

MODELLING THE ROLE OF HUMAN RESOURCE MANAGEMENT IN CONTINUOUS IMPROVEMENT

Frances Jørgensen¹, Paul Hyland² and Lise Kofoed¹

¹Aalborg University, Denmark

²Central Queensland University, Australia

frances@iproduct.aau.dk

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ABSTRACT

Although it is widely acknowledged that both Human Resource Management (HRM) and Continuous Improvement have the potential to positively influencing organizational performance, very little attention has been given to how certain HRM practices may support CI, and consequently, a company's performance. The objective of this paper is to take a first step in developing a theoretical model for the role of HRM in CI, based on the current literature from both fields. In particular, elements from the CI Maturity Model (Bessant and Caffyn, 1997) and a model depicting the role of HRM in innovation developed by de Leede and Looise (2005) serve as the framework for examining how specific bundles of HRM practices utilized during different phases of the CI implementation process may contribute to sustained organizational performance and enhanced operational performance. The primary contribution of the paper is theoretical in nature, as the model developed provides a greater understanding of how HRM can contribute to CI; however, the model also has practical value in that it suggests important relationships between various HRM practices and the behaviors necessary for successful CI. The paper concludes with a number of possible research avenues derived from the presented model.

BACKGROUND

Traditionally, the role of Human Resource Management (HRM) in an organization has been viewed as largely administrative in nature (Ulrich, 1997), responsible for maintaining procedures and policies related to employee selection, training, appraisal, reward and compensation, job design, and employee involvement (Beer *et al.*, 1984). Recognition of the value of human capital as a means of gaining strategic competitive advantage has however emphasized the importance of HRM in achieving organizational effectiveness (Conner & Prahalad, 1996; Barney, 1991), which has in turn led to increased research interest in the specific types of performance that can be enhanced through HRM. For instance, Ulrich (1997), argues that HRM has a major role to play in the development of organizational competitiveness through its influence on speed, responsiveness, and learning capacity; Ichniowski *et al.* (1997) provide evidence of the positive effects of HRM practices on product quality and others have cited the influence of HRM practices on financial success (Faems, *et al.*, 2005; Cascio, 1991).

The relationship between HRM practices and the establishment of learning organizations and environments that support organizational change have also been the focus of research. Keep (1989) has argued that HRM practices should be linked to organizational learning while others (e.g. Maxwell *et al.*, 2002; Walton, 1999) emphasize the importance of strategic HR in organizations

focused on becoming learning organizations and seeking to develop capabilities that enable knowledge sharing (Scarborough and Carter, 2000). Beckhard and Pritchard (1992) point out that HRM capabilities can support change strategies by utilizing practices that encourage risk taking, providing employees with feedback and making learning from experience explicit. The links between HRM practices and innovation are being researched in a growing but emerging body of literature. Michie and Sheehan (1999) argue that organizations that utilize a variety of HRM practices are more likely to engage in R&D and technological development than organizations with few or no HRM capabilities. Finally, Hyland *et al.* (forthcoming) have shown that manufacturing firms that integrate HRM into their Continuous Improvement (CI) programs have a higher rate of CI activity. Thus, while there appears to be indications that HRM supports organizational change initiatives, including CI, there are many questions left unanswered. Firstly, it is not enough to state that HRM can positively influence change initiatives in general and CI in particular. Like other types of managerial practice, HRM encompasses many functions and not all managerial practices have an equal impact on organizational performance. Therefore, more specific knowledge is needed about the particular HRM capabilities that can support CI, and consequently enhance organizational performance. Secondly, due to the developmental nature of CI, it is important to consider how specific HRM capabilities affect CI at the various stages of its implementation.

RESEARCH OBJECTIVE

The research objective of this paper is to put forward an initial model that incorporates HRM functions and capabilities with the CI implementation process, with the ultimate goal of improving organizational performance. The model is based on research of specific HRM capabilities and practices that have been shown to positively impact differing measures of organizational performance, emerging research on the role of HRM in supporting and engendering innovation, and elements of the CI Maturity Model (Bessant and Caffyn, 1997), which provides a framework for understanding the development of CI in organizations. HRM is discussed in terms of the specific ways that the effective management of human resources influences and enhances organizational performance. A model for integrating HRM into CI implementation processes is presented and discussed, with emphasis on identifying avenues for future research that will support the further development of the model in empirical settings.

HUMAN RESOURCE MANAGEMENT

According to Beer *et al.* (1984); human resource management encompasses all managerial decisions and practices related to the organization and its employees, including the policies and functions involved in the design of the organization and the work processes, staffing of appropriate persons to perform the work processes, performance measurement and the recognition and rewarding of the individuals performing the task, and the management of communication channels to facilitate employee participation in the work and decision-making processes. As this definition essentially qualifies most organizational activities as within the HRM domain, researchers have sought to further define, refine and clarify the field. Alternatively, Pfeffer (1994; 1998) has proposed a list of 16, and subsequently seven, "best practices" for HRM that focus on desired outcome (such as ensuring employee security, reducing status between organizational levels) rather than function and how these outcomes influence organizational performance. Attempting to identify specific functions and or (intermediate) outcomes of HRM is based on the assumption that there are some practices that will be effective in all organizations in all industries, that is., a universal approach to HRM (Delery and Doty, 1996). Studies assuming this universal approach have suggested ways in which HRM can improve organizational performance, through training

(Osterman, 1995; Pfeffer and Veiga, 1999; Harel and Tzafrir, 1999); employee participation schemes (Hodson, 2002; Pfeffer, 1994); career development programs (Blackwell *et al.*, 1994); incentive programs (Throley-Hill and Stevens, 2001); and strategic selection mechanisms. This has been supported by the work of Mak and Akhtar (2003) who describe the importance of training in successful quality management and innovation activities.

While many researchers seek to identify the relationship between a particular HRM function and organizational performance, others insist on the interdependency and potential synergistic effect of combining HRM functions into bundles or complementarities (Milgrom and Roberts, 1995). Ichniowski *et al.* (1997) propose that, for example, combining compensation plans with practices aimed at increasing employee involvement will result in improved productivity because employees are rewarded for their contributions. It is not the job design but rather the rewards, they claim, that provide employees with the motivation to participate, but it is the job design (i.e. employee participation) that allows for the motivated employee to participate in relevant decision-making activities that consequently improve performance. These same authors have demonstrated that companies combining several HRM practices have significantly higher financial and quality performance levels than companies using only one or no HRM practices.

Rather than attempting to find a single HRM function or a bundle of HRM practices that best enhances organizational performance in all or most organizational contexts, the resource-based approach to HRM (Barney, 1991) emphasizes the need to tailor the organization's resources, including its human capital, to the companies strategic objectives. From this perspective, HRM must be responsible for the management of the capabilities and competencies the organization needs to sustain performance and be successful. The resource-based approach to HRM does not in anyway dismiss the idea that there is one "best" practice or bundle of best practices, but rather these must be tailored to achieving the strategic objectives of the organization. One complementarity gaining recognition is that of "*High Performance Work Practices*, including comprehensive employee recruitment and selection procedures, incentive compensation and performance management systems, and extensive employee involvement and training" (Huselid, 1995, p.635). designed to support the organization's fulfillment of its strategic goals. These HPWP have been linked to improvement of employee competencies and the subsequent improvement of organisational capabilities, improved motivation, and positive results with retention of valued employees (Jones and Wright, 1992).

What appears missing from each of these approaches to research on HRM in relation to change processes such as CI is any consideration of the progressive and evolving nature of change initiatives. In other words, while the requirements an organization has of its employees may be relatively stable as long as the internal context remains unchanged, these requirements can and do change dramatically during the course of a change initiative. A change process, whether radical such as business process re-engineering or incremental such as CI, often results in new and radically different jobs that require different and new skills and even additional staff with totally different competencies. So consideration needs to be given to HRM practices that are important at different phases of the improvement process. A model that illustrating the specific HRM practices that impact CI at various stages of the implementation should provide guidelines for practitioners looking to allocate resources most effectively and efficiently and provide researchers with a framework with which to study the influence of specific HRM mechanisms on CI capability development.

HUMAN RESOURCE MANAGEMENT AND INNOVATION

The underlying assumption of the role of HRM practices and capabilities in supporting innovation is that providing the appropriate structures, work practices job design and incentive to qualified employees will result in measurable improvements in both the innovation process and in the outcomes (Laursen and Foss, 2003). Thus, the HRM capabilities required involves the design of jobs and work practices and then the selection and training of qualified employees and a compensation scheme that provides incentives for employees making valuable contributions. Job design is regarded as extremely important to facilitating innovation, according to the chain-link model of innovation (Kline and Rosenberg, 1986), which argues that the knowledge necessary for innovation is developed through complex interactions between members of the organization. A common example of the type of innovation knowledge gained through such interaction is in R&D department where employees in design and engineering working closely with employees from marketing manufacturing, and quality control are able to interact and share different types of complex knowledge. Without the appropriate job design, employees outside of R&D will not have an adequate understanding of the product development process to contribute nor will they have the opportunity to be involved in complex innovation processes. In essence, HRM plays a vital role in determining structures and formalizing activities and jobs and work practices necessary for innovation.

In addition to the need for HRM capabilities and practices that support knowledge generation and sharing needed for innovation, de Leede and Looise (2005) maintain that there is a need for an integrative research approach that emphasizes the dynamics of the change process rather than focuses solely on the causal relationships between specific practices and their associated performance outcomes. Their research suggests an important relationship between HRM practices and capabilities and the different phases of innovation—in other words, that a certain HRM capability, or bundle of practices, is especially critical at a specific stage of the innovation process while another function or bundle of practices would be beneficial at another stage of the process, which would be overlooked in traditional models, such as those used in other approaches to HRM.

According to de Leede and Looise (2005), HRM must support and enable innovation at two levels—at the organizational and strategic level (i.e. developing an innovative capacity within the organization) and at specific stages of the process and/or product innovation—and these two levels of innovation must be integrated in order to achieve the desired outcomes. Developing an innovative capacity is linked to strategy, goal setting and performance measurement, or what de Leede and Looise (2005) refer to as “HRM innovation”. This includes work systems, job design, compensation and rewards, employee related factors that must be aligned with the organization’s strategic objectives. Support at the second level of innovation can occur through HRM practices that support a culture of innovation including leadership, opportunities for change champions, teamwork, and creativity (e.g. Nijhof *et al.*, 2002), but these differ in importance at different stages of the innovation process.

The starting point for de Leede and Looise’s (2005) framework for HRM that supports innovation is the innovation model developed by Tidd *et al.* (1997). This model proposes that there are four distinct phases to the innovation process: signal processing (environmental scanning, looking forward, information processing necessary for decision-making); strategy (analysis of options, choosing an option and planning the process so that it is linked with resources and strategy); resourcing (acquisition of resources); and implementation (following through on the innovation until completion, developing market, launching). The innovation process as a whole is built upon a feedback loop that ensures that integration of learning and re-innovation (Tidd *et al.*, 1997, p.41).

This process is supported by HRM practices in various ways, according to de Leede and Looise (see figure 1).

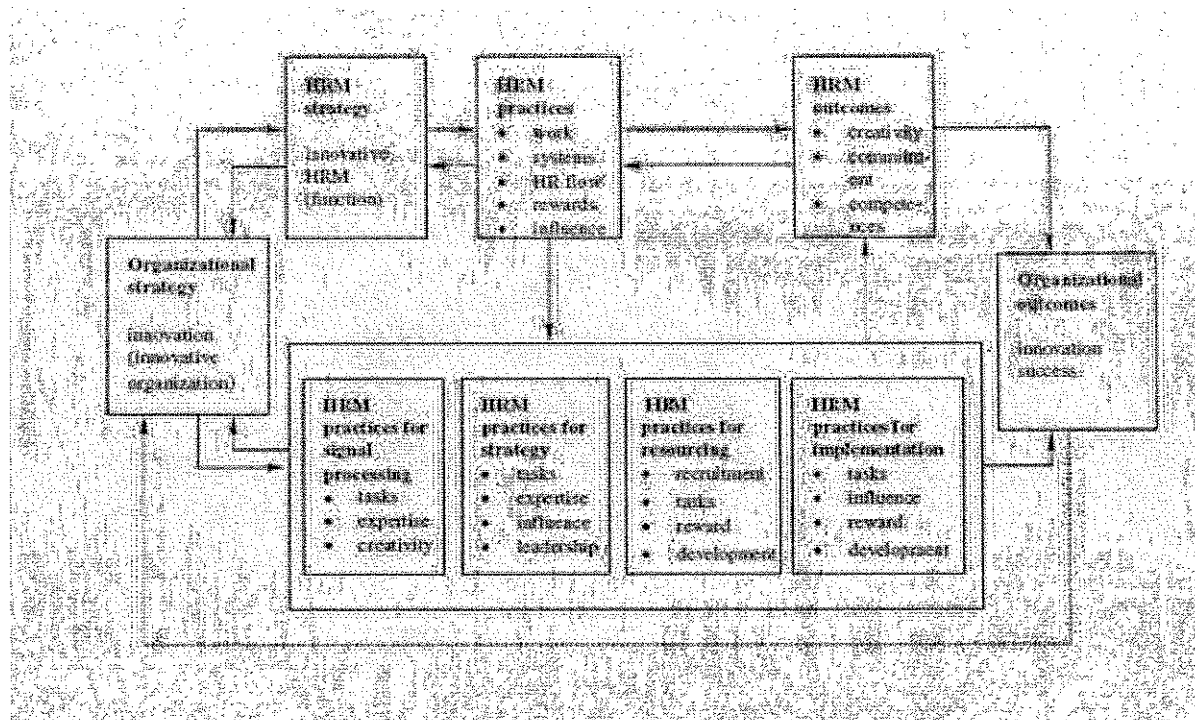


Figure 1 An integrated model for Innovation and HRM (de Leede and Looise, 2005)

The organizational strategy, the “innovative organization”, is shown as a precursor and constant element in the model. The upper portion of the model illustrates the role of HRM in supporting the establishment of an innovative organization, including an innovative HRM strategy, HRM practices that organize the work processes (e.g. work design, teams to support involvement) and supporting systems (e.g. recruitment, training, compensation), and the expected outcomes from applying these practices in alignment with the HRM strategy, which is in turn aligned with the organizational strategy. The outcomes include the capabilities and competencies that foster and enable innovation.

On the lower level of the model, the HRM practices that provide support during each of the four stages are included. In the first phase, HRM is responsible for ensuring the capabilities (e.g. decision-making, creativity) and opportunities necessary for signaling; in the strategy phase, HRM must also ensure that those involved are provided with the appropriate leadership and influence to take action; in the third phase, internal and external recruitment practices may be needed to develop solutions and efforts must be rewarded; in the final stage, there is likely to be further organization of tasks in order to bring the innovation to market or to implement the new process.

The framework developed by de Leede and Looise (2005) represents the first attempt at defining the role of HRM at specific stages of the innovation process. There are however limitations to the model: first, the model was developed on the basis of post hoc reflections on a case company and secondly, the types of HRM functions and practices are fairly broad and vague. The authors themselves cite the latter limitation as a direction for further research, recognizing the need for more finely detailed descriptions of the types of practices HRM can use to influence the innovation process positively. On the other hand, the model provides an excellent starting point for examining the role of HRM in CI once some important differences between innovation and CI are taken into

consideration. In particular, innovation is represented as a series of finite phases, whereas CI is by definition a continuous process that develops progressively over time. It would be possible to develop a model based on a single CI implementation using, for example the PDCA cycle, and indicate the role of HRM in each of these phases because it is conceivable that HRM practices could differentially impact each of these phases. Such a model would be quite similar to de Leede and Looise's (2005) framework; however, it is questionable how useful this type of model would be in practice for at least two reasons. Firstly, there is wide variation as to assignment of responsibility in the phases of the PDCA cycle with some organizations placing responsibility for the full implementation process in the hands of an improvement team while managers maintain responsibility for all decisions regarding the implementation (Boer *et al.*, 2000). Secondly, the model would provide a very narrow picture of CI as consisting merely of a series of PDCA cycles, which is not consistent with the current understanding of CI. In order to capture the scope and breadth of CI, the CI Maturity Model (Bessant and Caffyn, 1997) is therefore used as the foundation for understanding the potential role of HRM in CI. In the next section, the CI Maturity Model is described in terms of how it can support the development of a model of HRM practices that could support CI.

THE CI MATURITY MODEL

While the emphasis of innovation is on developing new products, processes, and/or services, CI focuses on improving existing practices with resources found within the organization. Successful CI is dependent on organization-wide involvement and participation and while top management's support and involvement is necessary, much of the CI activities occur at the ground floor of the organization. Over time, members of the organization are expected to become more competent at certain key CI behaviors, until they reach the point that CI is a part of the daily activities—a way of life for the organization and its members (Bessant and Caffyn, 1997). The progressive development of CI is represented by the CI Maturity Model shown in Figure 2, below. At the first level, problem-solving and implementation of improvements is haphazard and occasion, with no discernable structure. At level two, a systematic approach to CI has been adopted, where problem-solving and improvements are prioritized and organized in a within the department or organization. When CI becomes goal-oriented, the focus becomes much sharper and improvement initiatives are planned and executed to attain group, departmental, and organizational objectives. When individuals, groups, and departments begin to actively seek solutions even before problems arise, they have reached stage four. Finally, the fifth level, "strategic CI", would assume that CI is a fully incorporated and integral part of the organization.

According to Chapman and Hyland (2000), the problem with models such as the CI maturity model is that they are based on life-cycle theory and an evolutionary approach to change that insists that an organization is organic in nature and that it must undergo a sequence of pre-defined, necessary changes to reach its ultimate stage. However Van de Ven and Poole (1995) maintain that teleological theory can be used to explain changes based on goals as the final cause for guiding change. They claim that this approach underlies many organizational theories, including those on adaptive learning (March and Olsen, 1976) and strategic planning and goal setting (Chakravarthy and Lorange, 1991). Proponents of this theory view change or development as "a repetitive sequence of goal formulation, implementation, evaluation and modification of goals, based on what was learned or intended" (Van de Ven and Poole, 1995). As this is very similar to the plan-do-check-act or PDCA cycle widely used as a general basis for CI activities, CI can be viewed as part of teleological theory. Unlike life-cycle and evolutionary theory, teleological theory operates in a constructive mode. A constructive mode of change produces innovative and often unpredictable

solutions and is more creative than prescribed modes of change. Also, teleological models are not based on the idea that there are clearly-defined stages that an organization must progress through in order to achieve success. So, a firm embarking on CI does not have to follow a prescribed path and can move from one stage to the next without having to successfully master previous tools and techniques.

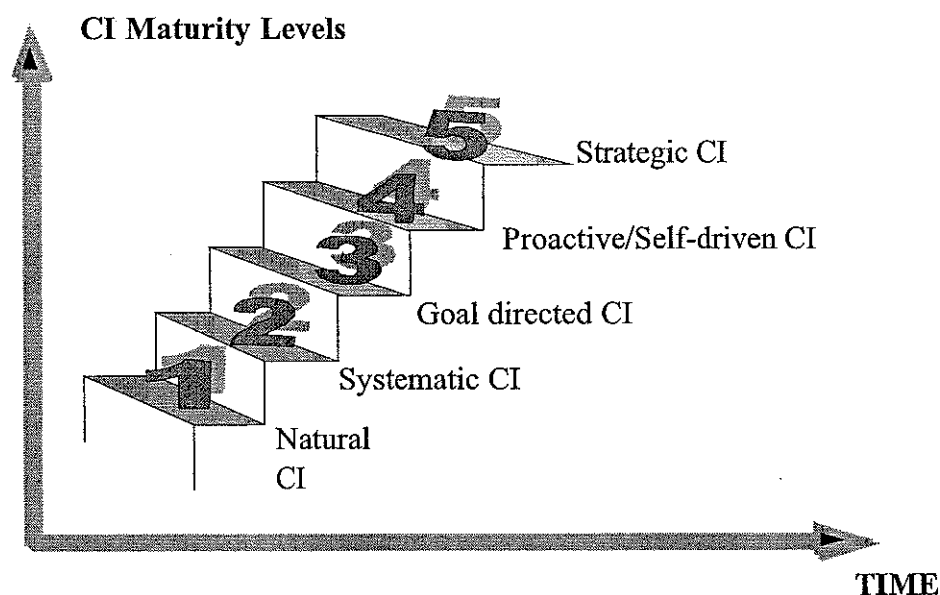


Figure 2 CI Maturity Model (based on Bessant and Caffyn, 1997)

Thus, the concepts of emergent strategy and organisational learning, teleological theories of organisational development and what might be called “organic CI” approaches have much in common. The term “organic CI” is used by Chapman and Hyland (2000) to describe the opposite of highly-structured, perhaps traditional CI where individual or group improvement activities are undertaken within a tight framework of strategy deployment or hierarchical goal development. This allows for a more spontaneous or self-directed CI approach where individuals or groups undertake improvement activities unbounded by a tight control structure, but perhaps within a consistent set of broad organisational values. The ability of an organisation to allow independent CI activities (albeit within a broad umbrella of organisational values) which can then shape and modify company strategy, is a valuable asset, particularly for organizations competing in rapidly changing global markets. A number of empirical studies (e.g. Rijnders, 2003; Savolainen, 1999; Jørgensen, 2003) lend support to the notion of “organic CI” (Chapman and Hyland, 2000), describing an often chaotic, cyclical, and/or iterative process by which CI develops and matures in organizations. Further, Jørgensen *et al.* (forthcoming) report how organizations that tailor their CI efforts to their own strategies and objectives, rather than focus on following a predetermined, linear path to CI development may experience greater performance results.

Although the debate over the (non)linearity of the CI maturity model may have consequences for the practical application of a model of the role of HRM in CI, it does not limit its usefulness in providing a theoretical framework. In the next section, the modelling of this model is described and explained.

INTEGRATING HRM WITH CI IMPLEMENTATION

As with the model developed by de Leede and Looise (2005), an integrative approach is desired for understanding the role of HRM in CI implementation, as HRM practices can and do impact CI at both the organizational level—i.e. the “CI Organization”—and the level of specific CI activities—i.e. the “CI Implementation”. Further, the “CI Organization” is expected to influence all aspects of HRM as it seeks to influence CI (see Figure 3). In the same way that “innovation HRM” is envisioned in de Leede and Looise (2005) model, a “CI HRM” strategy would be expected to influence specific practices such as the organization of the work to support the developmental progression of CI and organization-wide adoption of CI. The “HRM Practices” expected to support the development of the CI organization include leadership and structuring of the organization and its systems to enable the CI organization to progress (e.g. systems for continuing development of CI, systems and practices to measure CI impact and development). The “HRM Outcomes” would also be quite similar, namely “creativity, commitment and competencies”. In addition, the “CI HRM” would be expected to influence and be influenced by the “HRM Practices” and the “HRM outcomes”.

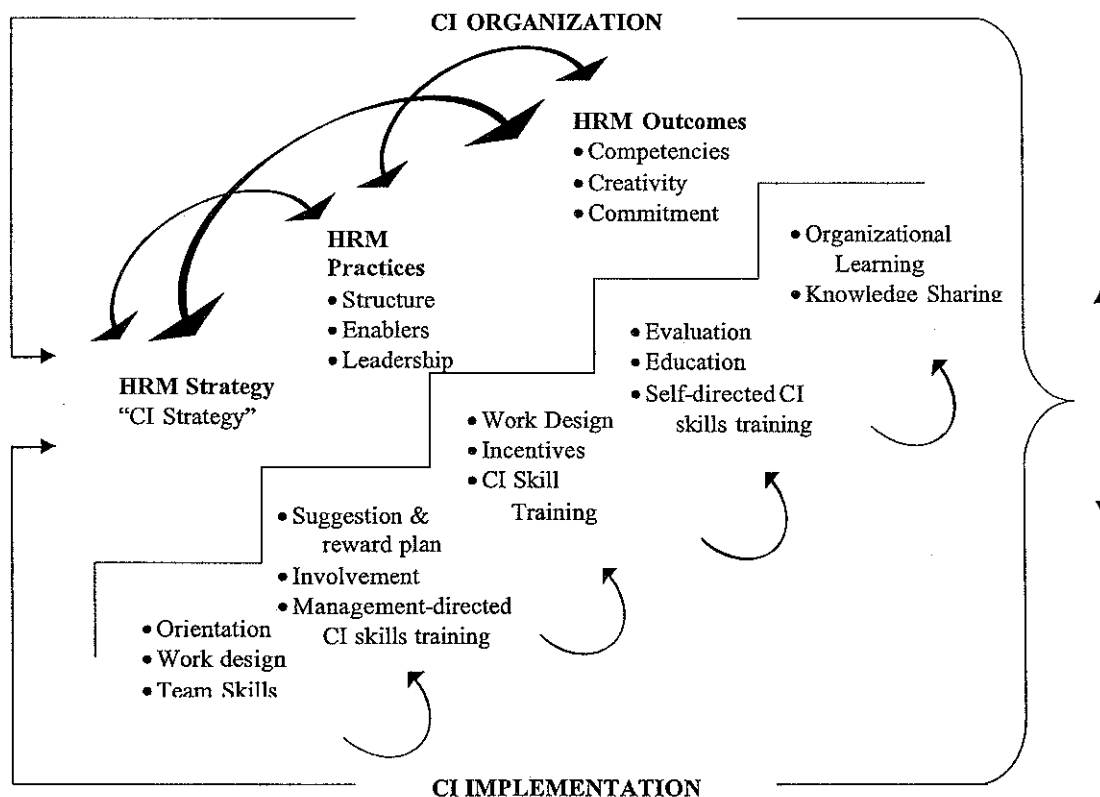


Figure 3 The Role of HRM in CI

Defining the organizational outcome relative to de Leede and Looise's (2005) is however somewhat problematic, because using the term “CI Success” is rather vague and does not address the impact of CI on company performance. Instead, two measurable performance outcomes have been included, namely “Sustainable Organizational Performance” and “Enhanced Operational Performance”. Sustainable organizational performance is characterized by employee commitment and positive attitudes towards change, improved safety and working conditions, decreased

absenteeism, improved organization, cooperation, and communication, skill and competency development, improved safety and working conditions and improved administrative routines. Enhanced operational performance would encompass improved lead time, decreased costs/waste, improved productivity, and higher customer satisfaction.

The lower portion of the model reflects the particular HRM practices considered important at the various stages of CI maturity:

Level 1: Orientation of new employees with the aim of providing an understanding of the organization, its strategy, and developmental goals and the importance of CI to these; the design of work processes to facilitate and enable generation of ideas and suggestions for improvement; training in basic team skills such as conducting effective team meetings, communication, and decision-making.

Level 2: Implementation of a suggestion scheme that allows for members of the organization to propose improvements, receive timely and learning-directed feedback on these, and rewards for selected improvements; practices which facilitate, enable, and encourage wide-spread involvement of all members of the organization in CI; specific training in the effective use of CI tools management deems necessary and appropriate for the employees, including problem-analysis and problem-solving tools and team skills aimed at developing suggestions to action plans.

Level 3: Design of the organization's work structures, systems, processes and procedures to facilitate CI at both the local and organizational (e.g. cross-functional coordination) levels; incentives aimed at encouraging organization-wide involvement and cooperation across organizational levels; CI skill training, including communication skills that support cooperation within and across organizational levels and customers and suppliers.

Level 4: Evaluation of the individuals and group performance with respect to CI contribution; opportunities for continuing education both internal and external to the organization in order to increase the breadth and scope of the individual's and organization's knowledge base; self-directed CI skills training in which the individuals and teams in the organization seek and obtain higher level CI skills.

Level 5: Systems, mechanisms and practices that support an organizational learning culture; knowledge sharing practices that transfer tacit knowledge to explicit knowledge and support the transfer of individual knowledge to organization-wide knowledge.

CONCLUSION

The objective of this paper was to construct a theoretical model of the role of HRM on CI, based on the extant literature on HRM, CI, and innovation. In particular, the model was constructed using a basic typology of HRM functions and practices, elements from the CI Maturity Model (Bessant and Caffyn, 1997), and a conceptual model depicting the role of HRM in innovation (de Leede and Looise, 2005). In the model, HRM is depicted as having a critical role in supporting CI at both the organizational level, through an HRM strategy, HRM practices that support the systems, procedures, and processes that enable CI, and through the HRM outcomes of creativity, competency development, and commitment, and at the CI implementation level, as individuals and groups within the organization develop CI maturity. The cumulative outcomes of HRM's impact on CI are sustainable organizational performance and enhanced operational performance. The model contributes directly to the development of theory on CI by illustrating the potential role of HRM in supporting CI.

One of the intrinsic strengths to the model as it is presented is the relative ease at which research questions can be formulated and subsequently tested. First and perhaps foremost, future research should attempt to determine whether the identified HRM practices are appropriate for supporting CI in general and CI at the various stages of maturity in particular. The discussion of whether CI maturity is or should be linear appears central to this research; however it is proposed here that regardless of how this development occurs (e.g. cyclically, linearly, or chaotically), there exist specific HRM practices or perhaps HRM bundles that should be more effective enablers of CI at different phases of the implementation. The next step is to begin to identify these HRM practices, and just as importantly, attempt to explain how these practices affect CI. A possible confound and potential weakness to the model involves identifying appropriate measures to be used in future research. In many instances, there is a risk of creating a tautological dilemma, as the objective of the HRM practice may be the same as the outcome to be measured. This would be expected with HRM practices aimed at increasing participation, for example, and then measuring the level of participation resulting from the use of the mechanism. One possible way to circumvent this issue would be to apply measures of accountability such as return-on-investment or of effectiveness and efficiency of the HRM mechanism. This line of research would be especially interesting with respect to CI implementation, as it could be hypothesized that some HRM practices are "one shot deals" delivered with high intensity, while others are continuous, building on previously implemented practices. A third direction for future research with this model might involve addressing the influence of the some previously identified enablers and disablers of product innovation, CI, and organizational learning (e.g. Corso and Pavesi, 2000; Jørgensen, 2003) on the HRM mechanisms used to support the phases of the CI implementation.

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