The problem defined as:

- Researches and studies that investigate the relation between Industrial interior architecture style and other interior architecture styles are very limited comparable with the importance of industrial design as referential guide.
- Remarkable developments of Industrial interior architecture design field due to the rapid updating of digital revolution need to be matched through dynamic and frequent researches and studies to match and utilize the contemporary alteration.
- Many of interior architecture issues can be solved through the methodologies and conceptions of industrial spaces design and innovation.

1.2 AIMS & OBJECTIVES

- Introduce simple and clear vision about Industrial interior architecture style as concept, origin, history and application.
- Demonstrate a theoretical and practical implementation about how can designers utilizes industrial interior architecture style to support and enrich their designs.
- Highlight a selective collection of industrial architecture design characteristics and elements that match interior architecture environment with the consideration of keeping other interior architecture styles identity and condition recognized.

1.3 literature

The research found considerable number of papers explores the domain of industrial interior architecture. In spite of the these papers existence and the importance of its subjects and objectives the direct and obvious impacts and interaction between industrial interior architecture design style as guidance and other types of interior architecture design styles still need to be considered with more investigation and survey. Some papers concentrate about the characteristics of the style itself without clear connection with other types of interior architecture, in the context of a narrative: paper discusses the environmental problems of industrial interior architecture. “Environmental Problems of Indoor Spaces in Industrial Buildings” (Katunsky 2011).

The majority of other papers explore one element of interior architecture design, in the context of a narrative: 1-paper concentrated about the aesthetical side of Industrial interior architecture “Aesthetics of Industrial Interior Architecture in the Context of Industrial Buildings Conversion”. (Jevremovic 2012). 2-paper concentrated about the color harmony as essential element of design in industrial interior architecture concept through focusing its analyses over the implementation of color in industrial building facades. “Use of Color in Architecture– Industrial interior architecture Perspective”. (Jevremovic 2020). 3-paper explores types and classifications of architecture in industrial buildings through limited time. “Typology of architecture of industrial buildings at the turn of the 20th and 21th century”(Goncikowski 2020).

1.4 METHODOLOGY

Both of descriptive methodology and analytical methodology employed to introduce research parts. **Descriptive methodology** assigned to clarify parts of (previous study - Industrial architecture design concept, origin and history – the style key characteristics and features). **Analytical methodology** assigned to the parts of selecting, analyzing and utilizing the effective ideas, factors and elements of industrial architecture design style that match and support other interior architecture styles.

1.5 RESEARCH LIMITATION

- Time limitation: started from the initial appearance of industrial architecture design concept in the 6th century, until the present time.
- Place limitation: The first foundation of industrial architecture design concept mainly located at western world and Asian countries, now it spreads over the world.
- Domain limitation: The research basically investigates how interior architecture designers promote their design scope, ideas and element, through the characteristics and features of industrial interior architecture style.

2. STYLE ORIGIN AND HISTORY

The development of Industrial interior architecture style associated with the industrial revolution as one of its consequences. Industrial revolution started during the 17th century with lifetime divided basically to four stages started from the 17th century up to now. There are some slight and remarkable differences about the exact starting and ending time of each stage. **The first stage** concentrated in Britain, USA and some other European countries such as France. It introduced significant inventions like mechanization, steam engine, water power and cotton spinning machine (Figure 2), (Figure 3). **The second stage** focused on: mass production, assembly lines, electrical power. **The third stage** introduce: automated production, computer science & information technology and robotics. The output of the three previous stages provided fundamental and vital factors to initiate **the fourth stage** which started around the beginning of 21th century up to now and led to the **modern industrial revolution**.

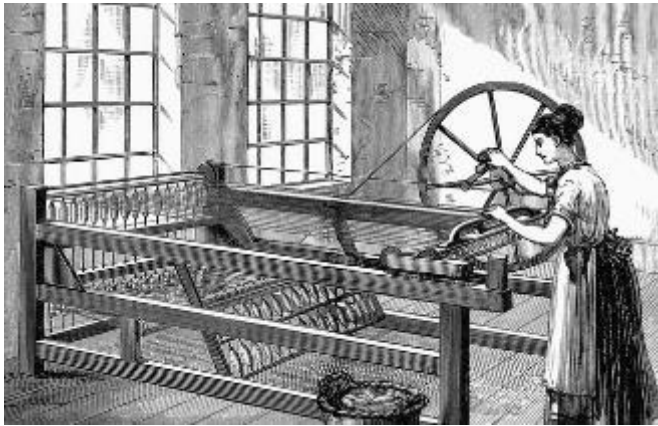


Figure 2: Spinning machine 1736 - 1819
Britannica 2024



Figure 3: The telegraph 1837
Interestingengineering 2023

Numerous inventions and developments in all industrial field happened impacting all types of human activities through four. “Industry 4.0 is a new sphere of industry, which appeared as a result of emergence and distribution of new technologies - digital technologies and Internet technologies - which allow developing fully automatized production processes, in which only physical objects that interact without human participation take part. Industry 4.0 creates traditional industrial products and new industrial Products, which cannot be manufactured in other spheres of the real sector economy.”(Kacprzyk 2019).The industrial interior architecture style as essential part of Industrial design achieves continues progress in both theoretical and practical domain through all stages of the industrial revolution especially through the modern stage. According to these growths and expansions the necessity to establish industrial spaces with professional planning became essential priority to satisfy and meet the new circumstances. As result of these consequences the interior architecture style of industrial field became an effective component that enrichment other types of interior architecture. (Figure 4) illustrate the four stages of industrial revolution by time period and main inventions.

The Four Industrial Revolution stages

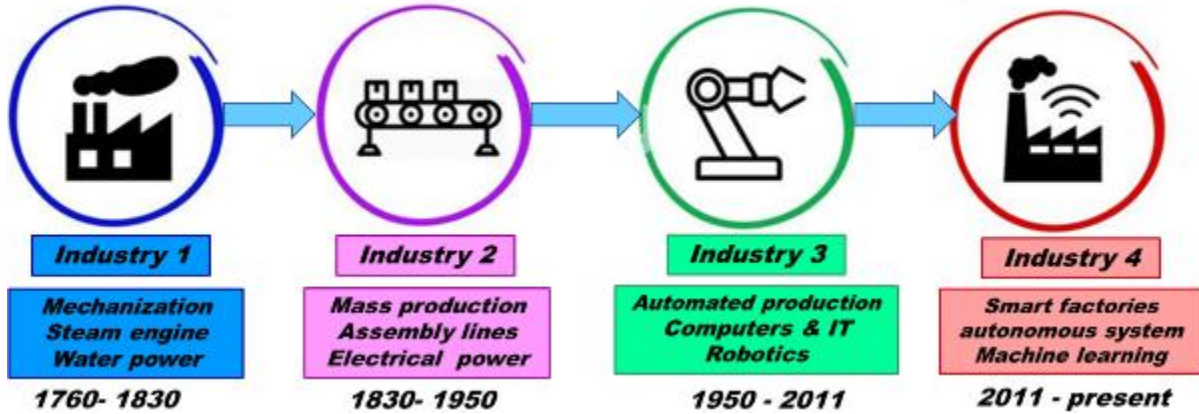


Figure 4: The four stages of industrial revolution by time period and main inventions

Alamy 2024

3. STYLE GENERAL CHARACTERISTICS

Undoubtedly the need to understand the environment of any style is essential to realize the intended design results of this style. This concept is critical within industrial building characteristics due to its wide variation in many aspects according to its mission (Factories, Power plants, Manufacturing, Refineries, Power producing). In spite of these differences a group of fundamental characteristics are bring them together as common style. So the research allocates this preparatory part to demonstrate the major characteristics of industrial interior architecture style. In order to support the sensible process of inspiration, help the involved persons to create an introductory vision about the style. The following context and items help to compose an introductory ideas and general scope about industrial interior architecture style to support designer or any other interested parts. (Figure 5) are two mood board about industrial interior architecture components examples.



Figure 5: industrial interior architecture style mood boards
Stylesourcebook 2020

They introduce a quick and general conception about the language and domain of industrial interior architecture style. Beside to the mood board indication the research summarize the general

characteristics of industrial interior architecture style in order to add more clarification about the style and its characteristics as following:

- Essential concerning to ensure functionality achievement as main priority.
- The majority of industrial paces free from barrier with high ceilings and flat floors in order to provide industrial processes the flexibility to use, move and maintain machineries, equipment and products.
- Durable structure constructed to match the heavy duty of industrial activities and different types of products.
- The strong tendency of depending on natural light through arranging the maximum possible dimension of openness and the use of skylights.
- Particular safety measurements and standards to avoid potential hazards and risks.
- The style prefers the tendency of using simplicity as fundamental philosophy of design with clean and straight lines.
- Special awareness to utilize sustainability regulation and procedures to enhance environmental conditions through accurate standards of design as ventilation, heating, air conditioning and other standards.
- Extensive use of raw and rough materials essentially steel, concrete, brick and other types of metal as aluminum.
- Usage of ornamentation and decoration done through very limited orders. Floors, walls and ceiling finished with clear and minimum number of neutral colors.

4. DIGITAL REVOLUTION GENERAL IMPACTS:

In spite of the existence of some remarkable **disadvantages** of digital revolution such as minimizing face to face interaction - cybercrime risks as viruses, malware and hackers - privacy and private information potential attack - the excessive dependence on digital world in many cases reduce the human capability of using normal thinking and efforts. **The advantages of digital revolution are more powerful and effective in many fields and domains. We can summarize the main advantages of digital revolution within the whole fields of information and architecture, interior architecture fields in the following points:**

- Improve the level of connection between the parts of information society.
- Enhance the environments of research, training and education.
- Expand the opportunities of innovation and creativity.
- Promote economic growth, productivity and investment.
- Make daily function easier.
- Introduce the capability of most personal and public activities automation.
- Led to new promise fields of knowledge such as AI (Artificial Intelligence).

5. DIGITAL REVOLUTION AND INTERIOR ARCHITECTURE

Interior architecture field impacted with digital revolution and rapid technological updating. These smart and new technologies provide interior architecture users with many of comfortable and convenience tools, devices allowing them to be more linked to the world, save time and effort, ensure more safety and security procedures, energy efficiency usage and generally improved the level of their life quality. In the other hand it supported professional offices companies and designers with wide and dynamic varieties of smart hardware devices, tools like sensors and software program like virtual design and 3D Modeling. (Figure 6) display vision about the most used components of architecture and interior architecture of smart automated building, while

(Figure 7) indicate some features of interior architecture environment depending on Wi-Fi concept. The research summarizes some of the important interacting aspects between interior architecture domain and digital revolution:

- General automation through remote systems that enable home wireless control.
- Digital and smart lighting control systems, like arrival automatically turn on lighting, automatic adjusting of lighting level.
- Advanced entertainment tools through remote control over centralized operation of entire home components.
- Security systems and digital monitoring Cameras.
- Digital controlling of openings (doors and windows).
- Smart ventilation by adjusting of airflow and control indoor environment status.
- Parking system through personal recognition systems and wireless remote control.
- Different tasks sensors like fire sensors.
- Voice recognition through smart Wi-Fi voice control.
- Managing thermal control and the level of temperature through Temp& Humidity Sensor.

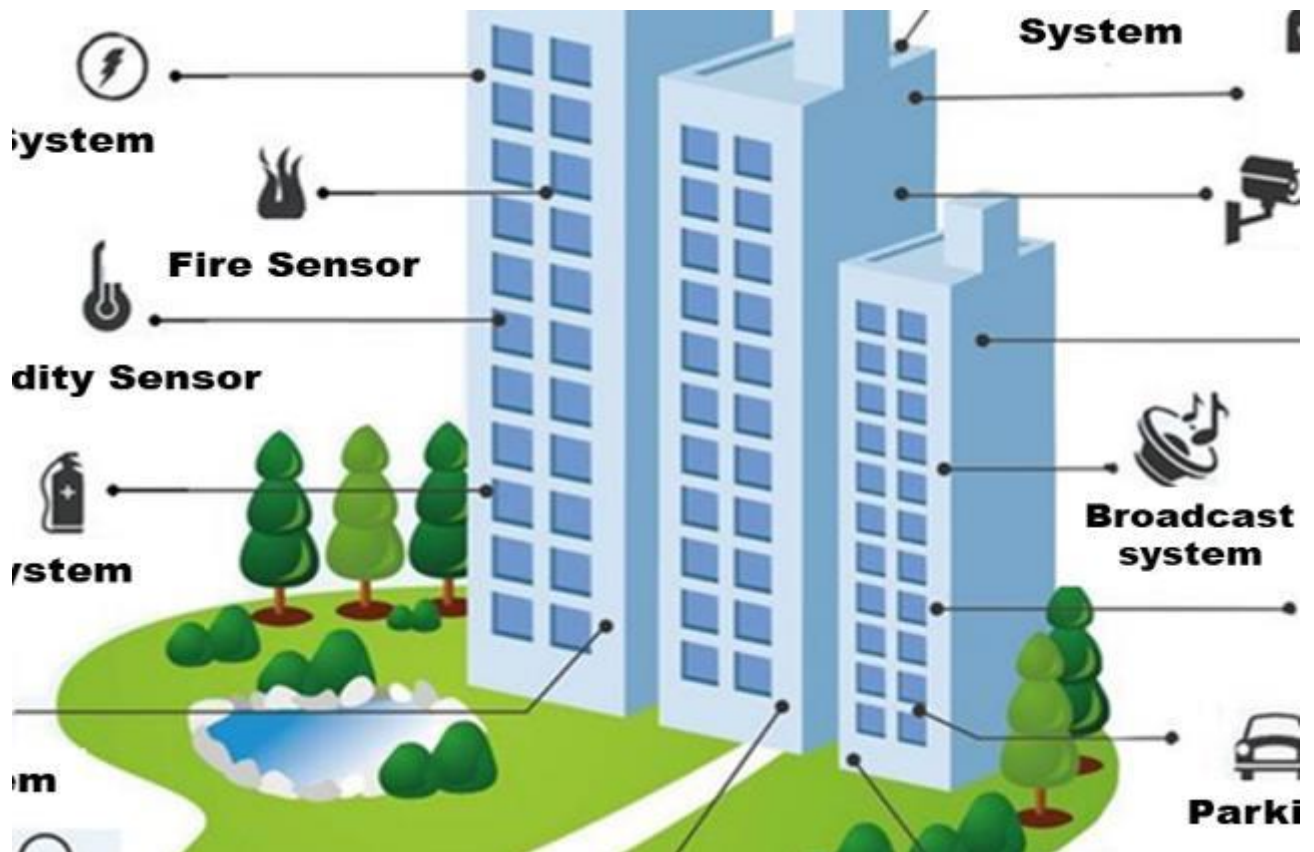


Figure 6: vision about one famous type of smart automated building

Pinterest 2024



Figure 7: some features of interior architecture environment depending on Wi-Fi concept
myhelpguy 2023

6. STYLE AS INSPIRATION GUIDE

As shown in the previous sections (style origin and history – style characteristics) Industrial interior architecture style has several recognizable ideas, characteristics and configuration in both function and form. Most of these features are valid to inspire other types of interior architecture through the sense of what we can select transfer from Industrial interior architecture style. These operations of selection and transference determined according the circumstances of each Recipient (other interior architecture styles) environment and function. Interior architecture designers have to select the appropriate method of transferring (explicit imitation by coping from the source or reformat the selective items). The following parts of research investigation, consider the core of the research once it presents the main aspects of how can industrial interior architecture style inspire other interior architecture styles of building. How can Interior architecture designers be careful about the consideration that must be taken through the process of selection and transfer?

6.1 SPACE OPENNESS

The operational attitude of industrial interior spaces oriented to interact with multifunction activities with dynamic movement of workers, machinery and product. This environment required spaces free from barrier, high ceilings and flat floors and other openness characteristics. In spite these characteristics can be required in many cases of other interior architecture styles it considered very vital with industrial interior spaces. The main factors that determine the degree of openness can be answered through the respond of these questions: What is the main function of the space? What is activities nature? Whether the space belongs to public sector or private sector? The expected number of individuals interacts with the space. . (Figure 8) explain one of industrial spaces openness degree where space item arranged in order to keep the main axes free without barriers. (Figure 9) Show an example of residential space with suitable degree of openness and with the spirit of industrial interior architecture style.



Figure 8: openness of industrial interior architecture style
plasticsnews 2020



Figure 9: residential openness transfer
es.kdmfab 2024

6.2 DURABLE CHARACTERISTICS

Industrial spaces usually constructed to work for extended life time according to the type of function and activates. Many industrial spaces operate over the 24 daily hours through more than one shift. The necessity of durable design in industrial spaces increases due to the intensity existence of various types of machinery, equipment and tools with great number. The less firm and accurate design the more cost of maintenance and repair. Many components in industrial spaces have heavy weight and huge size operate in dynamic movement and powerful vibrations. (Figure 10) an example about the durability feature associated with the industrial interior space. Both ceiling, floor, light, furniture, movable equipment designed to tolerate heavy duty activities. (Figure 11) give image about how can residential interior spaces designed through the durability concept. Most of the space component made of steel



Figure 10: durable design in industrial spaces
vietreader 2023

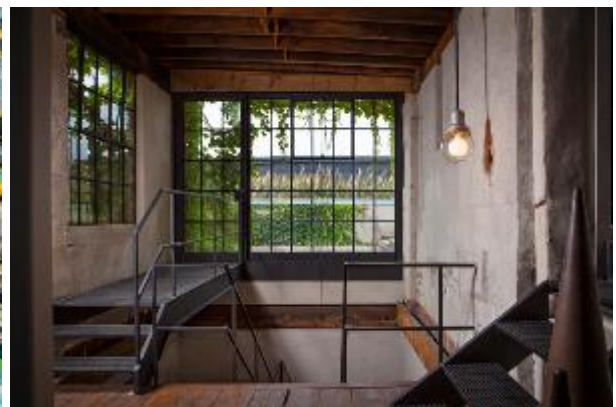


Figure 11: durable design in residential spaces
Architecturaldigest 2023

6.3 NATURAL LIGHT PRIORITY

The strategy of is to utilize natural lighting with the consideration of geographical location and the climate type. Natural light (Day lighting) used in the majority of architecture and interior architecture spaces as a preferable choice. This preference takes special importance in industrial spaces designs due to the wide dimension of its spaces and the specialty of work environment. Many studies ensure positive impacts on the volume of production and on the satisfaction of workers as result of the comfortability that nature light introduces. Therefore in many Industrial spaces a considerable proportion of windows types designed with transparent materials as part of ceiling directed to the sky (Skylights) to allow greatest percentage of light to enter. The maximum dimension of outer side spaces designed to be windows. Another important factor of industrial spaces lighting design is the accuracy of selecting lighting unite with long life, durable materials, less energy and aesthetic features. (Figure 12) gives example about how can industrial spaces utilizes natural lighting. These characteristics of light usability can be inspired and transfer to other type of architecture with sensible alteration according the nature and the type of the receiving space. (Figure 13) reflect indication about merging natural lighting openness with durable artificial lighting in practical residential space usage with the background of industrial interior lighting design.



Figure 12: Industrial interior natural light
danpal 2024



Figure 13: residential interior natural lighting
decorilla 2024

6.4 SAFTY AND PROTECTION

One of main targets of space designers is to protect users from hazards and risks. This target considers one of the main concerns of any industrial space design due to the high percentage of risk comparatively with other types of interior design. Primary suitable planning at first stage of any project has to achieve acceptance degree of safety and protection. This fundamental rule is very critical with Industrial spaces due to the potential hazards and risks related to manufacturing spaces which normally occupied with heavy machines associated with its accessories and the dynamic nature of workers and units of production. This section of the research can't demonstrate all industrial architectures safety and protection standers and measurements due to mush information with detailed branches. We will focus on the key characteristics especially what can transfer to the other styles of interior architecture spaces such as:

- The importance of convincing users with safety culture and the necessity to apply it.
- The suitable status and location of machines, equipment and devices.
- Maintenance performance according the instruction of every machine or equipment.

- Effective monitoring system to allow early discovering of any unsafely conditions.
- Decrease noise and interruption sources as possible.
- Ensure appropriate dimensions for comfortable access and movement.
- Provide specific types of light units according mission of each division of the space.
- Keep the relation between work partition and exits of emergency clear and available.
- Consider the ergonomic characteristics especially with machine, equipment and furniture.

(Figure 14) show side of industrial spaces safety and protection measurements (clothes - signs - monitoring systems - materials - color coding). (Figure 15) demonstrate selective items of safety and protection measurements matching the sprite of industrial architecture interior spaces when executed in administrative architecture space (natural light – exposed ducts and pipes – durable material)



Figure 14: industrial safety measurements
fcab.cl 2021



Figure 15: safety and protection space
homedsgn 2024

6.5 MATERIAL

The appropriate choice of materials is main element for any type of building to achieve its required function. The relation between the accurate materials selection and the different types of industrial building are critical issue due to the hazard of work circumstances. The roughness and hardness of conditions and activities require special types of materials. Most industrial building components particularly floors, walls and ceilings require special durable materials. In the other hand durable materials are easy to maintain with minimum cost. (Figure 16) indicate some aspects of durable material selection presented in floor coating, steel structure of columns and ceiling and special lighting units. (Figure 17) demonstrate an example of residential space designed with the suitable modification of using materials such as using brick wall, concert ceiling and durable furniture with selected inspiration from industrial style concept.



Figure 16: Types of material in industrial space
Everlastflooringct 2020



Figure 17: inspired material in commercial space
Interiormotions 2021

6.6 COLOR USABILITY

Color does not perform its role in industrial spaces or in other type of spaces of interior architecture as single separate element. It is an integration processes control the performance of each element including color. The space functional circumstances - space physical status, mental and moral state of the space user - space dimension are some example of the factors impact the method of selecting color palette. According to the previous notion the environment of industrial interior architecture style require particular color usability features. We can summarize these features as:

- The is no extreme restricted limits of using any types of color, as example some industrial space requirements lead to use specific warm color like using yellow and red in safety plan.
- As general tendency the color palette of industrial spaces consists of limited number of color. Usually the selected group of color formed in neutral and muted appearance, with low level of saturation. (Figure 18). A palette of group of color gives example about the color collections used with industrial spaces.
- Industrial space color palette can contain warm color like the degree of brick which used extensively in many industrial spaces.
- In many cases and according to the large volume of the space and its sides dimension may be one color can cover extended area.
- The durable materials which used such as wood, metal, concrete and stone have a dominate role of the final collection of color appearance.

These characteristics of color usability with industrial spaces can transform and reorganized according the targeted type of other interior architecture style and its circumstances. (Figure 19) demonstrate the color inspiration of administrative interior architecture space from industrial space. As we see the color selected is very compatible with the degree of color listed in the palette. There is more than one palette used with industrial interior architecture style, the important factor how much this palette matching with intended interior space.



Figure 18: industrial color palette example
 Interiormotion 2021



Figure19: color inspiration from industrial space
 formaspacespace2024

6.7 FURNITURE

The furniture intended by our research is the furniture that used as essential element of industrial the spaces, not the furniture which produces as industrial production. The majority of the industrial furniture style made of limited selection of material often wood supported with the different types off strong metal. “These pieces were not about looks; they were all about strength, durability, and function. They featured solid raw wood, leather and strong metal components, often with a weathered finish that came naturally with heavy use” (lionsdenfurniture 2022). In spite this limited selection of material the style proves distinguish aesthetical appearance. A wide percentage of individuals prefer the tendency of raw material furniture which designed with the concept of simplicity, durability and functionality. Both traditional and contemporary industrial furniture style have considerable existence in different societies. The harmonious between modern interior architecture style and industrial architecture style reinforce the popularity of industrial furniture. (Figure 20) displays TV table (Figure 21) display dining table. Both of the two pieces of furniture indicate the simplicity and the durability of industrial space style.



Figure20: industrial furniture inspiration
 Sokoni 2024



Figure21: industrial furniture inspiration
 retro.net 2013

6.8 VENTILATION AND AIR CONDITIONING

The need of ideal ventilation and air-conditioning systems in industrial spaces consider one of the first priorities due to the different pollution gases and particles found in such environments. High standard ventilation and air-conditioning systems ensure healthy and safe working environment for employees. The industrial building size and the type of production with its material used and produced, types of pollution produced according the work are main features that must be taken in consider. The efficiency of keeping fresh air standards and the accurate levels of temperatures, humidity are the main elements that evaluate the successes of the system. Ventilation and air-conditioning systems used in industrial spaces mainly depends on the three basic veneration types.

- Natural veneration: uses building openings with calculated dimensions as ceilings, doors and windows.
- Dilution veneration: reduces the level of concentration through mixing clean air with contaminated air.
- Exhaust Ventilation: prevents contaminated air to reach work spaces through pick up contaminated particles from the nearest source distance and exhausts them outside.

. (Figure 22),(Figure 23) display parts of industrial spaces ventilation system with its outside fans and inside ventilation pipes network systems.



Figure22: outside vans
Hsewebsite 2016



Figure23: inside network pipes
hanza-envirotec 2019

6.9 TEXTURE

According to the mutual relation between material and texture, sometimes they seem as two sides of the same coin. The texture appearance basically resulted from the type of the material used. Industrial spaces generally depend on natural materials beside the necessity to utilize synthetic materials with specific characteristics to match the requirements of the industrial spaces. Wood, stone beside a specific type of synthetic materials like steel, iron, glass and concrete are the backbone of the industrial space textures. One of the main features of texture its effective share of introducing the industrial spaces with distinguish and specific identity. According the type of material used and according to function of the space various type of texture used in the different types of industrial spaces (rough, smooth, patterned, geometric). In spite of the interior industrial spaces oriented to use little number of textures. The actual application through the compaination with other design element like form and color create wide varieties of textures. (Figure 24) shows

one collection of textures which display sample of these materials. (Figure 25) gives an example of material inspiration from industrial space.



Figure24: stone as type of industrial space texture
Gfxdomain 2011



Figure25: material inspiration from industrial space
decorilla 2024

6.10 AESTHETIC IMPRESSION

Industrial interior architecture style pays considerable attention for the aesthetic factor in spite of its trends and orientation for giving function its first priority.as result the style succeeded in establish combination between aesthetics and functionality. Industrial interior architecture style has group of factors shared and cooperated together to granting the style its expressive identity and its aesthetic vision. The openness of the space produces flexibility which let space alteration of both aesthetic and functional side become easier. “Developing openness into designs can be seen as a strategy to cope with architecture’s contingency: creating a building that can be interpreted and appropriated in different ways through changing contexts” (Stam 2019).



Figure26: Aesthetical transformation process
spencil 2023



Figure27: Aesthetical transformation process
indiamart 2024

The simplicity features of industrial spaces create a pure appearance without unnecessary ornamentation or decoration, the style beauty reflected type of comfortability and harmonious with its environment. The clear vision of natural light adds more quality and character to elements.

Natural materials surfaces have special impacts through giving the industrial spaces its aesthetical impression. As result openness, flexibility, material, natural light and furniture cooperate to produce comfortable and pure seen. (Figure 26) and (Figure 27) Examples of residential spaces express the aesthetical transformation process.

7. LocHal LIBRARY CASE

LocHal Library considers national and international Library. It represent a distinguish guide of the capability of reforming industrial space to be culture and public services space. The designers succeeded in utilize the remarkable characteristics of industrial building to be an referential model. The space was train station hangar built in 1932 in Tilburg city in Netherlands with 7000 m² square area building and 11,200 total square area located in the new heart of Tilburg city developments. The project has transformed from train station to large and amazing multipurpose international library. LocHal Library first opening was in January 2019.

From the interior architecture point of view the design of LocHal Library as industrial architecture in its basic structure has many referential characteristics and advantages that can reformatted or imitated according to the receivable style and its features (residential- commercial - educational - healthcare - Administrative). (Figure 28) and (Figure 29) illustrated most of the characteristics of the building supported by the following analyzing points.



Figure28, Figure29: LocHal library interior architecture characteristics

goood.cn 2019

- The design successfully realizes the function of the building as public space with different tasks.
- Most of the building is paces are free from barrier to ensure more freedom and flexibility.
- High ceilings and flat floors in order to give the feeling of comfortability.
- Strong steel structure to match the types of duties and the expected number of visitors.
- The design mainly depends on natural light through using skylights and large dimension openings.
- Particular safety measurements and standards to avoid potential hazards and risks.
- Simplicity philosophy with clean and straight lines.
- Indoor plants enhance the space aesthetics, purify the air, and reduce the level of stress.
- Durable, appropriate and movable furniture that matching the tasks and functionality of the space.
- The reform of historical space objects like the usage of wheeled train as main table.
- Durable lighting units
- The extensive use of raw and rough materials essentially steel, concrete, glass and wood.
- The limited usage of ornamentation, depending on minimum number of colors.

8. RECOMENDATION

- To create studies in the area of architecture and interior architecture it is importance to support your study with the background, origin and the history of the selective style in order to obtain appropriate degree of integration and authentication.
- Industrial interior architecture style consider one of the ideal reference for designers whom looking for functionality.
- Interior designer must be careful about the methodology he used to select from industrial interior architecture. Any incorrect choice will affect privacy and the identity of recipient style. Industrial interior architecture has plenty of ideas and elements many of them may be unsuitable for other types spaces.
- Further studies can focus in the financial cost efficiency of industrial interior architecture due to its characteristics of minimalism tendency, durable material, strong structure and low maintenance costs.
- More search and analysis required especially about the characteristics of industrial interior architecture style materials than other types of styles.
- Many ideas and measurements about sustainability consideration and safety can be guided from Industrial spaces.
- Industrial interior architecture style enhances the vision about ergonomics and anthropometry characteristics and measurements in order to match the consideration of workers interaction with machinery and dynamic environment.
- The continuous updating and expansion of most type of industries spaces require continues tracing with researches and flowing up to practical situation of these updates.
- Designers can achieve a recognizable aesthetic vision and impression if they recognize the methodology and the philosophy of industrial spaces.

9. CONCLUSION

Industrial architecture style proves its effective existence within the entire styles of interior architecture. The combination and the integration of simplicity and functionality as main trends of the style support its expansion and usability. The minimalism features let the style achieve the advantages of being guidance design model of cost reduction and financial efficiency. The sustainability procedures and the efficiency of using resources of industrial interior architecture style are types of essential features can be transform and utilize in other styles. The flexibility of industrial interior architecture style introduce the capability of reorganize and facilitate any required alteration or updating. The style successfully achieve distinguish aesthetic features in spite the priority of function as essential target. The openness of style spaces increases the level of communication between the different sections and the cooperation between workers. The high risk degree of work circumstances initiates the commitment to follow accurate and cautious measurements of safety and protection. Industrial interior architecture style considers a promising field for future studies.

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