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The relationship between work organization and workforce agility in small manufacturing enterprises

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ABSTRACT

Organizational agility requires development of an adaptable workforce that is able to deal with unexpected and dynamic changes in the business environment. However, little research has been done on the attributes and characteristics of workforce agility. Even less is known about what organization characteristics are conducive to the agile performance of employees. The main goal of this study was to explore the effect of agile strategies on work organization and employees' performance. A total of 41 managers, 82 office workers, and 52 production workers from six small manufacturing companies participated in the study. Three questionnaires, including *Agility Strategy Scale*, *Work Organization Scale*, and *Workforce Agility Scale*, were used for the purpose of data collection. The results support a hypothesized relationship between management strategies focused on agility development, work characteristics, and workforce agility. The results also reveal that autonomy at work is one of the most important predictors of workforce agility. A combination of job demands and job uncertainty had a significant effect on workforce agility. The study also suggests that developing strong cooperative relationships within an organization and with customers and suppliers promotes workforce agility in small manufacturing enterprises.
Relevance to industry: This paper investigated organizational practices that were conducive to implementing agile management and strategies in small manufacturing enterprises. The study results can be used for optimizing work demands and conditions in the workplace environments that require constant change and adaptation.

1. Introduction

Today's enterprises operate in the extremely competitive environment of a global market. The increased rate of innovation and technological developments, fragmentation of markets, and elevated customer expectations toward customized products have led to the especially turbulent and rapid changes in the business environment (Swafford et al., 2006). Among proposals of how to deal with the uncertain and unpredictable environment the notion of agility is the most predominant and popular lately. This concept was proposed to describe a new approach in manufacturing and enterprise management that is necessary to achieve success in a modern dynamically changing market (Sharifi and Zhang, 2001; Yusuf et al., 2004). Although, many different definitions of "agility" and "agile manufacturing" exist in the literature, there is no commonly accepted definition and no consensus on the meaning of the term. The above terms are mainly understood as an enterprise's ability to quickly respond and adapt in response to continuous and unpredictable changes of competitive market environments (Goldman et al., 1995; Sharifi and Zhang, 2001; Yusuf et al., 2004; Gunasekaran, 1999). A detailed overview and discussion of the different definitions and approaches to enterprise agility are presented in Sherehiy et al. (2007). The empirical research in the last decade supported the beneficial influence of agility capabilities and enablers on companies' competitive advantages (Almahamid et al., 2010), and business performance measured as market growth, profitability, and product-service innovation (Dowlatshahi and Cao, 2005, 2006; Vazquez-Bustelo et al., 2007).

The successful and fast response to changes requires that an agile organization is able to adapt all enterprise elements such as goals, technology, organization, and people to the unexpected changes (Kidd, 1994). The existing literature especially emphasizes that without an agile workforce enterprise agility cannot be achieved. It is believed that workforce agility may provide such benefits as quality improvement, better customer service, learning curve acceleration, and economy of scope and depth (Herzenberg et al., 1998; Hopp and Van Oyen, 2004; Bhattacharya and Gibson, 2005; Fink and Newman, 2007).

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Agility was described as a new approach to management and manufacturing, which is profoundly different from a planned mass production (Goldman et al., 1995; Dove, 2001, Pinochet et al., 1996). It has been suggested that agility has serious implications for the nature of work organization (Plonka, 1997; Parker, 1998). It is expected that work in agile enterprises will become more complex and cognitively demanding due to employment of advanced information and manufacturing technologies (Forsythe, 1997; Gunasekaran, 1999). Since agility requires fast response to changes in the market, it increases uncertainty in the workplace and requires constant adaptation to new requirements, conditions, changes in work processes, and technologies from the employees. In addition, flexible technologies lead to the increase of the operational uncertainty because of higher variability and complexity in work processes (Parker et al., 2001). The changes in the work organization due to the adoption of an agile strategy are expected to provide significant benefits such as an increase of employees' autonomy and control over their work, enrichment of their tasks, and subsequently it is supposed to lead to improvement of employees' performance and wellbeing. Similar benefits were expected in relation to the introduction of such modern manufacturing practices as lean or just-in-time production, which were also considered as an important change from mass production. However, the empirical research has brought equivocal results. A considerable number of studies (Landsbergis et al., 1999; Parker, 2003; Mehta and Shah, 2004) have shown that lean or just-in-time production have increased job simplification and restricted job autonomy, which in combination with a higher pace of work and increased workload resulted in various negative health effects such as job strain, job depression, and work-related musculoskeletal disorders.

The effect of agile strategies on the conditions and demands of work in the organization has not yet been investigated. Also, it has not been investigated how new conditions and demands of work in agile enterprises affect the employees and their performance and if those conditions are conducive for the development of an agile workforce and agile performance. The current literature claims that the support and development of the employees in agile enterprises, as well as the cooperation and work team require new forms of work organization. The optimization of the work demands and conditions of the workforce and, subsequently, establishment of work practices conducive for employees' productivity and quality of work, require effective and efficient organization of work (Genaidy and Karwowski, 2003). Therefore, the present study investigates how agility strategy affects work organization and how, in turn, work organization in enterprises that adopted agile strategies affects the workforce agility. The agility strategy includes a wide range of practices focused on the employees' management; therefore, in this study the direct effect of an agility strategy on workforce agility was also investigated.

The theory and research in the area of work design provide several suggestions on particular characteristics of work organization that may have an important effect on employee performance in agile enterprises (Wall and Martin, 1987; Parker et al., 2001; Morgeson and Campion, 2003). It has been established in the literature that work characteristics such as job demand, job control/autonomy, job complexity, and job variety significantly affect employees' behaviors, attitudes, and job performance (Hackman and Oldham, 1976; Karasek and Theorell, 1990). There is no direct empirical evidence that those work characteristics (job demands, job control, and job variety) are related to the agile workforce attributes or agile performance. The past research on work characteristics has been mostly focused on such work outcomes as job satisfaction, motivation, and performance. However, recent publications provided evidence that those core work characteristics are also related to such behaviors as proactivity, learning, personal initiative, creativity, and innovations (Oldham and Cummings, 1996; Parker et al., 1997; Ohly et al., 2006), all of which represent forms or dimensions of agile workforce performance. Higher autonomy and control at work allows workers to respond to problems faster and develop a more flexible solution to problems during the operation process (Wall and Martin, 1987). The possibility to solve small operational problems without waiting for the supervisor or other staff allows them to understand better the problems, task, or work process and later to apply that knowledge to prevent or anticipate difficulties. The anticipation and prevention of problems during work are highly valuable abilities in the agile enterprise.

A complex job, which is characterized by a high level of autonomy, and skill variety requires an employee to focus simultaneously on multiple dimensions of the job and thereby can enhance creative problem solving. More autonomous jobs enhance cognitive complexity and allow individuals to formulate and pursue more elaborated plans and goals and to be more flexible and adaptable (Brousseu, 1983; Kohn and Schooler, 1978). Higher demands, job control, and skill variety develop the knowledge and skills of the employees and enhance their learning of new behavioral patterns, which in turn is very conducive for flexible and adaptable performance (Parker, 1998). Job control and job complexity also have a positive effect on personal initiative and proactive behavior (Ohly et al., 2006; Parker et al., 1997). Job control and autonomy allows employees to decide how, when, and what method to use to perform the job. Those attributes give employees more freedom and opportunity to adjust to unpredicted changes. Therefore, in this study the effect of the work organization on workforce agility was investigated in detail. Specific work characteristics such as job demand, job control/autonomy, job uncertainty, job variety and supervisor support was examined in reference to their effect on the workforce agility.

2. Human-work organization model in agile enterprises

The theoretical model used to guide the research presented is illustrated in Fig. 1. The model represents the interrelationships between the agility strategy, work organization, and workforce agility that are assumed in the present study. Each of the main constructs (agility strategy, work organization, and workforce agility) includes all the important dimensions of each examined variable.

2.1. Agility strategy construct

In this work agility is defined as an ability of an organization to respond rapidly to changes in the internal and external business environment and to act proactively with regard to the changes in

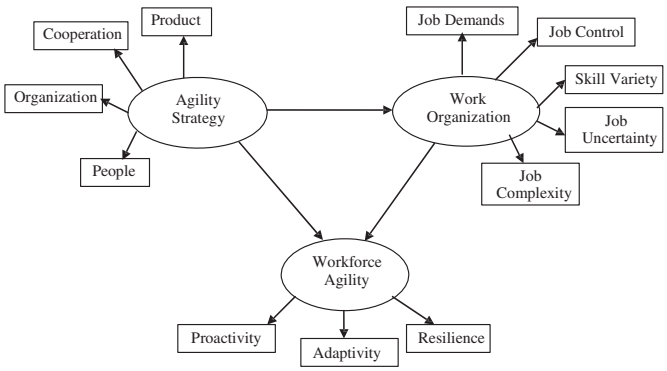

Fig. 1. Human-work organization model in agile enterprises.