



# JUST-IN-TIME PRODUCTION, AUTOMATION, COST ALLOCATION PRACTICES AND IMPORTANCE OF COST INFORMATION: AN EMPIRICAL INVESTIGATION IN NEW ZEALAND-BASED MANUFACTURING ORGANIZATIONS\*

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This paper is based on an empirical study of the relationship between Just-in-Time (JIT) production, automation, cost allocation practices and the relative use of cost information for making and evaluating managerial decisions. The study uses a survey questionnaire to collect data from a random sample of New Zealand-based manufacturing organizations. Hypotheses were tested using bivariate tests and multiple regression analysis. The results indicate that the choice of activity-based cost allocations is negatively associated with the extent to which firms use a JIT approach to manufacturing, but positively associated with increased automation in the factory, as hypothesized. Furthermore, the increased use of JIT production is found to be associated with the decreased use of detailed costing information. The study found some support for the hypothesis that increased automation is associated with the increased use of costing information for managerial decisions.

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## INTRODUCTION

This study has two purposes. First, it examines the effect of Just-in-Time (JIT) production systems<sup>1</sup> and automation<sup>2</sup> on the organization's choice of a particular system of cost allocations. Second, it investigates how JIT

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production systems and automation are associated with the extent to which an organization uses cost information for day-to-day managerial activities. Figure 1 presents a diagrammatic representation of the array of variables that lie at the focus of the study.

It has been argued that JIT production systems and automation in the factory are essential for managing an organization's resources in the best possible way in order to achieve its objectives (Kaplan & Atkinson, 1998; Johnson, 1990; Young & Selto, 1991; Bhimani & Bromwich, 1991; Cobb, 1993; Cooper, 1995a, 1996; Hansen & Mowen, 1997). Academics also claim that by eliminating non-value-added activities and making overhead costs more traceable to products, the adoption of JIT production systems gives managers a much better understanding of the full costs of a product (Hansen & Mowen, 1997), leading to reductions in material losses and the potential of greater improvement in overall factory productivity (Monden, 1983; Maskell, 1986; Voss & Clutterbuck, 1989; Dodd, 1993; Greenwood & Reeve, 1994; Ramarapu, Mehra & Frolick, 1995; Kalagnanam & Lindsay, 1998). For many firms, the increased use of automation may be necessary for survival (Howell & Soucy, 1987). Kaplan & Atkinson (1989, p. 420), for example, argue that automation offers improved quality and reliability for production processes, and by virtually eliminating set-up or changeover times, permits much greater manufacturing flexibility. Goldhar & Jelinek (1986) suggest that by automating manufacturing processes, firms can compete on economies of scope—the ability to produce a wide variety of products in small batches efficiently. Blackburn (1988) suggests that the key argument for automation is based on the rationale that competitive advantages lie in the areas of creativity and technology (see also Lee &

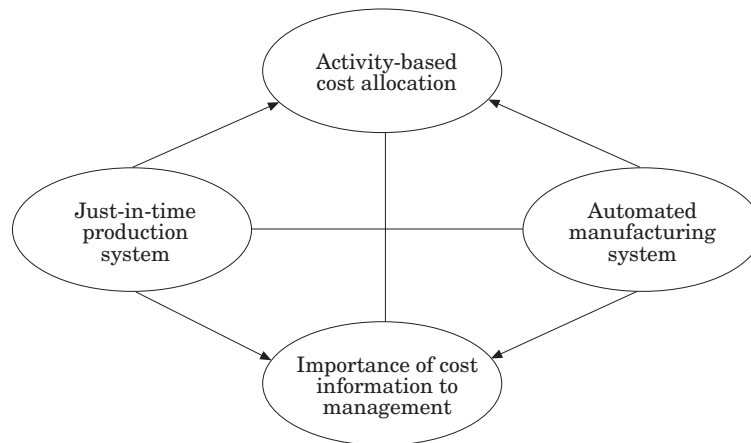


Figure 1. Diagrammatic representation of the relationships between the variables examined in the study

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