

Designing a Startup Incubation Center in Bahrain: Theoretical Ideas, Spatial Requirements and Architectural Ambience

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Abstract

Achieving the goals of Bahrain's Economic Vision 2030 requires a purposeful shift towards a diversified, non-oil economy. However, a significant gap remains in the availability of infrastructure that supports the emerging entrepreneurs. Although Bahrain has experienced notable growth in startup activities, there is a lack of purpose-designed spatial environments capable of supporting the progression from conceptual innovation to tangible market products. In fact, there is a need for a Startup Incubation Center in Bahrain. To facilitate the design of such a place, this research examines the important psychological, economic, and architectural factors for cultivating a resilient entrepreneurial ecosystem following the 'research for design' paradigm.

It employed an in-depth analysis into the influence of the built environment on creative productivity, complemented by a systematic analysis of users' needs related to spatial flexibility, privacy, and collaborative interaction. It adopts a mixed-methods approach to develop evidence-based architecture design guidelines. Qualitative data were obtained through an analysis of local and international case studies. Moreover, technical research was conducted into passive cooling strategies and intelligent building systems employing "kinetic facades."

The findings emphasize the importance of establishing a well-defined spatial hierarchy structured around five primary functional zones: public engagement and networking, innovation, incubation, a rentable "startup park," and administration. Key spatial typologies identified include advanced fabrication and technology laboratories supporting VR/AR and robotics development, flexible co-working environments, and interactive exhibition space to connect emerging talented people with big companies and international investors.

It demonstrates that architecture of the project should create a community-integrated spacial experience through adaptable spatial relationships that accommodate diverse scales of innovation, from individual experimentation to collective production. By incorporating visual connectivity through mezzanine levels and transparent partitions, alongside passive environmental strategies, the proposed center should offer a human-centered, environment that enhances creative productivity while contributing to the long-term economic transformation of Bahrain.

Keywords: Startup Incubation, Innovation, Entrepreneurship, Architecture, Flexibility, Technology.

Introduction

Bahrain's Economic Vision 2030 places strong emphasis on economic diversification, innovation, and the development of knowledge-based economy as key drivers of long-term sustainability (Economic Development Board Bahrain, 2008). In recent years, the Kingdom has experienced a growing interest in entrepreneurship and technological innovation; however, this growth has not been supported by sufficient built-physical environment that enables startups to evolve from conceptual ideas into viable commercial enterprises. Existing entrepreneurial initiatives often prioritize financial and managerial support, while the architectural and spatial conditions necessary to encourage creativity, collaboration, and experimentation remain limited (Grimaldi & Grandi, 2005). In other words, a significant infrastructure gap remains; especially, the kingdom lacks dedicated physical environments that support people to effectively transition creative ideas to successful commercial enterprises.

In this context, a 'Startup Incubation Center' is conceived as an integrated architecture ecosystem that responds to this gap by providing mentorship, advanced technological facilities, and flexible collaborative spaces within a single, cohesive environment. Innovation is understood in this project as a human-centered process that depends on creativity, interaction, and continuous development. This project is needed fundamentally because innovation is a human response to complex social and technological challenges, requiring a journey from the initial "spark" of an idea to its meaningful implementation as a tangible product. Without such innovations, Bahrain will not progress.

As Robinson states:

"There is no doubt that creativity is the most important human resource of all. Without creativity there would be no progress and would be forever repeating the same patterns".

Robinson, 2001:18

The primary aim of this project is to establish a startup incubation center that supports technological innovation while connecting emerging creative talent with investors, professional networks, and the wider market. The key objectives are:

- (1) to design flexible co-working spaces based on startups, needs of entrepreneurs and provide all the resources that support startup growth.
- (2) provide advanced fabrication and technology laboratories that facilitate prototyping and product development; and
- (3) create exhibition and networking spaces that promote knowledge exchange and collaboration.

By fostering an environment of "creative destruction," where new ventures can challenge and reshape existing markets (Schumpeter, 1934), the project seeks to empower Bahraini youth and contribute to the realization of Bahrain Vision 2030.

Theoretical Framework

This project requires research that focuses on the relationships between creativity, innovation, entrepreneurship, and the built environment. Creativity is defined as the ability to create new ideas, while innovation refers to applying these ideas in a practical and useful way (Detrich, 2004). Creativity provides the initial spark for new ideas, while innovation represents the entire process from ideation to implementation. Innovation is not an individual activity; rather, it develops through interaction, continuous evaluation, and testing of ideas among people (Liedtka et al., 2017). Therefore, environments that support interaction, networking, and shared learning play an important role in encouraging innovative thinking (Manzini, 2015). As shown in the Table 1, zoning strategies include open plan spaces, semi-open spaces, and enclosed pods that have different degrees of privacy and acoustic performance (prykhodko, 2025).

Creativity is strongly influenced by psychological and environmental factors. Research has shown that creativity increases in an environment that provides comfort, motivation, and low level of stress (Csikszentmihalyi, 1996). This can be directly affected by architectural elements such as natural lighting, acoustic comfort, and materials and colors used in space (Sternberg, 2001; Agustin, 2022). Moreover, biophilic design elements such as the use of natural materials, plants, and views of Nature can be used to create a sense of comfort, improve well-being and the ability to concentrate (Bianchi, 2023). As illustrated in the Table 2, biophilic factors such as plants, natural light, natural materials, and water features are linked to lower stress levels, increased concentration, and positive moods (Prykhodko, 2025). The Figure 1 shows the relations among light, Nature, materials, sound, and space in influencing focus, sense of belonging, and creative performance in a design setting and explains how these factors interact with each other as Agustin (2022) describes it. An environment that has both collaborative and quiet areas will also help to seamlessly switch between group and individual work.

Entrepreneurship refers to the stage where the concepts of creativity and innovation are implemented into tangible projects, businesses and services. Startup incubators therefore serve as tools for such facilities as shared resources, networking, and collaboration, thus reducing the challenges associated with early-stage entrepreneurship (Audretsch, 2001). Architecture contributes to this process by shaping spaces that enhance productivity, interaction, and identification. In alignment with the Economic Vision 2030 of Bahrain, this project considers architecture as an enabling tool for innovation, economic diversification, and the development of a knowledge-based economic economy (El Messeidy, 2019).

Research Methods

The research uses a qualitative approach, which is based on a review of literature along with a case study analysis. The literature review discusses the concepts of creativity, innovation, entrepreneurship, and workplace design. The case studies were chosen for relevance to incubation for startups and innovation spaces, specifically for flexibility, user experience, and functionality. This involves one local case study and two international as follows. Data from the local case studies were obtained by physical observations and an interview of the management while the data for the international case studies were obtained from the published internet sites. The Case studies were as follows.

1. Diwan Hub in Bahrain,
2. Station F in Paris, and
3. E5 Culture Activity Center in China.

In terms of the local case study: the Diwan Hub in Bahrain, three visits were made to the site for observations during which the facilities of the building, the spaces and arrangement of activities were made and recorded in plans obtained from the management. This was followed by an interview with the manager of the place, which lasted an hour, and 10 interviews of users of the place which lasted half an hour with each participant. Interviews were open, and unstructured allowing the respondents to unfold their insights as they wished. However, probing questions were raised in order to divulge the specific issues such as users needs and how they have been met in the design of the place.

In terms of the international case study, architectural details available in the published literature were downloaded and recorded, collecting as much information as available. Often, plans were available together with descriptions of the architecture of the buildings. Internet was searched using Google, and particularly through the 'Archdaily' website.

The analysis was done in relation to observation of space planning, site and surroundings, adaptability, and biophilic design integration, and interaction. The above approach enables the comparison of designs in relation to functionality and interaction in relation to the proposed incubator center.

Findings

Case Studies

The case studies highlight the key architectural principles for successful incubation for startups. For example, Diwan Hub shows how flexibility and shared workspaces can promote collaboration, though it lacks lab space. Station F shows how an entire abandoned building can be converted for adaptive reuse to accommodate thousands of startups, while still facilitating social interaction. E5 center shows how natural lighting, open space, and a comfortable environment can contribute to concentration and innovation. The lessons from the case studies cover flexible layout, access to natural lighting, a balance of collaboration and private spaces, and innovation-friendly and productive space.

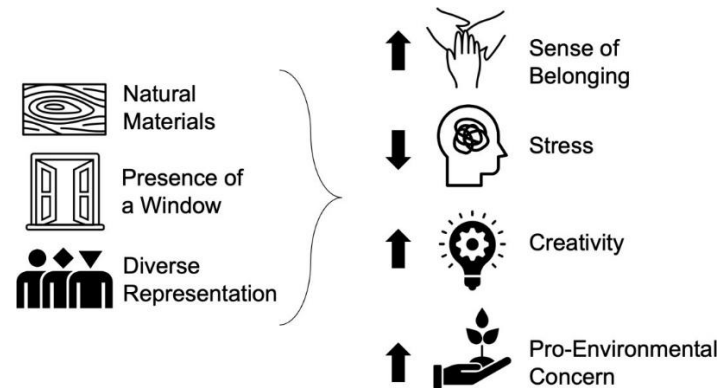


Fig 1: Conceptual diagram highlighting hypothesized relationships between independent and dependent variables

Source: Agustin, 2022

Table 1: Zoning strategies in coworking spaces and offices of a new type

Source: prykhodko, 2025

Zoning Type	Description	Advantages	Limitations
Open-plan space	A barrier-free area without partitions	High configurability- Facilitates communication	Elevated noise levels- Limited privacy
Semi-open	Areas divided by lightweight movable partitions and screens	Balances interaction & privacy- Enables rapid zone reconfiguration	Requires additional setup time
Enclosed pods	Enclosed booths or phone booths for one to two persons	Provides maximal acoustic and visual privacy- Allows microclimate control	Restricted mobility- High installation cost.

Table 2: Elements of biophilic design and their impact on users

Source: prykhodko, 2025

Element	Description	Psychophysiological Effect
Live plants	Green walls; potted plant arrangements	Reduction in cortisol levels; enhancement of concentration (~15 %)
Natural daylighting	Panoramic windows; skylights	Mood enhancement; decrease in fatigue
Water features	Compact fountains; aquariums	Activation of the parasympathetic nervous system; relaxation
View of nature or landscape	Window openings overlooking green areas or water	Stress reduction; cognitive restoration

Users and Spatial Requirements

The startup incubator center that specializes in tech innovations bring together a wide range of users, from startups, entrepreneurs, developers, mentors, investors, technology professionals, and social community. This diversity defines the organization of spaces,

balancing open collaborative areas with more private and specialized zones to support different work styles and levels of interactions.

The survey shows that, most potential users emphasize the importance of privacy in shared workplaces (Figure 2). This highlights the need for a clear hierarchy of spaces from open areas to enclosed offices and meeting rooms to support different work preferences. Interviews also show that the users value variety and flexibility in their environment, enjoying changes in the layouts, views, and seating style. Moreover, social amenities such as cafés play a key role in attracting users and enhancing productivity.



Fig 2: Requirement of General Spaces
Source: Author, 2026

Program Charts

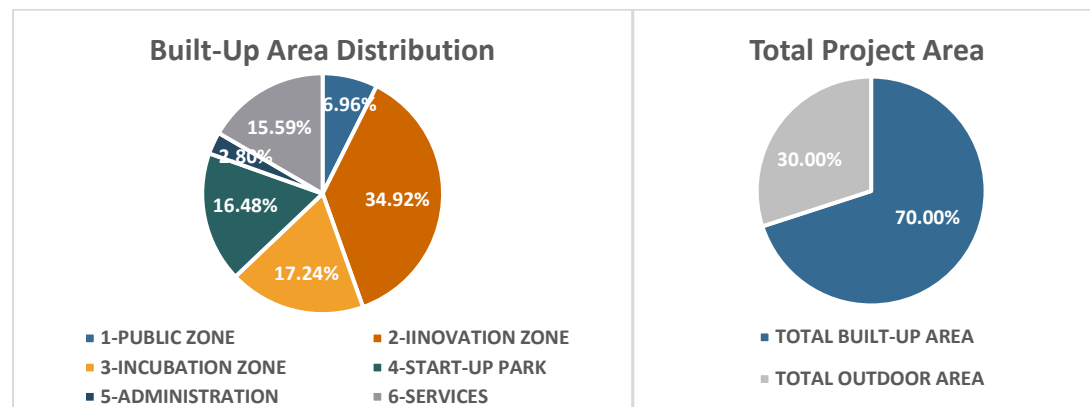


Chart 1: show the project built-up distribution.

Chart 2: show the total project area.

Project Program

The project program envisages a clear and functional distribution of spaces that directly serves the project's aim of creating creative, innovative and community interactions. The public zone is the welcoming spot to inspire and give an idea about the project, as shown in the Chart 1 & Chart2). By giving the innovation zone, the largest footprint shows that this area is the heart of the project, learning, creating, and experimentation. The surrounding incubation zone, and the Start-Up Zone work together helping the users move from skills to launching projects. As for the administration and services area to ensuring smooth operation and maintain overall efficiency.

The balance between built-up spaces (70%) and outdoor areas (30%) provide both functional and accessible environments for gathering and networking. Overall, the program aligns with the project vision focusing on users and their experience.

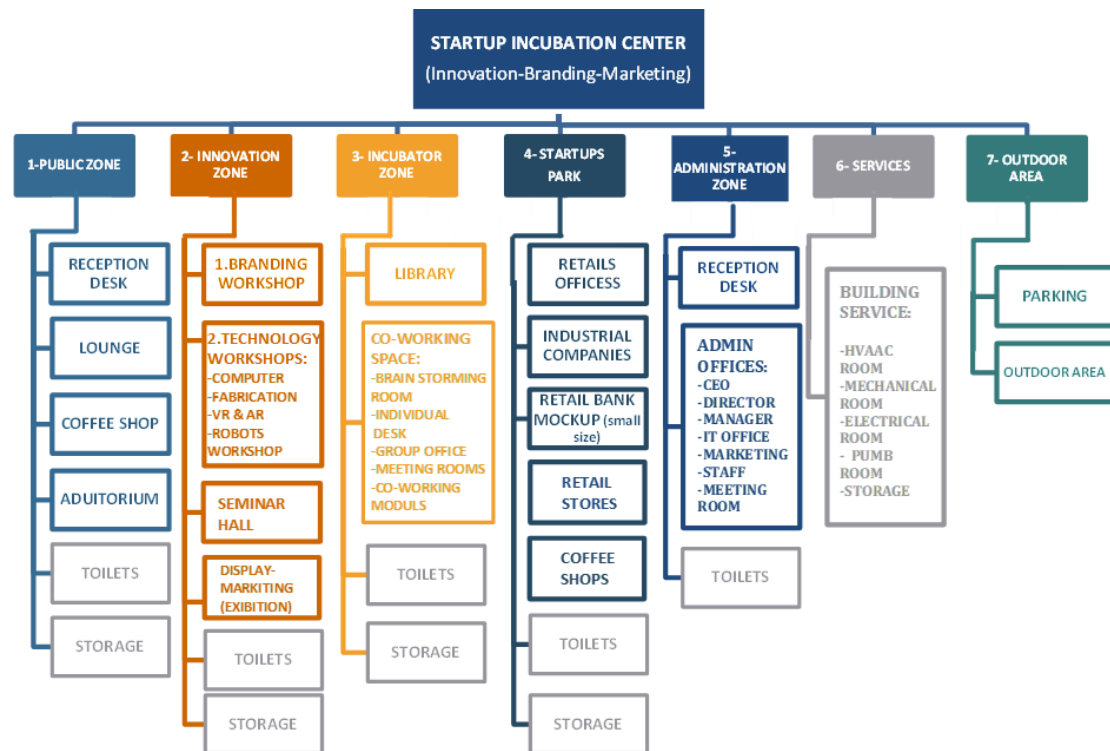
Spatial Organizations

Accordingly, the research identifies 7 zones as follows.

1. Public Zone,
2. Innovation Zone
3. Incubation Zone,
4. Startup Park
5. Administration Zone
6. Services and
7. The outdoor area.

It thus proposes to organize the spaces as per the table shown below.

Table 1: Project Zones and spaces
Source: Author, 2026



Ambience

It was noted that the ambience that have been created in the three case studies were similar and could be identified as being ‘friendly, energizing and exploratory.’ Needless to say that such an atmosphere suits well with the intended purpose of this building. The buildings appeared to be less formal and therefore ‘friendly’ from the external appearance. Most interior spaces also had a similar ambience, yet with a provocation of search and exploration. These had been achieved by means of articulating the following.

Case study	Aspects articulated	Ambience Created
1. Diwan Hub in Bahrain,	Enclosure, lighting, surface finishes, exposure of materials	Friendly and invigorating environment
2. Station F in Paris,	Volumes of space, scale, spatial progression, views and vistas.	Intimate, cosy and exploratory environment.
3. E5 Culture Activity Center in China.	Surface texture, Colours, spatial volumes, progression	Friendly and intimate environment.

Conclusions

This research explored the relationship between creativity, innovation, entrepreneurship, and architectural spaces in a start-up environment. The findings show that the design of space has direct impact on how people work, collaborate, and develop ideas. Flexible layout design is essential for accommodating different forms of work and various stages of growth. Well-organized spaces and flexible environments improve functional characteristics and promote smooth transitions between collaborative and concentrated working.

In addition, environmental comfort, especially natural daylight and acoustic control, is also linked to enhanced productivity and focused working. It is concluded that these findings

should guide the design of the project by shaping spatial zoning, workspace flexibility, and the passive and active environmental strategies that could support innovation and efficient work process. It is suggested that the proposed Startup Incubation Center should translate these findings into a comprehensive design approach that could support Bahrain's Vision 2030, by providing a human-centered, innovation-friendly environment. There is no doubt that such a project will contribute to the progression of innovative start-up businesses and the development of a resilient and diversified economy in Bahrain.

Key Conclusions

1. Flexible and adaptable spaces support different working styles and startup ventures.
2. Comfortable environments with access to daylight improve focus and productivity.
3. A balance between collaborative and individual workspace enhances overall experience and functionality.

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Ethical Issues

This research was carried out in line with academic ethical principles. All references and sources were clearly acknowledged, and the research only used public data available in the field. Interviewees were fully aware of the data being gathered and consented to participating in research. There was no use of personal or sensitive data.

Conflict of Interest

There is no conflict of interest related to this project.

Availability of Data

Data generated through this research is available for scrutiny and can be provided upon request.

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