

Environmental Entrepreneurship Technology and Its Impact on the Design of Sustainable Small and Micro Enterprises

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Submit Date: 2022-09-22 21:05:58 | Revise date: 2022-10-15 01:15:29 | Accept Date: 2022-12-02 05:31:36

DOI: 10.21608/jdsaa.2022.132721.1223

KEYWORDS:

technology, environmental entrepreneurship, design, sustainability

ABSTRACT:

The past few decades have witnessed a steady rise in environmental entrepreneurship due to its importance in economic growth and job creation. It is not surprising that the Sustainable Development Goals recently adopted by the United Nations adopt promoting entrepreneurship as one of its objectives under the axes of education and economic growth, and interest is increasing in environmental entrepreneurship, which is traditionally defined as Launching and promoting new business projects as a means to advance the development and sustainability of economies in the world. Studies have emphasized the need for leadership in education because of its impact on the behaviors and aspirations of individuals who seek to launch their new projects. To activate this, the trend of new environmental entrepreneurship in design will be studied in terms of features and technology, and the link between entrepreneurship on the one hand and environmental sustainability in design, both formally and functionally. (form, technology, function...) on the one hand and put forward a new vision for the development of the already existing traditional methods of entrepreneurship, on the other hand, and accordingly the interest in teaching entrepreneurship as a method that enables students of all kinds) to practice innovation, research, deduction and exploitation skills Opportunities to produce added value) where the importance and role of small and medium enterprises for environmental entrepreneurship in the economic advancement of most countries of the world was concluded, as these projects represent the bulk of the private business sector in most countries, including Egypt, and for all these reasons, identifying environmental entrepreneurship has become an important matter, and it has become important to encourage students and youth to a culture of self-employment and the establishment of small projects to form a global vision of environmental entrepreneurship, similar to highly differentiated countries in this area

1-Introduction

Recently, a lot of business incubators have appeared in the Arab region, and it has been confirmed that entrepreneurship is going through many frustrating challenges, as it was noted that there is no plan and an integrated entrepreneurial system and the spread of selectivity among some financing companies, so they deliberately support emerging companies from their country or from certain countries only and to research About quick profit and also the exploitation of entrepreneurs on unfair conditions and taking a large percentage of the investment under the pretext of providing services such as guidance, advice and favouritism sometimes.

In order to solve this, the interior designer realized the importance of studying the relationship between environmental product designs for entrepreneurship in the internal vacuum to add a new dimension with psychological effects on the one hand and to contribute to economic growth to achieve a greater level of individual income and a greater level of well-being on the other hand, and this requires various responsibilities that the entrepreneur must do It includes: solving problems, setting goals, taking moderate risks as a skill, carrying out tasks and predicting results. Therefore, the designer in general and the interior designer in particular were interested in studying environmental entrepreneurship projects, where they will study how to expand the application of environmental entrepreneurship education in study projects and their impact. We do not limit our study to launching new environmental business projects, but we use this launch as a means to develop the entrepreneurial mindset and build an advanced base of life skills appropriate for the twenty-first century that can be used to create and develop new projects for all elements of interior design and furniture so that they are consistent and integrated with the goals of sustainable development.

2- Environmental entrepreneurship concept:

It is the ability to develop and manage projects while bearing all potential risks in order to achieve profit. The idea of environmental entrepreneurship is based on a basic base, which is the establishment of a new project or any new business, through the resources that are available from its workers, capital and raw materials, in a manner that does not harm the environment and is consistent with any One of the seventeen sustainable development goals, which are illustrated in the following figure:



Figure (1) (1): sustainable development goals
<https://www.unicef.org/sdgs>

From the above figure, it is clear that:

- The sustainable development goals are:
 1. No poverty
 2. Zero hunger
 3. Good health and well-being
 4. Quality education
 5. Affordable and clean energy
 6. Clean water and sanitation
 7. Affordable and clean energy
 8. Decent work and economic growth
 9. Industry, innovation and infrastructure
 10. Reduced inequalities
 11. Sustainable cities and communities
 12. Responsible consumption and production
 13. Climate action
 14. Life below water
 15. Life on land
 16. Peace, justice and strong institutions
 17. Partnerships for the goals
- The Sustainable Development Goals are a global call to action to end poverty, protect the environment and the climate, and ensure that people everywhere enjoy peace and prosperity.
- The sustainable development goals are interrelated, although each of them has its own specific small goals, representing a total of 169 goals.
- The sustainable development goals cover a wide range of social and economic development issues, hence the importance of entrepreneurship in general and environmental ones in particular

3- The difference between environmental entrepreneurship and business management

Many people do not know the difference between the terms of leadership and management related to business, especially environmental, because of the convergent verbal meaning between them in the Arabic language, as each differs from the other in meaning, goals and skills required. The following table shows some of the differences between them:

No	Environmental Entrepreneurship	Business Management
1	It is the ability to develop and manage environmental projects while bearing risks in order to achieve profit, and the idea of leadership is based on a basic basis, which is the establishment of a new project or any development in a project.	It is the management of all business by means of supervision and control such as accounts, finance, project management, marketing, human resources, work performance and decision making.
2	Entrepreneurship cares beyond the private and internal details of the business and looks at the broader picture and sets its vision for projects.	Business administration is concerned with the details of the internal work, especially the technical details
3	skills related to the project and have special technical skills	Management related skills only
4	It is not necessary for the entrepreneur to specialize in accounts, legal affairs, or marketing, as he is interested in working from a more innovative and developmental external perspective.	Must major in Marketing, Legal or Accounting

Table (1) : difference between environmental entrepreneurship and business management

3-Types of Environmental Entrepreneurship:

A. Small Business Entrepreneurship

- It constitutes a large percentage of the general total of projects, and contributes to employment to a large extent.
- The majority of these business owners run their own businesses.
- They finance their project in a personal way or from small commercial loans from banks.

B. Scalable start-ups

- In contrast to small companies, where the environmental entrepreneurs in these companies start from day one looking for how to attract investments to expand their business and earn more money.

C. Entrepreneurship for large companies

- Most of these companies grow through a commitment to maintaining innovation.
- Interested in introducing new and diverse products, and may lead to some developments in customer tastes and new technologies.

Entrepreneurship goals:

Environmental entrepreneurship aims to achieve a set of goals, which are:

- 1- Presenting best practices and innovative ideas in environmental entrepreneurship to drive further research
- 2- Achieving economic paths that ensure the sustainability of compatibility of shared value systems in design aspects
- 3- Providing recommendations and proposals that help entrepreneurs to succeed in their applied design projects
- 4- Facing difficulties and providing a helping hand to overcome all obstacles and creating ways to obtain financial support for the environmental project

4- The historical development of the emergence of the term entrepreneurship:

The concept of entrepreneurship goes back to the Austrian economist “Joseph Schumpeter”, who was born in the year (1883) and died in the year

1950. He explained the concept of the entrepreneur as that individual who has the will and the ability to transform a new idea or A new invention turns into a successful innovative process, and therefore the presence of entrepreneurial forces in the market and diverse industries as well as new business models are the reason why entrepreneurs are the ones who drive economic growth in the long run.

5-The concept of entrepreneurship in sustainable design:

Sustainability is defined as meeting the needs of the present without compromising the ability of future generations to meet their needs. It is based on three main pillars: economic, environmental and social. These three pillars, in other words, symbolize people, planet and profits.

Entrepreneurship in general and in sustainable design is characterized by the following:

- Personal traits (desire for management - self-confidence - psychological motives - ability to manage risk - seize opportunities)
- Design process characteristics (continuity and perseverance - innovation - openness and broad horizon - time management - accuracy and clarity - material motives adapting to the external environment) (Wang W, Zmeureanua R, Rivard H, 2005, Yudelson J, 2008)

5-1-The relationship between entrepreneurship and sustainable design for small and micro enterprises:

Entrepreneurship has a close relationship with the sustainable design of small projects, and this relationship is represented in a set of strategies represented by the following figure:



Figure (2) : Strategies for the relationship between entrepreneurship and sustainable design for small businesses

5-2-Stages of completing small projects to be entrepreneurial:

To ensure the success of projects, a plan must be developed for these stages:

- A. determining the goal
- B. A preliminary feasibility study for the project idea
- C. Finance
- D. Detailed feasibility study
 - I. environmental study
 - II. Marketing study
 - III. art study
 - IV. financial study
 - V. social study
- E. Prepare a time schedule for the project
- F. Execution and preparation

6-Applications for environmental entrepreneurship projects :

Actual practices of environmental entrepreneurship in some of the pioneering countries of this idea will be reviewed to find

convincing models for applying environmental entrepreneurship in all design projects and the goal number that they achieve from the sustainable development goals. These projects include the following:

- Furniture project for IKEA

- Educational projects to support entrepreneurship in Malaysia
- Educational projects to support entrepreneurship in China
- Entrepreneurship projects in Egypt

6-1 Furniture project for IKEA

An amazing career of success was experienced by “Ingvar Kamprad”, the founder of the IKEA Furniture Company in Smaland, Sweden, until he succeeded in establishing one of the largest furniture edifices in the world, the “IKEA” company in 1943 - when he was 17 years old. “IKEA” are his initials, the names of the village and farm where he was born.

Project Idea :

- The importance of diversity in products to reach the expansion of the volume of activity and profits

The difficulties encountered by the project and how to overcome them:

The increasing demand of customers on IKEA led to the reluctance of the products of major furniture companies, and “Ingvar” presented a fierce campaign, which was the biggest challenge for the company.

- Major companies boycotted suppliers dealing with IKEA; To prevent the startup from further differentiated in the market.

- “Ingvar” thought of creating a new mechanism for storing his products, which is “flat storage”, in which he relied on storing separate pieces of furniture without installing them, which contributed to reducing costs and giving a unique identity to “IKEA” products.

- A section has been added in each exhibition of recycling products to emphasize the importance of implementing sustainable development goals in product design(Gokhan NM,Needy KL ,2006)

In a short time, IKEA became the largest furniture production company in the world; After its spread throughout Europe, it succeeded in breaking into the Asian continent in the early nineties; Bringing the company's retail stores to

about 313 stores in 38 countries around the world



Figure (3) : 100% of the wood we use is FSC® certified or from recycled sources

<https://www.ikea.com>

cotton

A natural and renewable material that passes air well and has the ability to absorb moisture. Focusing on water efficiency and biodiversity through appropriate cotton textiles in the hottest climates and characterized by sustainability by reducing the use of pesticides and fertilizers and developing farming methods



Figure (4) : using cotton in furniture Supplements in IKEA

Wool and natural fibers

Wool is used through IKEA's own sources according to the Responsible Wool Standard (RWS). The wool and natural fibers (banana fibres, rattan,) have the following environmental characteristics:

- Renewable, biodegradable and recyclable materials
- Durable and strong natural materials
- The beauty of the materials increases over time and is stain-resistant

- The materials provide warmth and allow air to pass through
- Various patterns of design and beautiful shapes can be created by dyeing materials



Figure (5) : using wool and natural fibers in furniture Supplements in IKEA

Leftover and recycled materials

Use of recycled materials such as wood, plastic, paper and metals
Use of leftover materials from other processes
- It aims to reduce waste when innovatively designing products from leftover or recycled materials



Figure (6) : using leftover and recycled materials in furniture in IKEA

<https://www.ikea.com>

plastic

The use of plastic made from natural materials that do not harm the environment, such as plastic made from lactic acid, sugar cane, corn and sugar beets, to produce safe and recyclable products that are used in the microwave



Figure (7) : Using polyethylene terephthalate plastic bottles to produce a film that sticks to recycled wood panels

Bamboo

Bamboo that has been certified by the Forest Stewardship Council (FSC) is used and has the following environmental characteristics:

- . -very durable
- Tough and moisture resistant.
- Bamboo is used in a variety of forms, whether it is in the form of natural fibers, manufactured bamboo, or from compressed bamboo veneer.



Figure (8) :using bamboo in furniture in IKEA
<https://www.ikea.com>

6-٢ Educational projects to support entrepreneurship in Malaysia:

Malaysia achieved a civilized renaissance during a short period in the nineties, although it was one of the poor developing countries in Southeast Asia and was able, so we will discuss the environment for supporting entrepreneurship in Malaysia in general and the environment in particular, by analyzing in the next lines to benefit from their experience. .

The entrepreneurial environment in Malaysia is divided into two parts:

During university education:

Universities are creating companies between them and their students who have distinctive projects

- Universities provide students with logistical, technical and financial support in exchange for income when this company is successful, as well as part of the intellectual property of the project.
- Offices, laboratories and volunteer students provide financial sums to this company, which was founded by the student in cooperation with the university

After graduating from university:

All the young people who graduated from the university, and they have a project idea and did a study on that idea and it has not become a model or a product yet, he does the following steps:

- the owner of the idea submits a request to a business incubator called Cradle, which means "cradle" and presents his idea to them
- If the "cradle" like this idea and get approval, they will fund it as follows:

A- The first conditional gift: giving the owner of the idea approximately forty to fifty thousand dollars, in three installments, in the form of conditional gifts, meaning that he does not have to return the amount if he succeeds in implementing what he promised in his plan.

B - The second conditional gift: giving the owner of the idea approximately one hundred and twenty thousand dollars after the owner of the idea succeeds in developing the initial product, where he submits a business plan to Cradle again to market his product and start selling it in the market, at this stage the entrepreneur establishes the company and markets his product in the market



Figure (9) : Using robots to promote small industries in Malaysia
<https://techxplore.com/news/2019-06-robots>

C -The third conditional gift: Giving the owner of the idea nearly millions of dollars in case he continues his success and wants to expand in the market and reach the world. The owner of the idea submits his business plan to a venture capital company supported by the Malaysian Ministry of Finance called “MAVCAP” to develop the product further, expand the market and export in return for a percentage in the company He negotiates with a venture capital firm about it.

Measures taken by the state to support entrepreneurship:

In addition to all the initial facilities presented above for starting or developing a global project, the matter does not stop at this only and takes additional measures to support and encourage projects in general and design projects in particular as follows:

- Supports and invests in many environmental projects that specialize in certain areas, including

clean energy and other projects that do not harm the environment, whether in the manufacturing stages or during applied use.

-Exempting these large companies from a percentage of taxes.

We conclude from the above that this integrated system for entrepreneurship in Malaysia helps the person who has just an idea to reach an international company or a company listed on the stock exchange over the years, and this is different from what we have in the Arab world, and this does not prevent the presence of some negatives, but there is an integrated system Supported by the state, the private sector, and the educational and university sectors.

6-3- Environmental entrepreneurship projects in Egypt:

The micro and small entrepreneurship projects sector is the backbone of the Egyptian economy, and the Egyptian government has paid great attention to entrepreneurship projects, especially since President Abdel Fattah El-Sisi stressed the need to take care of entrepreneurs, and announced among the recommendations of the World Youth Forum 2018 the launch of an international initiative to train 10,000 An Egyptian and African young man on entrepreneurship, establishing 100 specialized companies in Egypt and Africa in this field, and directing state institutions to establish a regional center for entrepreneurship. Given that companies consider environmental sustainability in design as one of the most important factors for the success of any project, a four-step approach has been developed that is summarized as follows :

- a. Setting the rules: Companies need to clarify their ambitions, which are to reduce costs and improve profit margins. and how to choose trade exchanges based on value, costs and sustainability.
- b. Determine the basic information: The best companies conduct a careful analysis of the

cost of existing products and newly designed products. Along with other considerations such as detailed costs of materials and capital expenditure requirements, they determine the level of sustainability for each product, taking into account other factors such as emissions and recyclability.

- c. Accelerate the process: Flexible working methods, when done correctly, reduce project delivery times from 18-24 months to 5-6 months..
- d. Consistency in work: following up the results accurately in order to save expenses completely, and to ensure the continuation of this savings.

The importance of environmental entrepreneurship in Egypt:

The entrepreneurship sector receives special attention from the Egyptian government, which is keen to create a climate for young entrepreneurs, whether by supporting a culture of self-employment or by providing the necessary funding for their projects and initiatives. The focus on environmental entrepreneurship among the youth has become one of the topics that cannot be ignored because it is closely related to economic growth. Entrepreneurship contributes to enabling young people to establish private projects, which contributes to reducing unemployment rates, as it is the main source of job creation in developed and developing economies alike. The idea of environmental entrepreneurship represents the clear path towards obtaining the highest possible profits without the need to work for others and under their leadership. The innovative thinking of environmental entrepreneurship provides a large area of freedom. There is great importance for entrepreneurship because of the benefits it provides represented in the set of contributions and innovations made by the new pioneers to society.

- Egypt maintained the first place in the Middle East and North Africa region in terms of the

number of financing and investment deals directed to emerging companies in the region, during the year 2020 with 33% as the most established and registered countries for start-up companies, and the United Arab Emirates came in second place with 27% Jordan followed with 11%.

COUNTRY WHERE STARTUP IS REGISTERED OR INCORPORATED

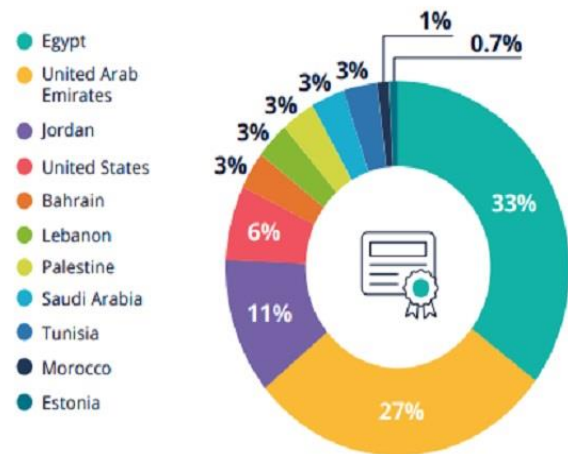


Figure (10) : Egypt's ranking in the field of entrepreneurship for the year 2020

<https://rcssegyp.com/3094>

Finally, we review the most important efforts of Egypt to encourage entrepreneurship in general and entrepreneurship in particular, as follows:

- The Rowad Egypt 2030 project was established under the supervision of the Ministry of Planning, Follow-up and Administrative Reform, by Ministerial Resolution 88 of 2017, with the aim of enabling young people to establish private projects.
- Nine business incubators have been established (including distinguished ones in the field of artificial intelligence and tourism, in addition to an Egyptian-African incubator).
- Expansion of business incubators in universities and technical schools, and the first specialized artificial intelligence incubator at Alexandria University, and the first

technological incubator at Minya University, and another in Tanta and Qena were established.

- The Ministry of Planning and Economic Development, in cooperation with Facebook and the RiseUp Foundation, launched the first “interactive platform for entrepreneurship to support small and medium enterprises in the

- Middle East and North Africa.” In 2020, the Egyptian House of Representatives approved a draft law on entrepreneurship projects and small, medium and micro companies, in order to provide the appropriate environment to support these projects by providing different types of financing, technical and marketing support that suit the needs of this type of innovative projects.

- Holding several marketing exhibitions for entrepreneurship projects in cooperation with the Medium, Small and Micro Enterprises Authority, such as the “Our Heritage for Handicrafts 2022” exhibition.

And we will analyze the experience of entrepreneurship at Helwan University to guide it as an applied model to encourage entrepreneurship in Egypt

- Establishing the Office of Technology Incubators for Entrepreneurs (with the aim of transforming promising ideas into innovative products and services - producing a graduate who competes in the labor market - employing the outputs of applied scientific research and innovations and transforming them into products and services)

- Adopting a course to incubate entrepreneurs and owners of start-up companies The incubator program selects ideas that are able to achieve a return for its financing, and this funding is provided by the Academy of Scientific Research, and it has a special part for the implementation of samples, a part for purchasing raw materials, and another part for logistical training on how to manage business from marketing and also thinking in a scientific way.” To achieve sustainable economic growth in Egypt, where it

works To incubate startups in a supportive environment, providing entrepreneurs with strong business knowledge and skills, with the aim of transforming promising ideas into innovative products and services. The office aims to map and attract investments, deal with climate change and environmental challenges and through projects achieved on the ground, maximize the use of ICT within the framework of the state’s plan for digital transformation, and spread societal awareness in finding solutions to the challenges of climate and environmental change, empowering women in the field of confronting Climate change challenges. Under the slogan “Towards a Vital Sustainable Economy” for entrepreneurs and start-ups

It includes the office provides incubation services for start-up companies, which are:

Financing for startups during the incubation period.

- a) Providing technical and technical support to implement the ideas inside the incubator with the help of experts from inside and outside the university.
- b) Providing technical capabilities in research centers, laboratories and workshops at the university to implement prototypes.
- c) Networking with individuals and investors in promising ideas and emerging companies.
- d) Contracting with developers to develop and promote the business of the technology incubator.
- e) Contracting with experts to provide legal and financial advisory services to the incubated companies.

The pre-incubation services for start-up companies are:

- a) Training in design thinking and developing prototypes.
- b) Implement idea generation camps to discover promising entrepreneurs.

Post-incubation services are also represented in:

- a) Marketing for startups and their goods and services.
- b) Follow up the growth and development of companies graduating from incubators.

7- Conclusions

Encouraging environmental entrepreneurship projects for young people, whether students or graduates, by linking the design between the three determinants (entrepreneurship, sustainability, small and micro projects) that leads to the following:

- a. Contribute to treating youth unemployment by supporting small industries and investing in more green jobs.
- b. Preserving the natural resources of the environment through ecological designs characterized by purity and simplicity in form and function.
- c. Reducing the demand for raw materials and using recycled or leftover materials
- d. Energy saving: making products from recycled materials requires less energy than making them from new raw materials.
- e. Reducing climate-changing carbon emissions: because less energy is used to obtain and process new raw materials, and this results in a reduction in carbon emissions. It also keeps potentially methane-releasing waste away from landfill sites.

8- Results :

- The technology of designing environmental entrepreneurship projects is not considered a new design trend, but it is the use of different and futuristic principles and methods in the environmental design thought of entrepreneurship projects. -Interest in applying the new environmental design philosophy in various entrepreneurial projects helps countries to face multiple

environmental, economic and social problems.

- The choice of materials plays an important role in the design of environmental entrepreneurship projects, where recycled materials, remnants of manufacturing materials, or materials that can be recycled after use are used, whether they are modern technological materials or environmental raw materials.

-The inclusion of environmental entrepreneurship education within education systems leads to encouraging investment and supporting entrepreneurship, especially in the Arab countries.

9- Recommendations:

1. The research recommends taking advantage of the characteristics of environmental entrepreneurship thinking when developing various designs that are simple, effective and flexible in form and function.
2. The interior designer must study ways to achieve environmental entrepreneurship projects, whether in university life or after
3. The necessity of reconsidering the policies of some institutions supporting entrepreneurship and providing facilities to entrepreneurs.
4. Encouraging the launch and promotion of new environmental business projects as a means to advance the development and sustainability of the economy in the world

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