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RESEARCH ARTICLE

The Effect of IT on After-Sales Service in Small-and Medium-Sized Industries

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Abstract. In a world where competition is based on quality of service, quality distance between products becomes smaller day by day. Nowadays, after-sales service can be considered as an inseparable part of industrial products. The development of IT has paved the way for offering better services for customers in a shorter time in a way that these days it is called the electronic after-sales service. Based on this, the present research has analyzed the effect of using IT on after-sales service in small- and medium-sized industries. This research is a causal or a posteriori one which tries to answer the question of whether the use of IT can influence the quality of after-sales service offered by small- and medium-sized industries. According to results with a certainty level of %5, IT influences the accessibility of after-sales service in small- and medium-sized industries.

Keywords: IT, after-sales service, small- and medium-sized industries

1. Introduction

Nowadays the idea that offering services with high quality is a key factor in creating permanent competition advantage has been recognized as true [1]. Rapid development in technology has basically led to change in the way services are offered and in addition to face-to-face method, offering services through telephone, the Internet (websites), etc., have become prevalent [2].

Services are the activities promised by a company to be done that produce benefit as time passes, are measured based on customer satisfaction, and is perceptible only with a product or a collection of products.

Herve has emphasized after-sales service as a powerful marketing tool. He believes after-sales service as a new opportunity has a share from a company's profit [14]. Tore and Uday define after-sales service as installation and application services, training, maintenance, documentation, providing spare and logistic parts, product improvement, software services, guarantee, and telephone support [15]. Arvinder believes that strategies of after-sales service include rules and guarantee, maintenance, leasing, and telephone support [16].

Services have been studied widely since 1980s. In the past, salespeople focused on sales and delivery of goods and considered after-sales service as a liability or something unnecessary. Now, however, quality and services offered to a customer are powerful competition tools that keep the customer satisfied, make the product distinguished, reduce marketing costs, and increase the company's profit [11]. The profit made from after-sales service is often more than that of sales [7, 22]. In addition, support market can be considered five times bigger than products market [23]. After-sales service is not only considered as a potential long-term source of income but also a way of finding out about customers' needs and planning strategies to keep customers [10] and finally, after-sales service leads to improvement in product design and quality [24, 25].

Studies show that there is a relationship between quality of service, customer satisfaction, customer loyalty, and organization profit. Although much research has been done on service and customer-support-related activities, few researchers have paid due attention to these important topics. Most studies are superficial [12].

The significance of after-sales service is especially obvious when a customer has paid a considerable amount of money to purchase a device or an item. According to studies, customers of home appliances regard support as the third and customers of installation products (heater, elevator, etc.) regard it as the first required factor for gaining competitive advantage and success in a company [13].

Over the past few years top executives of organizations have paid more attention to the relation between after-sales service and IT in the form of a process [17] because a customer's perception of quality of service depends heavily on IT technologies present in

an organization [18]. Therefore, we can refer to IT-based after-sales service as electronic after-sales service. Offering this kind of service will not only produce profit but also reduce unnecessary customer visits to the representative agency and increase customer satisfaction [19]. In addition, using electronic after-sales service reduces marketing and advertising costs and provides 24/7 support for customers [20]. Since electronic after-sales service needs less money to keep customers for servicing companies, it is the prime factor in improvement of servicing. And the customer saves the extra exchange money through expanding relations with servicing companies. Electronic after-sales service is popular mainly for its online features.

The growing trend in implementation of IT in after-sales service is not without reason. Increase in opportunities for customization, flexibility, improvement, and increased customer satisfaction are the reasons why technology is used in offering of services. In addition, offering service to customers, from the viewpoint of sales, is of utmost importance to an organization's money-making abilities. From this viewpoint, offering service to customers must be paid enough attention as a part of a general approach for systematic improvement [3]. Many large companies have been leading users of IT in various contexts. In small- and medium-sized industries, however, things are different. Despite the importance and necessity of paying serious attention to development of these industries, traditional structure of management, workforce, and machinery, limited supply to small local markets, and insufficiency of funds and resources necessary for improvement are some major problems that small- and medium-sized industries are faced with and it seems using IT can resolve most of these problems. Because of this and the effect of these industries on a country's economy, we study the effects of IT on after-sales service in small- and medium-sized industries.

But the question here is whether using IT in after-sales service of small- and medium-sized industries results in customer satisfaction and loyalty and fulfills their needs.

2. A Review of Previous Work

Various methods have been used around the world to evaluate the effect of IT on small- and medium-sized industries. Some examples are:

The results of a research conducted by Michelle H. Commosioun and Lloyd G. Waller in 2008 called *Impact of IT in Trade Facilitation on Small and Medium-sized Enterprises in Bangladesh* show that using IT in small- and medium-sized industries has improved the performance of organizations. The aim was to examine the effect of using ICT on small- and medium-sized industries [4].

In the research conducted by Paolo Gaiardelli, Nicola Sacconi, and Lucrezia Songini called *Performance Measurement Systems in After-Sales Service: An Integrated*

Framework in 2007 key factors for measuring the performance of after-sales services have been pointed out and discussed at the level of business, process, activity, and development. The research not only regards after-sales service as a source of income but also defines it as a strategic part of every organization [21].

Another research has been conducted by Sajda and York (2008) called Information Technology Adoption by Small Businesses in Minority and Ethnic Communities. Their work is trying to provide an integrated model of IT used in small businesses in order to promote IT in minority and ethnic communities and the results said that using IT by these organizations depends on characteristics of their managers like ethnic characteristics, individual cognitive styles, and their attitudes toward IT. According to the results of this research, if IT is used properly in small and medium-sized businesses it can lead to development of these businesses and, consequently, economic development.

Also, the results show that the reason for not using IT is absence of training, fear of losing control, ethnic norms, etc. [5]

The other research has been done by Mahesha and Robyn (2007) called SMEs in the United States Need Support to Address the Challenges of Adopting E-commerce Technologies. This work provides a complete understanding of challenges that medium-sized businesses are faced with in adopting technologies and e-commerce in developing countries. The results said that government and industry must make logical decisions for implementing strategies and promote mutual trust and cooperation among medium-sized businesses, provide special support for these businesses in order to help them overcome some obstacles, promote competition, transfer skills and technology, and provide access to larger markets.

According to the results of this research, %88 of managers or company owners had little knowledge of computer and their knowledge of technologies appropriate for their organization was at a very low level and it seems that they do not do well in choosing software, hardware, and computers.

The main concern for managers and owners of these businesses was the high cost of the Internet and implementation of e-commerce. Unstable economy, lack of knowledge of e-commerce, precarious political circumstances, lack of time, and inaccessibility to expert help were examples of obstacles mentioned by %70 of people answering questions about using IT and e-commerce [6].

3. Analysis method

First of all, in order to determine analysis method, three important factors have been defined about this research.

Information Technology: the technology dealing with transferring and storing information especially promotion, installation, implementation, and management of computer systems in companies, universities, and other organizations.

Small- and Medium-sized Businesses: (urban and rural) industrial and service centers that have less than 50 employees [8].

After-sales Service: service provided for customers after purchasing a product to support customers [9].

In this research, the aim of after-sales service is to produce customer satisfaction while using the product. The service is offered by a website, email, customer contact, etc. This research is a causal or a posteriori one which tries to answer the question of whether the use of IT can influence the quality of after-sales service offered by small- and medium-sized industries.

To answer this question, since statistical society is small- and medium-sized businesses of Iran, 380 sample members were chosen using Morgan table. To increase the validity, 400 companies were chosen using random sampling method.

Data collection tool is a researcher-made questionnaire and to evaluate its stability, 30 members from the statistical society that were not samples were chosen and given the questionnaire. After collecting the questionnaires, data were typed into the SPSS software and validity of questionnaire was calculated using Cronbach's method. Since the calculated alpha coefficient was more than %60, no question was removed.

The questionnaires were emailed to organizations, analyzed by them, and 385 questionnaires were accepted. The coded questions were typed into the SPSS17 software. Data normality test was done using the Kolmogorov–Smirnov test in order to choose appropriate testing statistics for confirming or rejecting hypotheses about the impact of IT on after-sales service provided by small- and medium-sized industries and the result was that data are normal. Therefore, descriptive statistics was used to test the hypotheses.

The output results of SPSS for variables are as follows:

Table 1. Central indexes and dispersal distribution

One-sample Statistics				
	Quantity	Mean	Standard deviation	Mean standard deviation
After-sales service	385	3.736	.6711	.0342

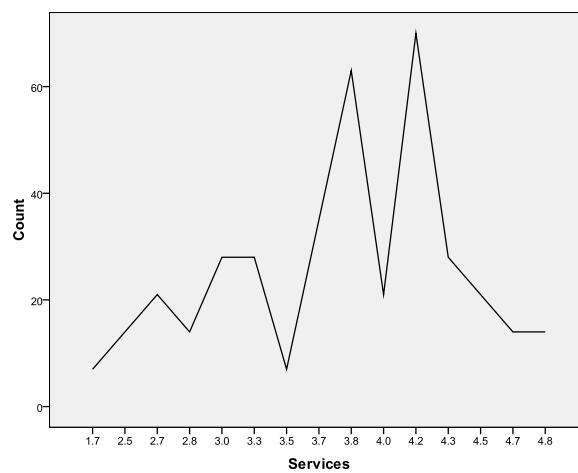


Fig. 1. dispersal distribution

To test the hypothesis, we assume that if the mean value of questionnaire data is equal to, or greater than, three the hypothesis is accepted

$$\left\{ \begin{array}{l} \text{Hypothesis one (H}_0\text{): } \mu - 3 = 0 \\ \text{Hypothesis two (H}_1\text{): } \mu - 3 \neq 0 \end{array} \right.$$

Table 2. One-sample Test

	One-sample Test					
	Test value = 3					
	%95 certainty space		Mean difference	P	Degree of freedom	t
	Maximum	Minimum				
	m	m				
After-sales service	.804	.669	.7364	.000	384	21.529

As table 1 and table 2 show, according to participants' answers, the mean value of effect of using IT on after-sales service is significantly more than mean (mean = 3) and t (t = 0.05) is more than p (p = 0). Therefore, we have:

Degree of freedom is n – 1, i.e. 384

$$T = \frac{X_n - \mu}{S_n / \sqrt{n}} = \frac{3.737 - 3}{.1342} = 21.029 > . \tag{1}$$

$$\text{sig. (1-tailed)} = \text{p-value} = .000 < .05 \tag{2}$$

Since p is less than α , there is no reason to accept H0 (hypothesis H0 is rejected). The two numbers shown in maximum and minimum columns do not include 0 which is a reason why we reject H0 and shows a conspicuous difference because this range is positive, i.e. $\mu - 3$ is positive and the mean is greater than 3.

4. Results

By collecting information and analyzing them, the findings of the research are approved, i.e. using IT improves after-sales service in small- and medium-sized businesses. This is a very important finding. It can lead to increase in competitive advantage, customer loyalty, and dominance of market. The results of this research are parallel with the proceedings of the International Meeting of Information Society held in Geneva (2003) and Tunisia (2005) the goals of which were to introduce the benefits of IT in small- and medium-sized businesses

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