

Challenges faced by solar energy businesses commerce essay

[Business](#)



The solar energy in Cyprus is a start up venture for new entrepreneurs. The solar heating systems are recently getting the attention of house owners and organizations due to increase in electricity charges and this presents an opportunity for a company to take advantage of the growing market in Cyprus. The objective of this research is to assess the relative importance over the next three to five years of the changes/trends identified in the PESTEL framework and look at the probability that the changes / trends may occur and their likely impact on the renewable business sector. Solar water heating is an example of solar thermal technology and has become increasing popular around the world. Accordingly to the mechanical engineers at the University of Wisconsin's Solar Energy Laboratory, an average four-person household with electric water heater needs about 6, 400 kilowatt hours of electricity per year to heat their water. Assuming the electricity is generated by a typical power plant with an efficiency of around 30 per cent, it means that the average electric water heater is responsible for about eight tons of Carbon Dioxide (CO₂) annually, which is almost double that emitted by a typical modern automobile (Anthony Grest, 2007). Solar water heaters are designed to last many years with little maintenance. The system operates on a 'Thermosiphon' or passive system as a basis (Wikipedia, 2007). A thermosiphon system requires neither a pump nor a controller for the system. The cold water from the city line flows directly to the tank on the roof where the water is heated. As the sun shines on the collector, the water inside the collector flow-tubes is heated. As it heats, this water expands slightly and becomes lighter than the cold water in the solar storage tank mounted above the collector. Gravity then pulls heavier, cold

water down from the tank and into the collector inlet. The cold water pushes the heated water through the collector outlet and into the top of the tank, thus heating the water in the tank.

PESTEL Analysis of the business sector in Cyprus

Political Forces

Cyprus offers a stable political climate that supports business investment. The new businesses provide employment, increase government revenues through taxes directly. Indirectly, this business boosts the economy in the long run by reducing the expenditure on the fossil fuel consumption which is becoming expensive day by day. Over the last 30 years, there is no noticeable political instability in the country. Efforts are being made by governments across the world to reduce their emission by encouraging the use of environmentally friendly sources of energy as solar power by both organizations and households.

Economic Forces

The country is experiencing a construction boom in the economy and is seeing a considerable growth in the tourism sector after entering the EU in 2003. More over, the country is enjoying a favorable balance of payments and a positive economic growth, probably one of the strongest countries in the EU in terms of economic terms. The rise in housing construction represents a viable market for solar heaters. The low levels of unemployment gives the citizens an increase in disposable income and as a result increased affordability of the solar water heaters even by medium-

income earners. The trend is likely to continue in the next three to five years, makes it a lucrative market for solar energy sector.

Sociological Forces

Many changes are taking place in the sociological front in Cyprus as well. Some of the important elements in the sociological forces that may have an impact on the business in the next three to five years are discussed as follows. An increased education level in the country is bringing more awareness in the technologically advanced products than before. From the past few years, Cyprus is experiencing an increase in the average household income. The economists are predicting that it would continue to increase in the next three to five years. There are changes in the Family Size and changes in the family life cycles. All these factors will help the business to market the product more easily than before

Technological Forces

Technology is constantly changing. If a company operating in the solar energy sector is to capture and maintain a competitive advantage, it must continuously upgrade its technology. At the present many research institutions around the globe are doing intense research in improving the product so that it continues to be competitive in the market. Improvements in solar technology will result in lowered costs of the equipment and thus offer potentially higher profits for the company in terms of increasing sales. Efforts are also being made to improve the safety and cost efficiency of electrical and natural gas water heating systems. New water heating technologies, such as heat pump water heaters (a combination gas heaters

and hot water pump systems) further threaten the viability of the solar thermal market. There is some research and development effort directed toward other environmentally friendly heating systems like geothermal energy. This will substantially compete with solar thermal energy as a clean and dependable energy source. However, these developments are still in nascent stages and would not directly threaten the business in the next three to five years.

Environmental Forces

A lot of environmental forces are changing over the last few years and are likely to change much more intensely in the next three to five years. All these changes are however, directed towards lowering emission of Green House gases. Since the business is environmentally friendly, any changes in the environmental forces would only benefit the company operations rather than threatening the existence. More the changes in these force the better in terms of opportunities for the business growth.

Legal Forces

The present legal factors that would have a direct impact on the business are those related to the establishment of the business like, memorandum of association, documents for shareholders profits, copyright laws for product, shareholders liability and work permits for foreign experienced technical persons to train new hires in the introductory phase of the company. As such these legal forces remain unchanged over the next three to five years. However, on a larger note, one has to look at the environmental legal forces that may change towards of greener environment which might move

towards compelling the society to adhere to stricter environment and pollution related laws. Any change in these laws only helps the business to grow and as such are conducive in the long run.

Competitive Environmental Analysis through the Porter's 5 Forces Analysis (Appendix A).

Potential Development of substitute products

The market growth for water heater industry is high, however, for solar water heaters the market growth is low as a result of the large capital requirements. The water heater industry is in its maturity stage. Increasing use of instantaneous water heaters eliminate the need of storage and provide heated water on demand. However, solar water heaters are in their introductory stage since existing competition in this category is minimal. Given the large initial investments required by the consumers in non-conventional energy related products, not much development is taking place in this sector. As such, the potential development of substitute products is low or non-existing at present. The trend is likely to be the same in the next three to five years to come.

Rivalry among competing firms

The business faces increased competition from the existing and old business. The water heater industry is large with 15 major competitors existing in the market (number of rivals and their size). The competitors not only deal in water heater equipment but also cater to the plumbing requirements of the customers. Their names are established in the market place and are synonymous with the water supply in both domestic and industrial market.

Competitors target markets include households, hotels and other industrial users. The competitors thus operate in multi-markets and already established their name over the past few years. The intensity of competition continues to escalate as new markets are targeted. The traditional water heating firms do have a significant market share. With the change competition, competing firms are offering more services for the same prices. As they started offering more and more services, they captured a sizeable market share in this tiny island.

Potential entry of new competitors

There are high capital investment requirements for the solar water heater industry. For this reason, there will be few new entrants. Potential competitors are the existing electric water heater suppliers who may recognize the benefits of the solar heaters and seek to market a similar product. These competitors have the resources to make the required capital investments because of their experience in the industry. They recognized that profits from the previous business can be reinvested to become more competitive in the solar water heater industry. It is difficult at this time decide the size of the operations that are required to be done by the new entrants in to the market place. But it is certain that whoever enters in the market now or in the next few years, should enter with a new product and service differentiation that would give the new entrant a specific advantage over the others. The changing socio-economic factors along with the changes in government regulations are encouraging new entrants in to the business, thus there is a potential entry of new competition. However, the relatively small size of the country and high cost of setting up of facilities is restricting

the competitors to a certain extent. Another factor that should be taken into account is the Cyprus joining EU opening its doors to EU, many companies from other EU countries can enter into Cyprus.

Bargaining power of suppliers

As there are many companies in the world manufacturing the solar panels and other associated product providers the bargaining power suppliers is relatively is lower. However, given the size of the country, the manufacturer may compel the company to buy large quantities of the solar panels and associated equipment and as such can have an influence on the total business. So there is also an element of bargaining power of suppliers. However, this largely depends on the market share the company is likely to capture in the next few years. Given the three to five year time frame, this may become less evident if the company captures a large market share. In the event of the not in a position to capture a large market share, the bargaining power of suppliers may increase in the next three to five years.

Bargaining power of consumers

The changing competition structure and increased awareness of the product in the consumer market is increasing the bargaining power of the consumers. The traditional water heaters are cheap in comparison with that of a solar water heater and for this reason, the switching costs are high and consumers would be less loyal to one supplier. Over the next three to five years, this bargaining power of the consumers may likely to increase due to increase in the competition and increased choice from the EU market.

Challenges Of The Value Chain System And Relationships Towards Competitive Advantage In The Solar Sector.

Value chain is an important tool for identifying ways to create more customer value. All companies have activities to perform like production, marketing, delivery, and after sales support for its products. The value chain helps in identifying some of these strategically relevant activities that help every firm create value and cost in every business firm. On a careful review of these activities one understands that they begin with bringing materials into the business and concludes with servicing the customer. Taking these value chain activities into the present context, the following assumptions are made. The elements existing in the Porter's (1995) Generic Value Chain is taken for this purpose.

Primary Activities

Inbound Logistics

The major concentration of the specific business question deals with this question. The efficiency of the business deals with how well the firm tackles the inbound logistics. The solar panels are manufactured outside the Cyprus and as such the firm must depend on import of the solar panels from two popular cost effective countries namely India and China. Solar energy sector should decide to import the solar panels from India for three primary reasons. First, India has good manufacturing facilities and is developing a strong research network in the solar panel manufacturing sector. Second, the costs of the solar panels are comparatively lower from other manufacturers in the world. However, the costs of solar panels are cheaper in china. Third, the travel time for sea bound cargo to Cyprus is less from

India than from China. It is assumed that these three factors in comparison helped the firm narrow down on India as the prospective supplier of solar panels. The accessories like the storage tank also come from India and are supplied along with the panel manufacturer. This gives the company reduce the coordination time with another supplier. Single manufacturer supplying both the panel and storage tank gives better control over this activity. The competitors usually are importing the solar panels but depend on the local suppliers for the storage tank. This local procurement of storage tanks is more expensive than importing them. In the long run this would be one of the competitive advantages for the solar energy business.

Operations and Outbound Logistics

The primary activity of operations does not involve in this case as there is no conversion of raw materials in to finished products. The raw materials are sold to final customers as they are. Increasing oil prices and warehouse locations does put a lot of challenges in terms of outbound logistics.

However, this challenging business has taken due concerns about the same. The potential location of the warehouse and service centre in Strovolos gives the location advantage to the company to cover the whole country with little less effort than the other competing firms which have ware houses in more than one location. The single location ware house for solar panels gives the firm cost saving. Further to this, the company has tied up with other suppliers of the plumbing materials in each every small town thus giving lesser transportation costs. For example, if a customer orders a solar water heater who is 80 kilometers away from our warehouse, the small van takes the solar panels and water tank and on the way picks up the plumbing

materials from the network associate who is close to the place of installation. In some occasions the network associate delivers the accessory plumbing materials to the customer well before the firm arrives with solar panel and storage tank. This would help save costs for the firm and also helps the local plumbing suppliers who support the firm in the long run.

Marketing and Sales

It is one of the crucial activities of the company in the given competitive market place. The marketing and sales office of the company would be located in Nicosia, the capital of Cyprus. The marketing office is connected to the warehouse in Strovolos on a real time computer. The marketing team works independently. Solar water heaters are marketed to more than one segment. This multi-segment calls for different marketing strategies for each segment. Large numbers of customers for the business exist in the household segment. The product is marketing to them directly and indirectly. The sales representatives make cold call to prospective building owners. The ministry of housing and infrastructure development which is responsible for the permission for construction activity in the country will have lists which are publicly assessable to every one. This list would constitute the prospective household customers. The local suppliers of hardware and plumbing materials are also approached to market the product indirectly to the households. These material suppliers are in the company network for the supply of the accessory products. This helps them to improve their business while both the firm and the local supplier take advantage of each others competitive positions in the market. A small percentage of commission is paid to these material suppliers besides the company buying the accessory

products. The second largest buyers of solar water heating systems are hospitality industries. A group of marketing professionals work exclusively to market the product at a differential price to this segment by promoting custom built solar heating systems that meet their specific requirements.

Service

Solar water heaters are designed to last many years with little maintenance. So the question of service in this particular case is of little or limited importance to the firm. However, during the installation process, there exists an element of service that differentiates the firm with that of the competitors. The solar energy sector should team up with an upcoming roofing company for the associate service. So when the firm completes the installation the solar heater on the roof top, the roofing company would come and takes care of the roofing so that customer's roof is given a face lift which is damaged due to the installation of the solar panel. The roofing company would change the broken tiles on the roof and repaints the roof at a reasonable cost which is included in the price quotation given to the customer during negotiation process. It is expected that it would save the consumer to going around many different people to get things fixed once the solar system is installed in their household. This convenience is expected to improve the business of the solar business in the long run.

Support Activities

Firm Infrastructure

The firm is simply structured. The total work is supervised by the three promoters. Each of the promoters takes care of each function of the

organization and more over the structure of the firm is highly flexible giving substantial freedom for every member of the firm to operate on their own but in tune with the over all performance objectives of the firm. The marketing director (one of the promoters) manages the marketing department who also decides the sales forecast in consultation with the other two. The Administration director is responsible for the financial and administration function of the firm. The operations manager is responsible for procurement, warehousing and the entire operations related to sales, installations and after sales services. They work along with the employees along side giving the desired motivation and guidance to the people working in the organization. Thanks to the professional qualifications of these directors in the respective fields. They bring in enough knowledge and expertise in their respective fields. It is expected that this would give a long run competitive advantage to the firm.

Human Resource Management

As the firm is still is in a nascent stages, the need for Human Resource Management has not felt. As the numbers grow over time, this would come to play a role in the overall value chain. But at present this factor may not have enough impact on the total performance of the firm.

Technology Development

At present company uses IT to facilitate their operations. This reduces the paper work and keep the flow of information in all the directions so that every one in the whole value chain including the customers know what is

happening in the value chain network. The firm is working on improving the IT to further improve and to reduce further costs of administration.

Evaluating Profitability and Success of this New Product

Two of the most popular evaluating success and profitability of product so as to set and develop the appropriate future strategies are Boston Consulting Group (BCG) and Product Life Cycle (PLC). The Boston Consulting Group (BCG) developed and popularized a 2x2 growth share matrix to help business formulate strategies necessary to succeed. Taking this matrix into consideration, the exiting firm would like to understand its location. The different categories as mentioned by BCG Matrix are - Question marks, Stars, Cash Cows, Dogs. (Appendix B) Question marks - businesses that operate in high-growth markets but have low relative market shares. A question mark requires a lot of cash because the company has to spend money to keep up with the fast growing market, and because it wants to overtake the market leader. The company has to think hard to about whether to keep pouring money into this business. The present business comes in this category. Solar energy is a high-growth market. Due to increased awareness by both public and governments in the global warming, they are more encouraging the use of renewable energy sources. Add to this, increase in oil prices is driving households and organizations alike towards alternative energy resources and hence this sector is growing much faster than expected. The firm is new and as such have relatively low market share. Product Life Cycle - The PLC analysis is very useful tool to identify in stage the product in its product life cycle, so as to set the appropriate strategies. In general, the water heater industry is in its mature stage.

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However, the solar water heater industry is in its introductory stage. Even though the competition in the general water industry is high, in solar water heater industry it is just picking up. So the early entrants will have an opportunity take advantage of this growing industry and earn good profits and market shares. (Appendix C). With the introduction of the solar energy sector to the Cyprus market, it is expected that competitors will try to modify and enhance their product to make it more attractive to customers and to maintain their current share of the market. They might enhance the technology so that the electrical system is more efficient in producing and storing heat energy by converting on demand heaters to storage water heaters. So, an enterprise in the solar energy sector may choose to further differentiate their product by offering better customer service, improving on the timelines of installations and maintenance of heaters, better payment options and discounts, extending product warranties.

Conclusions

The main objectives to be pursued by a new company operating in the solar sector are:

To develop, service and sell / lease all renewable energy based products including solar water heating equipment but not limited to solar energy only.

To develop a wide area network or provide value added services on the network to develop, service, buy / sell all related products to provide marketing services rising directly or indirectly in the area of renewable energy based industry. To undertake the design and development of systems and applications either for its own use or for sale in Cyprus or for export outside Cyprus and to design and development such systems and

applications for or on behalf of manufacturers, owners and users of renewable energy systems in Cyprus or elsewhere in the world. To set up and run business centers and to carry on the business of this nature, consultancy, research studies, management consultancy, techno-economic feasibility studies of projects, design and development of such systems in the area of renewable energy resources. To conduct, sponsor or otherwise participate in training programs, courses, seminar conferences in respect of renewable energy area and for spreading or imparting the knowledge and use of such energy resources including publication of books, journals, bulletins, study / course materials, circulars and news letters and to undertake business as agents, stockiest, distributors, franchise holders or otherwise for trading or dealing in such renewable energy related products and services. In order to be more successful and have a competitive advantage over the other established competitors, it is also essential to go beyond our own operations and the business also depends on the people who are associated with the business. As such, it is essential to partner with specific suppliers and distributors to create a superior value-delivery network. The solar energy sector must also plan to link up with other solar panel manufacturer from abroad e. g. India through a real time network. This real time network provides us to create custom made panels to suit the individual specific requirements based on their rooftop designs so that the panel comes differentiated to suite the customers' specific requirement. This would give the company a long-term advantage. The company should also plan to establish the similar network with other suppliers of accessories like plumbing materials so that storage space is saved. As the order comes and

service team goes to deliver, they would pick up the required accessory materials from the other local suppliers saving storage space and cost of inventory. The solar energy is a new business and new product and entrepreneurs operating or planning to enter into this challenging business sector must be very well prepared and be aware of all what the customers want and all the new business technologies because this new sector offers many challenges and profitable opportunities to be explored. Furthermore, due to the recent global economic crisis and the continuous oil dependence. Organizations and counties are urged to look for other renewable energy, not only solar, but also aeolic (using the air) and wave energy using the sea waves. Finally, Cyprus has massive potential on solar and aeolian power (more commonly known as wind power or wind energy) through solar photovoltaic materials and wind turbines. Solar energy production is the future solution to save our world from destruction. It is essential to eliminate carbon dioxide emissions from fossil fuel based electricity generation in order to limit global climate and environmental changes. The key to a clean energy future is the setting of clear and challenging targets and the provision of reliable, long-term support to the solar perspective. Besides monetary savings, the environmental benefits are obvious as solar is a completely clean energy source and dependable. Cyprus in an effort to support sustainable energy perspective is offering payment incentives and subsidization to citizens willing to install solar receptors at their house and convert their homes to solar use. All of these benefits are marketed to influence homeowners to initialize solar usage in their home. The use of solar energy is steadily growing expressing not only the economic benefits but

also the eco-friendly benefits. The sun provides enough daily energy to supply our needs for power, however solar energy is not yet viewed as a primary energy resource. We should continuously emphasize the benefits of protecting our environment and our quality of life by promoting sustainable energy. The future is towards exploitation of sustainable energy and become eco-friendly orientated. However, to put this in perspective, to reach the capacity of energy produced by the existing energy produced through non-sustainable resources. We should invest on technology and couple solar power with other renewable energy sources such as aeolian power, hydropower and biomass where Cyprus could easily cover its own energy needs in the future.