THE DIFFUSION OF LAPTOP COMPUTERS AMONG INDUSTRIAL SALESFORCES

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Many companies with industrial salesforces supply their salespeople with portable or laptop computers to enhance productivity. According to current forecasts, laptop sales are projected to increase over 250 percent between 1988 and 1993. These forecasts are contingent upon the continued adoption of laptops by businesses. The research reported here focused on the characteristics which might enhance or impede the adoption of laptops by corporations for their salesforces. Specifically, a study of over 200 sales managers was conducted to ascertain the extent to which laptops/portables and the companies that use them in field sales have traits consistent with those posited to speed the diffusion of an innovation.

With average U.S. business productivity eking out gains in the one percent range and manufacturing productivity falling behind other major industrial powers (Peters, 1987), corporate decision makers have turned toward information technology as a tool for increasing productivity (Curley, 1984; Davis, 1989; Edelman, 1981; Sharda, Barr & McDowell, 1988). One form of information technology, factory automation, has cut direct labor to a small fraction of production costs making further cost reductions from total production labor more difficult (Moriarty & Swartz, 1989). Further cost reductions in direct labor are not likely to represent a significant percent of total costs. Marketing and sales functions, therefore, have become an important target for productivity increases through the use of information technologies.

When investigating firms with marketing and sales productivity systems, Moriarty and Swartz (1989) found sales increases of ten to 30 percent with investment returns often exceeding 100 percent. One facet of such a productivity system, laptop computers for the salesforce, trimmed the order cycle at Vanity Fair from more than two weeks to three days with a resultant sales increase of ten percent. In addition, Metropolitan Life Insurance Company’s pension and annuity center in New York experienced a 75 percent increase in
sales following the assignment of laptop computers to sales personnel (Krasnoff, 1987). These and other successful implementations have led many marketing executives to conclude that portable computers will eventually become standard equipment for sales representatives who spend a substantial portion of their selling time out of the office (Taylor, 1988). A recent study of 24 companies found that sales and marketing executives in some of the most successful marketing organizations in the United States perceive that portable computers improve sales productivity, efficiency and customer service. They also make needed information more accessible and manageable, reduce administrative tasks and enhance communications (Taylor, 1988). Furthermore, Taylor (1988) found that, despite all the horror stories about computer phobia, most sales representatives have taken to personal computers enthusiastically.

This embracing of portable computers as productivity enhancers has fueled their rapid sales increase. Dataquest, a high-technology marketing research firm, has projected that 1.9 million laptop and notebook personal computers will be shipped to U.S. distributors in 1993 (Parker, 1990). This represents a 270 percent increase in five years (1988 sales = 700,000) (Lewis, 1988). Further increases should be expected as laptop computers with more power, more storage, longer battery life, smaller size and better screen displays become available.

Yet, these expected increases are contingent upon the continued adoption of laptops/portables by businesses. Much of the research in the diffusion of technology has focused on the management of implementation and the organizational facets which help with the integration of any technological enhancement (Gibson & Nolan, 1974; Nolan, 1979; Kramer & King, 1980; DeLone, 1983; King & Kramer, 1984; Baker, 1987; Schleich, Corney & Boe, 1990). The rapid diffusion of this new technology provided an excellent environment in which to test diffusion of innovation theories proposed by Rogers and Shoemaker (1971) and Foster (1986). In general, the purposes of the research reported here were to investigate (1) the extent to which the diffusion of laptop computers among industrial salesforces could be explained by extant diffusion of innovation theories, and (2) the characteristics which either enhance or impede the adoption of laptops by manufacturing firms for their salesforces.

**Objectives**

In their work on the diffusion of innovations, Rogers and Shoemaker (1971) and Foster (1986) posit properties of both the innovation and the corporation which are related to adoption of a product and its diffusion throughout a market. Rogers and Shoemaker (1971) suggest that:

- the relative advantage of the product,
- the compatibility of the product with existing life styles/consumption systems, and
- a lack of product complexity

lead to higher adoption and diffusion rates. According to Foster (1986) diffusion depends on relative value offered and the investment required by the user. With these properties in mind, the research reported here was designed to:

- obtain evaluations of features and traits of laptops, laptop usage and laptop productivity from using companies;
- ascertain perceptions of laptop features and traits from nonusing companies;
- evaluate satisfaction levels; and
- determine the amount of training offered by firms that supply their salesforces with laptops.

Using this information, the extent to which laptops and the companies that use them in field sales have traits consistent with the assertions of Rogers and Shoemaker (1971) and Foster (1986) was explored. Further, the differences between adopters and nonadopters on the characteristics being studied were used to suggest barriers or impediments to adoption and diffusion.

**Research Design**
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