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Abstract. With time passed, information and communication technology (ICT) has penetrated into all aspects of industrial production worldwide. ICT offer a new way in which ideas can be generated, communicated, and assessed. During the past years, medium-sized enterprises have played an important role in the economy. However, little attention has been paid to the usage of ICT in medium-sized enterprises in China. In this paper, we analyses ICT-based issues from technicians in Shandong Linyi Lingong automobile drive axle Limited Company. The methodology for carrying out the tasks mainly contains questionnaires according to normative Delphi technique. Some recommendations are proposed for medium-sized enterprises authorities to take in order to properly penetrate ICT in their production.

Keywords: information and communication technology, Delphi, ZPD gaps, medium-sized enterprises.

1 Introduction

In the past 20 years, a wave of new information and communication technology (ICT) was introduced in almost all aspects of industrial production. Advances in the field of ICT, including Email, Internet bulletin boards, Internet-based courseware delivery strategies, and video conferencing have together changed the whole process of industry. ICT do offer a new way in which ideas can be generated, communicated, and assessed [1].

During past few years, small and medium-sized enterprises have played an important role in the economy and easing employment pressure [2]. Small and medium-sized enterprises comprise more than 99% of all enterprises with more than 73% of entire workforce in China. It is vital for China as well as the other countries worldwide. Medium-sized enterprises in China are identified as follows: medium-sized industrial enterprises employ from 300 to 2000 employees; its annual income is from 30 million to 300 million yuan or balance value of assets is from 40 million to 400 million yuan.

As the importance of medium-sized enterprises has increased, it has been accompanied by an increase in the amount of attention paid to them. Now medium-sized enterprises face enormous pressures when China integrates into the world economy gradually. The way that medium-sized enterprises develop in an increasingly competitive market has become one main problem [3]. How to stay
competitive is a question that bothers most of the enterprises because they cannot compete on mass production [4]. One of the possible answers is innovation through lifelong and informal learning by the use of ICT. ICT is needed to facilitate the exchange of ideas and information about industry production [5].

ICT has changed the whole process of industry as time passed. While ICT usage in industry has become a standard, workers will become more informed, more interactive, and more confident in the usage of various kinds of hardware and software. It is recognized by many researchers that use of ICT tools and application is an important life-skill for any worker, whereas some workers lag far behind the others in adopting ICT.

A lot of research is dedicated to usage of ICT in large enterprises since large enterprises are able to invest more in ICT. Little attention has been paid to the usage of ICT in medium-sized enterprises in China. Importance of usage of ICT in medium-sized enterprises is not highlighted.

2 Methodology

In this study, Shandong Linyi Lingong automobile drive axle Limited Company is proposed as an example on our research of Chinese medium-sized enterprises. The company covers an area of more than 46 acreages with assets of more than 400 million yuan. There are above 1200 employees, including 265 high and middle-level technicians in Shandong Linyi Lingong automobile drive axle Limited Company. The main product of the company is mild form automobile transmission, agricultural equipment transaxle case, and engineering machinery components assembly. The annual production of the company reached 600 thousand sets of automobile drive axle for different famous automobile factories.

According to normative Delphi technique, a questionnaire was prepared and hand-delivered to the 265 high and middle-level technicians, and 198 of the staff answered the questionnaire [6]. Within next 2 months, these 198 members complete other questionnaires for 3 rounds. The same group was asked to devise development strategy that medium-sized enterprises authorities should take in order to integrate ICT in their company. The purpose of these development strategies is to increase technicians’ experiences by the use of ICT, and therefore improve output of medium-sized enterprises.

The concept of Zone of proximal development (ZPD) was coined by [7]. ZPD gap is the difference between future/maximum and current state of any development/use of information technology. In this research, working and learning with and without the help/use of ICT in Chinese medium-sized enterprises are explored. The ZPD gaps in solving problems are recorded, so that proper mechanism can be figured out to reduce these ZPD gaps to a minimum. Those data showing ZPD gaps obtained through the questionnaires is shown in Table 1.

3 Data Analysis

Data shows ZPD gaps obtained through the questionnaires from 198 technicians of Shandong Linyi Lingong automobile drive axle Limited Company. Please refer to Table 1 for issues.