

# Chapter 11

## An Empirical Analysis of Indices and Factors of ICT Use by Small- and Medium- Sized Enterprises in Japan

**Masatsugu Tsuji**

*University of Hyogo, Japan*

**Teruyuki Bunno**

*Kinki University, Japan*

**Hiroki Idota**

*Otemon Gakuin University, Japan*

**Hiroaki Miyoshi**

*Doshisha University, Japan*

**Masaru Ogawa**

*Kobe Gakuin University, Japan*

**Yasushi Ueki**

*Bangkok Research Center, Institute of Developing Economies/Japan External Trade Organization,  
Thailand*

### ABSTRACT

*This chapter attempts to extract factors which promote the introduction and usage of ICT by SMEs (small- and medium-sized enterprises) through the method of mail surveys and in-depth interviews conducted in two of the largest SME clusters in Japan, Higashi-Osaka and Ohta Ward, Tokyo. The questionnaire was sent to more than 6,000 SMEs there, and received nearly 1,200 replies. Questions are related to company characteristics and purposes for ICT use. Moreover, the followings indexes are selected which present the degree of ICT use by SMEs: (i) software that contributes to efficient utilization of managerial*

DOI: 10.4018/978-1-61520-709-1.ch011

*resources; and (ii) Internet usage. Based on these data, factors are extracted by utilizing the regression methods such as OLS, logit and probit estimation. Among them, the most important elements in promoting ICT use are found to be a future-oriented vision for SMEs such as expectations for restructuring business process through ICT, and managerial orientations.*

## INTRODUCTION

### Background and Objectives of Analysis

Information and Communications Technology (ICT) was introduced in the early 1990s, and since then, it has been transforming the frameworks of not only economies but also business firms. ICT has been creating new businesses such as e-commerce and contributing for economies to become more globalized and more competitive due to easier access to all kinds of information through ICT. The development of business management has also increased greatly due to ICT. Business organizations have also been undergoing rapid transformation; ICT has created new forms of organization by destroying the traditional ones.

SMEs (Small- and medium-sized enterprises) undergird Japan's entire manufacturing sector by supplying it with high-quality parts; it is well known that the unsurpassed quality of Japanese products is largely based on SMEs. In accordance with the above transformation, however, SMEs have been attempting to adapt ICT in their business, but they are not necessarily successful. This chapter examines current ICT use by SMEs, namely, examines empirically what are the factors that promote ICT use by SMEs. The analysis is based on field surveys, a mail survey and in-depth interviews conducted by the authors in two of Japan's most prominent SME clusters, located in Higashi-Osaka city, Osaka Prefecture, and Ohta ward, in the metropolitan area of Tokyo. The questionnaire was sent to more than 6,000 SMEs in two clusters, and received nearly 1,200 replies.

Questions sent to SMEs were related to (i) company characteristics (amount of capital, number of employees, etc); (ii) managerial orientation, which classifies SMEs as the expansion, incentive-providing, adapting, or data-using category; (iii) business environment such as the degree of competition; (iv) purposes of ICT use, such as raising profit and productivity; (v) expectations for ICT use; and (vi) other factors such as ICT investment in the most recent fiscal year and the company's understanding of importance of the ICT in business management. Regarding managerial orientation, a detailed explanation is called for. The questionnaire contains ten questions regarding managers' daily activities. Since there is some overlap between the ten questions, an attempt was made to isolate the variables through component analysis.

In this manner, four variables, which account for 70.1% of the total responses, were isolated. The first of these includes questions to determine to what extent an SME is geared toward expansion. The second category, orientation to incentives, contains questions on management's performance vis-à-vis stakeholders, and on any incentives it gives employees by relinquishing rights and responsibilities to them. The third variable includes questions on the extent to which firms learn from their mistakes, and on whether top management considers employee suggestions. Since such courses of action are indicative of management's responsiveness, this factor is referred to as "orientation to expansion". The last variable, called "orientation to data use," contains questions on how firms make use of data for decision-making.

12 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:  
[www.igi-global.com/chapter/empirical-analysis-indices-factors-ict/41138](http://www.igi-global.com/chapter/empirical-analysis-indices-factors-ict/41138)

## Related Content

---

### A Policy Rationale for Multidisciplinary Approaches in Synthetic Biology

Lino Paula (2012). *International Journal of Social Ecology and Sustainable Development* (pp. 60-63).  
[www.irma-international.org/article/policy-rationale-multidisciplinary-approaches-synthetic/67359](http://www.irma-international.org/article/policy-rationale-multidisciplinary-approaches-synthetic/67359)

### Risks Management in Agile New Product Development Project Environments: A Review of Literature

Brian J. Galliani and Paola Andrea Hernandez Lopez (2020). *Sustainable Business: Concepts, Methodologies, Tools, and Applications* (pp. 1835-1869).  
[www.irma-international.org/chapter/risks-management-in-agile-new-product-development-project-environments/232879](http://www.irma-international.org/chapter/risks-management-in-agile-new-product-development-project-environments/232879)

### The Social, Economic, and Environmental Impact of Ecological Beekeeping in Romania

Cristina Raluca Gh. Popescu and Gheorghe N. Popescu (2019). *Agrifood Economics and Sustainable Development in Contemporary Society* (pp. 75-96).  
[www.irma-international.org/chapter/the-social-economic-and-environmental-impact-of-ecological-beekeeping-in-romania/210016](http://www.irma-international.org/chapter/the-social-economic-and-environmental-impact-of-ecological-beekeeping-in-romania/210016)

### Environmental Sustainability: The Emerging Issues in India's Textile Sector

Hasanuzzaman and Chandan Bhar (2017). *International Journal of Social Ecology and Sustainable Development* (pp. 48-60).  
[www.irma-international.org/article/environmental-sustainability/190868](http://www.irma-international.org/article/environmental-sustainability/190868)

### Sustainable Development Goals and Their Implication on Economic Growth: An East African Perspective

Mangasini Atanasi Katundu (2018). *Handbook of Research on Sustainable Development and Governance Strategies for Economic Growth in Africa* (pp. 47-65).  
[www.irma-international.org/chapter/sustainable-development-goals-and-their-implication-on-economic-growth/197583](http://www.irma-international.org/chapter/sustainable-development-goals-and-their-implication-on-economic-growth/197583)