Psychological Contributions to Competitive Business Process

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Ployhart (2012) identifies two areas where contributions from industrial–organizational (I–O) psychologists may be particularly relevant to a psychology of competitive advantage—strategy formation and human capital management. These are two among a range of areas I–O psychologists could address in the influential model of competitive advantage developed by Michael Porter (1985). Figure 1 presents porter's generic value chain model, which distinguishes between an organization's primary value chain activities and its support activities. The primary value chain is the end-to-end integration of processes that produce and deliver the organization's products and services. According to Porter (1985, p. 33), ''the value chain disaggregates a firm into its strategically relevant activities in order to understand the behavior of costs and the existing and potential sources of differentiation.''

In addition to contributing to human resource management, I urge I–O psychologists to consider making potentially unique contributions to improving the competitiveness of a primary value chain activity—operations. The effectiveness of an organization's business processes for designing, producing, and delivering their products and services is frequently a strategic differentiator among competitors. This differentiator has proven especially

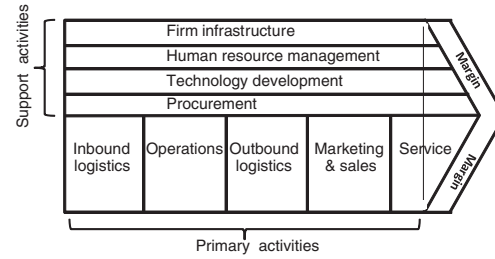

Figure 1. Porter's (1985) generic value chain model.

potent in automobile manufacturing where Japanese companies adopting the lean principles pioneered in the Toyota Production System achieved strong competitive advantages in lower costs, higher quality, and shorter production times.

Although Ployhart attributes the rise of Japanese auto manufacturers to their use of newer technology, Womack, Jones, and Roos (1990) in their comprehensive study of the automotive industry attribute the success of the Toyota Production System to its extraordinary ability to reduce waste in the manufacturing process by improving worker effectiveness. Toyota's waste-reducing techniques included such practices as just-in-time inventory, better organization of physical resources around workers, extensive training, empowered teams, and the rapid elimination of defect causes. Womack et al.'s analysis of production data concluded that technology was only a contributing factor in a system that focused primarily on improving the capability of the manufacturing process and the workers who performed it.

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The study of organizational and business processes presents a meso-level opportunity for linking the micro behavior of individuals and teams with macro-level organizational outcomes. Individuals and teams frequently perform their tasks using processes prescribed by their organization or discipline. The effectiveness of these processes, especially when combined with continual process improvement techniques such as Six Sigma or Lean, is a greenfield for behavioral analysis. Continual process improvement has not been formulated as a theory but rather as a toolbox of best practices such as statistical process control, the design of experiments, empowered teams, and other activities to which psychologically-based research is relevant.

Although process improvement techniques have been used for creating competitive advantage in manufacturing, their use for creating competitive advantage in knowledge-intense work such as software development has been more challenging. For instance, the assumptions underlying classic statistical process control are strongly violated in domains where individual differences variation is extremely high and the complexity of nonroutine work varies from task to task (Raczynski & Curtis, 2008). The average Six Sigma master black belt lacks the training in behavioral statistics that is common among I–O psychologists. Consequently, they continue to apply control charts in situations where their results can be misleading rather than switching to more appropriate statistical techniques. Opportunities such as this for I–O psychologists to contribute solutions from their unique training abound in methods for improving the performance of business processes.

Psychologically based questions underlying the improvement of competitive business processes are numerous. For instance:

- To what level should a business process be defined?—to the level of individual tasks, or no lower than the level needed to guide coordination among two or more people, leaving individuals to select work methods tailored to their individual capabilities?
- What is the best way to represent process information (e.g., roles, tasks, work products, and sequencing), especially when process alternatives must be selected under stress and may involve multiple teams?
- How much empowerment can be afforded a team when other teams share dependencies on its work?
- What is the best way to operationalize multifunctional teams whose members come from disciplines with different expectations about how business processes are performed?
- How should a business process workflow be designed to manage variation in performance among teams executing dependent sequential tasks or related parallel tasks?
- Since a defined business process creates expectations among individuals and teams along the value chain, what limits should be set on tailoring individual or team work procedures so that these expectations are not violated?
- How much can variation in team performance be reduced by adopting or improving standard business processes?
- How can organizational learning from measuring the performance of standard business processes be best assimilated into individual and team performance?
- How do we prepare individuals and teams to work using agile business processes where roles, team procedures, or reconfigurable business process steps can change rapidly to meet customer needs or market competition?

A particularly critical issue in creating competitive advantage is developing the organizational agility to rapidly respond to changes in customer demand or market conditions (Goldman, Nagel, & Preiss, 1995). Flexible reconfigurable business processes provide a foundation for business agility. An organization's standard business

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processes, once mastered, can be disaggregated and reassembled in creative ways to solve emerging challenges. However, implementing agile capability is an organizational transformation that requires the change management skills possessed by experienced I–O psychologists. The rapid formation of multifunctional teams that tailor and integrate situation-specific solutions from a menu of business process components is critical to organizational agility. Preparing people, and especially managers, to operate effectively in an agile environment is similar to change management challenges I–O psychologists have undertaken in other contexts.

Many of the behavioral challenges in competitive business processes raise an important distinction between traditional team-based research and the issues raised in business process research. Teams and their behavior represent an internal variable in models of competitive business processes. However, the summed performances of individuals and teams do not necessarily equate to the performance of a business process, in the same sense that the properties of atoms do not sum to explain the performance of molecules. Thus, competitive business process models must include variables that emerge from the interaction of individuals and teams that cannot be observed except when executing the organization's business processes. These models must embrace the performance of multiple, interdependent teams whose work may be performed in either a parallel or sequential workflow. Such models will populate the meso-level between the microfocus of traditional I–O psychology and macro-level models of competitive firm performance.

To contribute to these meso-level models, I–O psychologists will need to adopt a systems perspective in their research. For example, the people capability maturity model (Curtis, Hefley, & Miller, 2001) treats human resource management as a system of integrated processes (e.g., staffing, performance management, team development, workforce strategy, etc.) that can be deployed in evolutionary stages called maturity levels. Each maturity level establishes a stronger organizational capability for developing, optimizing, and evolving the workforce capability needed to execute a business strategy. Case study results (Curtis, Hefley, & Miller, 2003) show gains in various measures of workforce capability and performance when human capital management is focused on staging the deployment of an integrated system of workforce processes rather than on implementing isolated best practices.

A systems perspective aggregates the characteristics of individuals and teams into internal variables that contribute to the performance of an organizational system rather than treating organizational-level variables as exogenous factors affecting the attitudes or behavior of individuals and teams. The dependent variables of interest in meso-level models will be organizational-level performance outcomes whose variance will be more fully explained by insights in how micro-level task performances aggregate into meso-level business process behaviors. I–O psychologists are uniquely prepared to study the meso-level behavior of competitive organizational systems and the factors that cause variance in their performance.

I–O psychologists are not new to the domain of competitive business process. For instance, I–O psychologist Geary Rummler made landmark contributions to this domain (Rummler & Brache, 1995) and is one of the primary figures credited with stimulating interest in business process management during the 1990s. Compared to other disciplines, I–O psychologists are often better prepared for developing research strategies and providing insightful solutions to the complex behavioral issues that underlie competitive advantage. The domain of competitive business process provides an opportunity for I–O psychologists to meet business theorists at the meso level.

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