

INDICES OF THE DIFFUSION OF INFORMATION TECHNOLOGY AMONG JAPANESE SMALL- AND MEDIUM-SIZED ENTERPRISES: AN AHP APPROACH

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ABSTRACT

This paper proposes a method of constructing a single index of ICT (information and communication technologies) use by SMEs (small- and medium-sized enterprises) by making use of AHP (analytical hierarchical process). Based on this index, we then attempt to extract factors to promote ICT use by SMEs. In so doing, we categorize SMEs into two groups, those with advanced and less advanced ICT use. For the former, we selected SMEs which had received awards for ICT use from organizations such as the IT *Hyakusen* Committee or Ministry of Economics, Trade and Industry. These were referred to as IT *Hyakusen* SMEs. For the latter, we selected SMEs from two of the largest SME clusters in Japan, Higashi-Osaka and Ohta Ward, Tokyo. Questionnaires were sent to more than 6,000 SMEs in these two clusters, and nearly 1,200 replies were received. With regard to an index of ICT use, this was derived using AHP for the following five items: (i) number of PCs owned by the SME; (ii) number of PCs connected by networks such as LANs; (iii) amount of software contributing to the efficient utilization of managerial resources; (iv) Internet use such as homepages, e-mail, and e-commerce; and (v) security measures such as introduction of security systems and organizational measures. Based on this index, we extracted specific determinants of ICT use promotion among the groups using regression analyses, including OLS, probit and logit estimation. We also identified obstacles to ICT use and policies sought by SMEs.

Keywords: AHP, probit and logit estimation, component analysis, software use, Internet use