


Chapter 5

Role of IoT in Industrial Transformation and Marketing Management

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ABSTRACT

This is an extended research article discussing the role and the applications of the internet of things (IoT) in industrial transformation (ITN) in general and in marketing management (MMgnt) under five research proposals. IoT has already reached its threshold of success in all the disciplines and MMgnt has also been applying it in many of its areas for optimum growth, development, and safe working. This chapter is a case-based qualitative analysis which involves the role of IoT in three fields of MMgnt, namely customer relationship management (CRM), business process models (BPM), and product life cycle (PLC). For study, many instances from the real retail firms are compared before and after the application of IoT and presented the distinguished achievement of classification of IoT. This study proposes five IoT plans for measuring the effectiveness of IoT for the above-mentioned three sections of MMgnt that depend on the collection and sharing of data from external and internal environments.

INTRODUCTION

World's industrial companies are stressed by the competitive and divided markets, continuing economic uncertainties, and growing operational costs (OC) (Thoma et al., 2012). All these issues have to be solved by reducing the OC, increasing productivity along with the achievement of competitive advantage. The solution is not easy to implement because that also requires some investment like increasing the cost of technology. Cost in Operation Technology (OT) may help in reducing OC

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but increasing other technological-related expenditures. Traditional industries have focused on OT for competitive advantages but with the introduction of Information Systems (IS) better decision-making options came into existence. IS gave rise to new digital technological developments in ITN and offered solutions that could integrate OT and Information Technology (IT). This was the time of application of IoT in ITN. This combination could mean exploring more options for business processes and adding value to the products (Weinberg et al., 2015). IoT creates a liaison between business and all the human resources and other tangible assets and resources that give rise to obtaining valuable business vision for industrial competitors (Iwasaki et al., 2019).

Generally, ITN is the ratio of the variety of imitation- to innovation-based intermediate goods. To develop chronological changes and changes in operation in IoT, ITN have been applied in the context of industrial structure. IoT creates an integration of digital technology into all areas of an ITN and aids in the methods of operations, CRM, BPM, and other areas needed for transformations in industries. Apart from these changes IoT also brings changes in organizational culture (Porter & Heppelmann, 2015).

Industrial internet of things (IIoT) is an evolution of a distributed control system (DCS), and an interrelated connection of sensors, instruments or devices networked together with computerized manufacturing and energy management applications etc. in industry. According to (Glova et al., 2014), improvements in productivity and economies of scale can be achieved with IIoT. DCS has three essential components of a digital transformation, namely the repair of processes, the repair of operations, and the rebuilding of relationships with customers.

IoT has helped to all the users such as companies, suppliers, and consumers (Khan & Salah, 2018) in creating new and innovative products. Researchers of (Thoma et al., 2012) defined IoT products (IoTP) as a new category of data collecting and sharing products and they have extended the basic functionalities of regular products by offering the ability to collect and share data via the Internet. Smart products (SP) can make decisions that would require human learning and critical decision making to evaluate customer behavior, preferences, and complaints, provide recommendations or rating and reviews for further considering the achievement of customer satisfaction. Figure 1 shows the development stages from traditional products (TP) to (IoTP) to (SP) where TP has only basic functionalities, IoTP includes the function of autonomous data collection and product analysis through virtual interfaces and finally, SP encompasses data analysis, Artificial applications, machine learning DSS applications for decision-making processes (Naim, 2022).

Figure 1. Transformation from TP to SP

Source: Naim (2022)



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