



## Evaluation of New Opportunities and New Business Initiated by Contemporary Technologies

Javad Malakootikhah<sup>1</sup>, Mehrnaz Salimi<sup>2</sup>

Email: [jmalakootikhah@ut.ac.ir](mailto:jmalakootikhah@ut.ac.ir)

### Abstract

Contemporary technologies, based on their relevant applications, have introduced new opportunities to human being. A technology without a useful application would be only left as an abstract curiosity and would never become known by all people but only some interested researchers. On the contrary, by introducing appropriate applications, the technology would become valuable in terms of commercial or relevant fields. The pioneers of contemporary technologies encounter a plethora of choices when commencing a new business. Producing and selling a particular new-technological product are not essential in setting up a new business. As a matter of fact, supplementing products, services and accessories are of high importance in reaching the maximum efficiency and revenue. Revolutionary technologies with considerable potentials for a variety of applications provide substantial opportunities for investors which are not necessarily constrained to that specific technology but related to the consumption or supporting relevant applications. The wide range of such applications and the relevant supporting fields and consequently the business and job opportunities originated from them, are deemed to unlimited and could never be stopped by anything. In this study, the new opportunities and new business for new technologies would be discussed.

**Keywords:** Contemporary technologies, New opportunities, New business, commercial, Management of new technology

---

<sup>1</sup>,\* Corresponding author: Researcher on Nanotechnology in The Science and Technology Park of the University of Tehran

<sup>2</sup> MSc Student of Tourism Management, Allame Tabatabaibii University



## 1. Introduction

New technologies have presented opportunities related to their applications to human beings, and these applications are conceived specifically to create new job opportunities. Throughout history, from inventing the wheel to nanotechnology, it was always like this. Each technology, without having any useful applications, remains as an abstract curiosity that except a few people interested, no one will be aware of its existence. However, when the applications for these technologies are discovered, the relevant technology from business perspective or similar areas, will be valuable and in this way it can fully be exploited. Initiators of new technologies face many choices in starting a business. A business should not necessarily be based on producing and selling a specific new technology product. For every produced product, there are some lateral goods or services for achieving the maximum peripheral / exploitation. Initiators of new technology must support these products. The more the lateral products be available, the more it will be people's want and attention, and it will be accepted for more sales.

Revolutionary technologies such as nanotechnology, with potential capabilities for many applications, provide opportunities for investors which are not necessarily unique to that technology, but it's also relevant to its applications or the applications that support it. The range of these applications and their support areas, and therefore, opportunities resulting from it, can be only limited by human's imagination which itself is not limited at all. We can name oil industry development and its products as an example which is not an invention per se but a natural product. Petroleum products have been recognized since a long time ago. 4000 years BC, the Babylonian, used the asphalt which was from an oil source nearby. There are also resources that show in Iran, they have used crude oil for drug and light uses. The Chinese also since the 4th century AD, drilled the oil wells and burned the oil to produce salt and evaporated salt water. In the 8th century, Baghdad streets were covered with tar and in the 9th century an Iranian chemist- Razi- separated kerosene oil and other components from crude oil. Marco Polo in the 13th century has said that oil fields in northern Iran, near Baku, which is part of Azerbaijan now, produced oil and freight it. This refers to the first ancestors of modern oil tankers. In the mid 19th century Baku produced 90% of the world's oil. These fields have been mentioned in documents from several hindered years ago (at least from the 9th century).

Therefore, it's nearly more than 1200 years that Middle East is producing oil but the use of oil due to the limited technologies at that time was limited. It was mostly used in constructing buildings or in lightning. This industry waited for further technology advances in the mid and late 19th century. In the early 19th century in America, a small industrial sale of " rock oil " which is what the word petroleum actually means, began to grow. This, as an unintended byproduct of the wells, was used for therapeutic use.



After the invention of wick lamp in 1857, demand for kerosene as an alternative for fuel derived from animal products, went up. And this caused the whales' savior. The chemist conditions also were better, and they progressed, and oil was used as a source to produce kerosene. But at the end of the 19th century, significant changes accrued that caused the development of kerosene industry. Internal combustion engine and progress in organic chemicals industry can be named among them. Undoubtedly, it was internal combustion engine that caused the processes of producing gasoline and diesel fuel at large scale, develop. These processes which included the refining catalyst, or “cracking” crude oil to useful cuts, in turn caused the development of a strong research industry that had a stake in the development of modern laboratory research. Organic chemistry industry is mainly come from the chemical paint industry based on tar, in Germany in the second half of the 19th century. With the technology of cracking and refining of crude oil, a large collection of small chemical molecules were achieved which later were used as the corner stone for the raw materials used in producing many of more complex combinations. This work was created through the development of chemical synthesis method. The capability of manipulating the chemical productions and compounds for producing newer ones helped us reach the new pharmaceutical industry which was itself due to the researches on the origin of biological and chemical treatment of these chemical productions.

There are many other industries and products that as the main source of their primary materials are dependent on crude oil, these industries are plastic, artificial fiber, organic materials, pharmaceuticals and chemicals used in agriculture and many other products as well as several other substances that are produced with these productions. Without exaggeration we can say that there are tens of thousands of new business, totally depended on the potential products derived from crude oil which mostly are for the 20th century. Each of these industries were separately began by an investor who had bold and creative ideas.

There were other technologies and inventions that many of their important applications were quickly found. One of these cases which is noteworthy, is X-ray technology which was discovered in the second part of the 20th century and was immediately used to prepare images of objects particularly inside the human body. The development of the first applications of this technology later led to the preparation of medical images industry. Today, all companies involved in this industry along with the equipments of preparing images, produce supported devices such as specific medical items. It can never be said that the value of X-ray is limited to produce images for medical purposes, although this is very important as well. An early observation on X-ray which caused materials to radiate light, led to the development of X-ray fluorescent spectroscopy industry, and by that a new business application to material analysis. A new discovery showed that by using X-ray refraction patterns, we can find atomic arrangement of organic, inorganic and biological materials, which are capable of forming crystals. Deviation of X-ray in space caused the spread of astronomy. X-ray lithography has helped us in making the electronic components smaller in the computer industry. In the mid 20th century, X-ray microscopes were developed that were able to see objects that usual optical were not able to see. This list of X-ray applications list is still being continued.



All of these applications created opportunities for business, and the investors took and are still taking advantages of these opportunities. Alongside the development and construction of a vast string of precision tools for business, the entrepreneurs needed softwares to control and develop their companies. they used these softwares to control the operations, help the repair services companies and many specialized applications. All these can be easily achieved by using X-ray industry.

Many of these businesses are the reflection of the 20th century needs. For example, before, in the United States of America, working with doctors and taking images of the patient, saving data with a computer key and sending it to a far radiologist for an x-ray technician, was impossible. But now this technology works so strong that it seems like not only the expert isn't far, but it feels like he is sitting in the room next door. Some technologies have potential features but for various reason these capabilities are not displayed. When the microwave oven was invented, it was remembered as a faster and more efficient way than the conventional ovens, for cooking. Ads that time showed a cook whom prepared food in a few minutes, and the family members were also enjoying every bite of it. It was predicted that the new microwave ovens would utterly send out the traditional gas cookers.

As it usually accurse about new technologies, the Ads didn't reflect the reality. This means instead of replacing the standard equipments used in the kitchen, it was just an add-on. There were many foods that when were cooked in microwave oven, didn't taste very good and many others like bread dough, didn't even look good too. Most kitchen dishes were not usable in microwave oven, because they had metal in them, which would spark up and fire in the microwave. The plastic containers that time, because of the heat created in food were melted. However, these ovens were easily used for heating last night's food or some particular ones. So the entrepreneurial thinking caused the production of dinner wares for microwave cooking. Food, which were already packed and ready to be cooked in microwave ovens, were produced.

Experimental chef found that many fresh vegetables in the microwaves cook fast and well. Cooking books for food to be cooked with tasty results to satisfy a happy family in the first advertisement were written. Prepared popcorn for the microwaves were produced, that released people from the dirty work and its preparation on stove. Today, special coatings for plates are sold to keep the water while heating the food in it. Special metal alloys that didn't reflect the microwave energy were produced. And now special thermal test transmitters can be put inside the meat to understand how much it has been cooked.

So microwaves are known as means of cooking that working with them is quick and easy among people and also it has a timer to set the cooking time. Today, people by selecting a button for foods such as popcorns and other ones, elect a certain time for each. In the microwaves the foot rotates on a rotating surface and at the same time, it is cooked without any spark and just by microwave radiation. The original models were too large, but now models in all sizes which can be put on the cabinet or even being installed on the wall, are available. In the United States having a microwave and a stove next to each other is a



common thing. In the kitchens, all these applications and supporting products, including the ovens, were developed by business activities and even the discovery of this device had happened in a research laboratory of Raytheon Co.

People who knew this technology, not only saw the equipments which used this technology but also the need for supportive products, and so they began to produce them. Then when this technology was used, others found new opportunities that by using them, improved this technology. They also used other applications which were all in their turn new and innovative.

## **2-Resistance to new technology:**

Introducing a new technology is always facing some resistance. Lovat movement in England in the early 19th century was a response to the endurance of weaving workshops with major frameworks into the markets and concerns about changes in employment and in pricing. Recently resistance to innovations such as nuclear power, biotechnology, and in particular, modified organisms into genetic ( specially agricultural products ) have affected the usage of these technologies. In the United States, nuclear power technology has been stopped and in Europe using the crops altered genetically has been accompanied with arguments that in near future this technology will not enter the public market.

Biotechnology, reshaping DNA, faced resistance but also indicated its value. Perhaps because of using this technology in basic researches and also in development of agricultural products. Nanotechnology was not also away from doubtful viewpoints and even resistance. Fortunately, discussing the risks and benefits of this technology has been started and there are researches being done with the aim of determining the nanotechnology products' impact on living organisms and the environment. But among more than 200 products around the world as nanotechnology, only one was out of market due to having negative impacts on people, and that was not actually a nanotechnology product. Initial tests conducted on carbon nanotubes and carbon forlorn demonstrated a percentage of nerve poisoning in fish exposed to these products. In other studies, pulmonary poisoning was observed in mice. While we need more studies to confirm and understand these findings better, but these results show that any investor should also consider the biological and environmental issues related to nanotechnology. Probably these current methods of assessing biological and environmental nanotechnology products and processes are inadequate and in future other new methods will be developed to provide new business opportunities for investors in nanotechnology.

These questions are not only related to nanotechnology products but as long as each process of producing has a flow of sewage and fecal materials so nanotechnology fecal material flow should be considered as well, and since the nanoparticles have diameters less than 100 nm, they go through all existing filters (the finest level of analysis they have is 0.22 microns or 200 picometere) so we need other



ways for collecting nanomaterials from industrial process. There is this possibility that the nanoparticles enter the air and so some methods to filter the air in front of the particles must also develop, this is important for the workers whom work in a nano-products factory, as well as people who live near the factory. Clean rooms and full protective clothing are common in some industries but the amount of protection services for nanotechnology industry must be separately approved. Here too, from these issues, many opportunities are created for nanotechnology investor. In fact, testing and measuring the credit in the broadest meaning of these terms have the ability to form the world's largest nanotechnology business. With an internet search we can achieve an extensive collection of published articles, studies and views on speculation. In connection with the toxicity of nanotechnology products and processes, these articles and opinions show the extensive concern in this case and many areas of nanotechnology applications, with toxic properties, that an investor should be aware of.

### 3-Conclusion:

Every new invention, new technology and new idea, brings capabilities and potentials for trade. The bigger and more revolutionary the idea be, more opportunities will be given to us. Business opportunities are not directly limited to patents and technology. Many of them are obtained through the supported products and services, to make the full potential of technology happen. For finding the opportunity, the nanotechnology investor, just faces one limitation and that is his own imagination.

### References:

- [1] M. C. Roco and W. S. Bainbridge, eds. 2001. Societal implications of nanoscience and nanotechnology. Arlington, VA: National Science Foundation.
- [2] M. C. Roco and W. S. Bainbridge, eds. 2003. Nanotechnology: Societal implications Maximizing benefits for humanity. Report of the National Nanotechnology Initiative Workshop, December 2–3.
- [3] Oberdorster, E., "Manufactured Nanomaterials (Fullerenes, C60) Induce Oxidative Stress in the Brain of Juvenile Largemouth Bass," Environmental Health Perspectives 112 (2004): 1058–62.
- [4] Lam, C. W., James, J. L., McCluskey, R., and Hunter, R. L., "Pulmonary Toxicity of Single-Wall Carbon Nanotubes in Mice 7 and 90 Days after Intratracheal Instillation, Toxicological Sciences 77 (2004): 126. This article can be found on the Internet at <http://toxsci.oxfordjournals.org/cgi/content/full/77/1/126>.



[5] An assessment of the need for testing of nanoparticulate materials can be found in Weisner, M. R., et al., "*Assessing the Risks of Manufactured Nanoparticles*," *Environmental Science and Technology*, 40 (2006): 4336–45; also available at [http://pubs.acs.org/subscribe/journals/esthag/40/i14/html/071506feature\\_wiesner.html](http://pubs.acs.org/subscribe/journals/esthag/40/i14/html/071506feature_wiesner.html).

[6] Wrle-Knirsch, J. M., Pulskamp, K., and Krug, H. F., "*Oops They Did It Again! Carbon Nanotubes Hoax Scientists in Viability Assays*," *Nano Letters* 6 (2006): 1261. This article can be found at [http://pubs.acs.org/journals/nalefd/promo/most/most\\_accessed/2006q2.html](http://pubs.acs.org/journals/nalefd/promo/most/most_accessed/2006q2.html) and is entry number 3 on that page.

[7] <http://www.azonano.com/news.asp?newsID=1261> (accessed October 10, 2007).

[8] <http://www.amity.edu/aint/>. A number of companies and centers have also been established: <http://www.nanovip.com/nanotechnology-companies/india?page=1>.

Archive of SID