The Role of Firms’ HRM practices in Building Human Resources for Industrial Innovation in Developing Countries

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AGENDA

• Human Resources for Innovation: Traditional view

• The Other Side of the Story

• Firms contribution to development of HR

• Surfing the background literature

• The Scope of this Research

• Methodology
Human Resources for Innovation: Systems Perspective

• Supply-biased approach. (Lundvall, 1992; Hemmert, 1998; Lundvall et al., 2002)

• International League Tables. (Lichtenberg, 1994 Pattel & Pavitt, 1994; Freeman, 1995; Mani, 2002)

• Demand-related factors: economy’s and firms’ absorptive capacity for HR. (Alcorta & Peres, 1998; Valenti, et al., 2000; Chang & Shih, 2004; Texeira, 2004)

• Education: Linear model in systems of innovation. (Bush, 1945; Nelson, 1959; Pavitt, 1998; Edquist, 1997; Smith, 2000)
The Other Side of the Story

• Increased awareness: dynamics of markets HR; organization, knowledge creation, learning, development and management of HR in firms and networks. (Hemmert, 1998; Lundvall et al., 2002; Coriat & Wenstein, 2002; Johnson & Lundvall, 2003)

→ Changing modes knowledge production-use. (Gibbons et al., 1994; Johnson & Lundvall, 2003)

→ Do Firms’ contribute to development of HR for innovation? (Hemmert, 1998; Michi & Sheehan, 1999 & 2003; Laursen & Foss, 2003; Terzirovski & Morgan, 2004)
Who Performs R&D in the US?

Educational distribution of individuals in non-academic S&E occupations in the US, 2000

- Bachelor’s: 44%
- Master’s: 20%
- Some College: 11%
- High School or less: 6%
- Associate’s academic: 4%
- Associate’s vocational: 3%
- Professional: 1%
- Doctoral: 11%

Distribution of S&E-degree workers with R&D as major work activity, by degree level: 1999

- Bachelor’s: 56%
- Master’s: 27%
- Doctoral: 14%
- Professional: 3%

Distribution of S&E-degree workers with R&D as major work activity, by field of highest degree: 1999

- Engineering: 32%
- Life Sciences: 14%
- Social Sciences: 16%
- Non-S&E: 18%
- Maths/Computer sciences: 11%
- Physical Sciences: 9%

Firms Contribution to Development HR for innovation

• 4 intertwined interactive dimensions:


- Personnel characteristics, HRM practices. (Hemmert, 1998; Michi & Sheehan, 1999 & 2003; Laursen, 2002; Laursen & Foss, 2003)

- Knowledge required, generated and used within firms. (Gibbons & Johnston, 1974; Faulkner, Senker & Velho, 1995; Smith, 2000; Salter & Gahn, 2000; Laursen & Salter, 2004)

Management Studies

• Linkage HRM-innovation better established in management literature, -e.g. R&D-personnel. (e.g. Katz, 1988; Mumford, 2000)

• Attention on creativity, attractiveness, motivation, productivity R&D personnel. (Badawy, 1988; Alic, 1995; Gupta et al, 1993; Debackere, et. al., 1997; Mumford, 2000)

• Management orientation: mostly descriptive and prescriptive. (Nelson, 1991; Zanko et al., 1998; Michi & Sheehan, 2003)

→ Focus on specific aspects of particular HRM policies;

→ “Best-practices”, “role-models”;

→ Failure: relationship firms’ internal innovatory processes and environment.
Economics & Innovation


### Relevant HRM Practices

Enhanced HRM practices and Firms’ innovative performance

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* Mentioned in management studies, though not formally addressed in the innovation literature. Source: Author with information obtained from the studies cited in each column heading.
What We Have Learned

• Enhanced HRM practices better as systems. (Ichniowski, 1997; Zanko et al., 1998; Michi & Sheehan, 1999; Laursen & Foss, 2003)

• At least 4 possible clusters of dynamic HRM.

• Positive relationship between alternative characterizations of technological and organizational change. (Lorenz, 2003)

• Sectoral affiliation conditions the impact of HRM on innovation. (Laursen, 2002; Laursen & Foss, 2003)

• HRM practices condition interactions with environment.
Some Knowledge Gaps

• Most empirical studies based on survey data or case studies. (Michi & Sheehan, 2003; Laursen & Foss, 2003; Lorenz & Wilkinson, 2003)

• Lack of detailed/comparable data across countries. (Lorenz & Wilkinson, 2003)

• Difficult to see:
  → Influence on distinct departments/people;
  → Impact on ‘creativity’, ‘creative-processes’ underpinning innovation;
  → Contribution along different stages of innovative process;
  → Objectives pursued by firms;
  → Specific impact on firms’ external interactions;
  → Characteristics of training, issues and agents involved.
Research on Developing Countries

• Management: specific aspects of particular HRM practices. (Kaplinski, 1995; Ta-Cheng Hsiao, 1997; Zanko et al., 1998; Kim & Cha, 2000)

→ Mostly descriptive, little performance considerations. (Zanko et al., 1998)

→ Centred on dynamic South East Asian countries.

• Innovation studies: conditions and determinants diffusion of Japanese-style management practices. (Kaplinski, 1995; Cho, 2004)

• Impact on training or knowledge transfer in production. (Sparkes & Miyake, 2000; Bartlett, et al., 2002; Bae & Rowley, 2004; Okada, 2004)

• No research on HRM and innovation.
Scope of this Research

• Consistent empirical and theoretical work on relationships HRM-innovation seems yet to be done:

→ Do firms’ HRM practices contribute to enhance people’s and, thereby, firms’ innovation performance in developing countries?

→ Which practices matter most for innovation?

→ What is the importance of such practices for different firms in terms of sectors, technology profile and national origin?

→ What are the possible implications for the design and implementation of S&T policy in developing countries?
A Dual Methodology: Empirics + Case Studies

• Goal: ‘sensing’ objectives, impact, instrumentation of HRM practices.

• Contrasting experiences between innovative and ‘non-innovative’ firms through detailed cross-country case studies.

• Two of the major Latin American economies: Brazil and Mexico.
Empirical Model

The empirical model: (Michi & Sheehan, 1999 & 2003; Laursen & Foss, 2003)

\[ p(I) = f(aX, bY) \]

Where,

- \( p(I) \): probability of a firm being an innovator;
- \( a, b \) parameters associated to a set of control variables;
- \( X \): traditional determinants of innovation;
- \( Y \): variables representing individual and/or systems of HRM practices.
Case Studies

• **Objective:** learning about nature and content; structure and organisation of innovation departments, and impact of HRM on firms’ innovative performances.

• **Firms included in the study:**
  - Companies in the Annual National Technology Awards in Mexico and Brazil. (PNT; Prêmio-FINEP)
  - Databases from S&T authorities.
  - Contrast and validation by comparison with ‘non-innovative’ firms.