


## Chapter 9

# Digital Transformation of SMEs in the Energy Sector to Survive in a Post-COVID-19 Era

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### **ABSTRACT**

*This chapter emphasizes the digital transformation of small and medium scale enterprises (SMEs) in the energy sector that specifically engage in the business of solar water heaters (SWH) to survive and even to stay competitive in the post-COVID-19 era. A novel framework is suggested for digital transformation of SMEs. This framework first divides the major activities into layers, analyses the needs of customers, suggests a stage-wise transformation, and provides ample opportunities for development of smart applications. With this approach, SMEs can significantly automate their processes and thus stay relevant in the challenging times that are likely to occur in the post-COVID-19 era. Digital transformation process will pose its own challenges to SMEs as they lack financial resources and skilled workforce. A few suggestions have been made to mitigate such challenges, and then prospects for further work are provided.*

### **INTRODUCTION**

Covid-19 or Corona virus is an infectious disease that has changed the world since late 2019. Thus far, this virus has spread all over the world, infected many and even resulted in a few millions of deaths thus far. This essentially, is a member of Corona family of viruses and specifically termed as Severe Acute Respiratory Syndrome, Coronavirus 2 (SARS-CoV-2). During its spread, the virus itself has mutated into different forms, and World Health Organization (WHO) has recognized this as a global pandemic. A few countries are working towards a vaccine for this virus.

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Covid-19 is managed globally in different ways, but isolation of patients is considered as the important measure almost everywhere (SME-United, 2020). To accomplish this, several countries have identified patients in geographical areas and tried to contain them in respective localities. Such areas are termed as Corona containment zones. These zones are heavily guarded to restrict both inward and outward movements in a bit to contain the spread of the virus. Even otherwise, restrictions have been imposed on all forms of transport from normal human movement to international flights through special orders and actions by respective governments (Ganaie et al, 2020). Thus, Covid-19 has disrupted all walks of life and even economies of almost all countries have contracted significantly. Impact and effects of coronavirus continue to affect the general public especially the physical movement of personal public supply chain mechanisms logistical systems and in general all operations related to trade and commerce (SME-United, 2020). At the level of individual customers Corona impact can cause them not to move outside as frequently as before the start of the virus. Hence it is not prudent for the companies to expect customers to come to their facilities as in the past. Digital transformation enables the companies to automate most of their operations and to provide the required information to the customers. Such efforts help the companies to develop competitive advantage when compared to their immediate competitors. Though digital transformation looks very obvious, there are several challenges in undertaking the power of digital transformation for achieving the fruits of competitive edge (Reijonen et al, 2015). Since this chapter focuses on SMEs in energy sector, a brief introduction is provided on the companies that engage in the business of SWH systems.

Use of energy has always been dependent on socio-economic conditions of the wider communities and overall GDP of the respective countries in general. Electrical gadgets such as electrical water heater, electric stoves for cooking, washing machines, dryers, refrigerators, air-conditioners etc., can be afforded typically by the communities with middle or upper middle-class incomes (NREL, 1999). Hot water is an essential commodity and about 20% of the total energy bill goes to heating requirements, if electric energy is used. Solar Water Heaters (SWHs) have proven to be very useful in reducing the overall energy expenses since they use solar energy from the environment. Typical payback periods for SWHs typically vary anywhere from three to nine years depending on the geographical location (NREL, 1999; Serban et al, 2016). Hence it is prudent for the customers to invest on SWHs. There are several Small and Medium Enterprises (SMEs) that engage in various technological and business operations in the energy industry and specifically to deal with SWHs. Since SWHs are known for overall savings in electric energy consumption, this industry is considered as the one of the green industries (PV-Magazine, 2020). The landscape of this green industry has several segments where companies specialize. They include manufacturing the SWH system or components, sales, engineering and technological maintenance services. As part of marketing their products, these SMEs are required to educate the people with necessary information on the cost of SWH structures and their payback periods. Such an effort requires the companies to carefully consider the present electrical tariff structures, local climatic conditions, average family size, average available roof space and socio-economic conditions of the clients.

Company size and capital layout are the two important control variables of SMEs. Three aspects viz., competitive intensity, superior organizational innovation and outstanding business creativity are critical to enhance overall business performance of any company (Reijonen et al, 2015; Pelletier et. al., 2019). It can be very challenging to modify and transform the operations of SMEs that heavily engage in conventional engineering technology and maintenance activities. However, a careful digital transformation of core organizational activities can significantly enhance the company's competitiveness and to an extent of innovation and creativity. Hence, digital transformation is an indispensable approach in

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