HUMAN RESOURCE DEVELOPMENT RESEARCH CENTER

A STUDY OF INNOVATIVE HUMAN RESOURCE DEVELOPMENT PRACTICES IN MINNESOTA COMPANIES

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CHAPTER 1

INTRODUCTION

Within the discipline of Human Resource Development (HRD), innovation is considered critical for organizational success. However, while HRD professionals recognize its importance, innovation and particularly its relationship with HRD has not been a focus of the research work or practice in HRD or either of its two major components—training, and organization development. The few attempts to linking HRD and innovation have approached the topic in different ways—which somehow reflects the diversity of interests around it. For example, Watkins and Marsick (1993) understand it as a requisite for learning in a learning organization. Holton and Kaiser (2000), on the other hand, depict innovation as a performance driver in organizations, towards an end. Yet, Sta. Maria and Watkins (2001) emphasize the relationship between perceptions, concerns and the actual use of innovations within an organization.

There are two issues in the current literature on the relationship between HRD and innovation that are important to highlight. First, with few exceptions (e.g., Torraco, 1998) researchers do not frame their work in the mainstream theoretical perspective of innovation and its adoption and implementation, particularly the body of knowledge developed around Rogers' (1995) work; and second, only a few researchers have explored innovation in HRD beyond general statements. This includes the description and analysis of innovative practices. Consequently, a theory of HRD innovation is currently not developed.

Innovation is critical for HRD due to the many challenges organizations face today. HRD is a discipline that is permanently challenged and reinvents itself to better

the work of persons and organizations, to ultimately keep those organizations alive and competitive. For HRD and organizations alike, those challenges appear to be driven by three main elements—changes in the business and external environment, including the globalization of the economy; technological changes; and constant HRD needs, including those related to workplace demographics (Harper & Utley, 2001; Hartenstein, 1999; Hitt, Keats, & DeMarie, 1998; Hugenberg, LaCivita, & Lubanovic, 1996; Marquardt & Sofo, 1999; McLagan, 1989; Mumford, 2000; Smith & Dowling, 2001; Thomas, Pollock, & Gorman, 1999).

Attempts to respond to these challenges have been mixed with the continued quest for HRD's own identity. Much of the core of the discussion in the HRD discipline has focused on general concepts, theories, and philosophies linked to the debate about what constitutes HRD.

A sample of those concepts, theories and philosophies includes learning organization and its definition, characteristics, purposes, and philosophy (Dirkx, 1996; Ellinger, Watkins, & Bostrom, 1999; Marsick & Watkins, 1994; Watkins & Marsick, 1993), and the proposal of the learning organization to be the "unifying vision for the field" (Watkins & Marsick, 1995, p. 1). Another is performance improvement (Bassi & Van Buren, 1999; Henschke, 1999; Rummler & Brache, 1995; Swanson, 1996), and the need to understand performance as the ultimate step in the organization process that starts with learning and continues with expertise, and "for HRD to become a core business process, performance is the key" (Swanson, 1995, p. 209). And yet another is the related topic of the financial benefits of performing HRD practices (Swanson & Gradous, 1988; Swanson, 2001), or even more, the relationship between the latter—performance

improvement and financial benefits (Ellinger, Ellinger, Yang, & Howton, 2002; Swanson & Holton, 1999).

Innovation, defined as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 1995, p. 11), appears not being explicitly and sufficiently addressed in this debate. It is mentioned and embedded in it. Yet, it is not expressly articulated as a guiding principle and its connection with HRD has not been fully developed.

Innovation, as a process or product is a central component of organizations' activities and strategies in order to survive, to lead, and ultimately to develop competitive advantage in an increasingly competitive business world (Reed, 2001). Technology, global markets, and widespread change—all demand innovation to perform differently and to perform better. The ability of organizations to being innovative will give them the chance to face the challenges posed by a more integrated and ever-changing world.

For a discipline that is in constant transformation, it is not enough to make the claim that HRD and its practices are innovative. Because there is a lack of research on the relationship of HRD and innovation, it thus becomes critical to properly frame the innovation-HRD relationship and to analyze what we understand by innovation in the context of HRD. There is also a lack of empirical evidence about what those innovations in the field of HRD are, and how practitioners and organizations approach innovation from the perspective of the HRD discipline.

Although studies on the relationship between innovation and HRD can have many approaches, one of the areas in which research needs to be conducted is the study of the HRD practices that are considered to be innovative by researchers and practitioners alike.

One way of approaching such interest is by looking at the organizational characteristics that may be influencing the adoption and implementation of those HRD practices considered innovative, as the general literature on innovation suggests (Rogers, 1995).

Problem Statement and Purpose of Study

The problem to be addressed is the lack of understanding about innovation, and the relationship between innovation and HRD. More specifically, the problem is described as the lack of research on innovative Human Resource Development practices.

Organizations and the HRD function in organizations are under constant pressure to innovate in order to sustain the viability of the organization. Furthermore, some literature in HRD praises innovation and sees itself as an innovator. Yet, there is no clear knowledge or depiction of innovative practices in HRD.

The purpose of this study is to contribute to the understanding of the Innovative Human Resource Development Practices (IHRDP), by identifying what those innovative practices are, and by examining the organizational characteristics that influence their adoption and implementation. This research will study the existing IHRDP through the study of the practices that HRD professionals identify as being innovative in their organizations. Thus, this study will comprise both the study of the IHRDP as reported in the survey and the literature, as well as the relationships between those organizational characteristics that have a potential for facilitating or deterring the adoption and implementation of such practices in organizations, and the practices themselves.

The specific purposes of this study are to:

- contribute to the knowledge and understanding of the innovative Human Resource Development practices, in particular in the HRD discipline two major components—Training & Development, and Organization Development;
- identify and describe the IHRDP as reported by professionals in the field;
- explore the IHRDP identified by professionals and contrast them with the IHRDP reported in the literature;
- examine the relationships between organizational characteristics and the IHRDP;
- explore the managerial characteristics that influence the adoption of IHRDP;
- explore the job function characteristics that have an impact on the adoption of IHRDP;
- analyze the business characteristics that relate to the adoption of IHRDP; and
- frame the discussion about the IHRDP within the mainstream theory of innovation.

Significance of Study

In this research I will study the IHRDP in the framework of the most important innovation theories, and HRD. I will also analyze, factually, how IHRDP are understood in the context of organizations. Furthermore, in this study I will explore the major characteristics of those practices and how they interact in the context of an organization. Therefore, this research will cover a significant absence in the HRD discipline. The significance of this study resides in the following.

Knowledge Building on an Emerging Discipline

One area of contribution of this study is the knowledge base of HRD. As it has been said many times the HRD discipline is of recent formation, and in constant

evolution and renovation (Ruona & Rusaw, 2001). Major efforts have been placed in building a knowledge base for the HRD core ideas—definition, theoretical foundations, main components, the role of learning. Simultaneously, development also takes place in a variety of areas covered by HRD—e.g., organization climate, organization culture, leadership development, training, conflict management, etc.—contributing amply with a body of knowledge of recent developments.

The first contribution to the knowledge base of HRD is knowledge about the relationship between innovation and HRD. More specifically, the identification of the innovative practices in HRD. What are they? To this point, very little literature reports IHDRP as such, individually. Having an inventory of those practices is a real contribution to the understanding of what HRD professionals are talking about when they refer to "innovative practices" adopted and implemented in the workplace. The instrument used in the study aims at building an inventory of those innovative practices.

A contribution that derives from the previous point is the understanding those professionals have of what constitutes an "innovative Human Resource Development practice". In this study, the views of interviewed HRD professionals will be contrasted to what the literature, inside and outside HRD portrays as practices. Although there are a few specific references to innovation and innovative practices in the HRD literature, the proposed contrast will be done by broadening the scope so as to include the human resource and managerial literature and that from other disciplines. In doing so, the study will uncover knowledge on claimed, but little studied practices.

Another contribution to the knowledge base of HRD that stresses the importance of this study resides in the understanding of the organizational characteristics that favor

or impede the adoption of innovative HRD practices. Organizational characteristics and their relationship with innovation and HRD practices have received little attention and there is a lack of knowledge in that area. Thus, a study about those organizational characteristics that specifically favor or deter the adoption or implementation of those innovative practices in HRD will contribute to the knowledge base of HRD.

Similarly, another point of importance of this study resides in the knowledge it will provide about three dimensions: the role of the manager's, the job function characteristics, and the business unit characteristics in the adoption of those innovative HRD practices. This study is intended to provide knowledge on how these dimensions relate to the adoption of IHRDP.

By focusing on the IHRDP and the organizational characteristics that favor or deter them, this study then becomes a benchmark study. Moreover, a study of innovation and human resource practices is also adding to an *integrated* knowledge of HRD. Because the study is not focusing on one of the main two strands of HRD—training or organization development—but in the HRD discipline as such, and since the study does not have a focal point in a specialized topic within either of them—e.g., certification, re-engineering, team building, etc.—knowledge resulting from this study will provide an articulated and integrated perspective of the different practices analyzed.

Thus, knowledge about the relationship between innovation and HRD, and more specifically about IHRDP will contribute to the formation of a knowledge base by informing of new concepts and the understanding of how innovation and innovative HRD practices occur within organizations. In particular, the study's goal of linking the understanding of practices of HRD with the mainstream theory of innovation process and

adoption and implementation will cover a lack of research and literature in an area that is becoming strategically crucial for both the HRD discipline and the organizations where these practices take place. The resulting knowledge will further contribute to the shaping of the HRD foundations, theories, concepts and values.

Strategic Role

The strategic significance of HRD, and in particular the innovative HRD practices reside in the way they can align with the general business strategy. From a theoretical perspective, the most important consideration is that both HRD and the IHRDP can be better understood if approached from the strategic management point of view, and in particular from the perspective of the resource-based theory of the firm. The resource-based theory of the firm emphasizes the role of the firm's internal resources as sources of competitive advantage (Wernerfelt, 1984). By analyzing the firm from that perspective, people become one of the most important resources for competitive advantage. People development—i.e., human resource development—thus should be aligned with the organization's strategic plan, which "is an entire system that is geared toward continuously detecting changes in the outside world, deciding how to deal with them, and translating these needed changes into programs that produce desired results" (Fogg, 1999, p. 4). Many studies have examined the relationship between innovations and competitive strategy (Schroeder, 1990).

This relationship has not yet been examined in the HRD literature, and this research will provide a comprehensive, though initial, view of HRD and IHRDP as strategic using the resource-based theory of the firm.

Impact on Practice

As important as to build a discipline's knowledge base, knowledge about innovative practices will help practitioners in terms of their work in the field. A central area for this matter is the understanding this study will provide of those organizational characteristics that help or constrain the adoption and implementation of those innovative practices that will increase performance and productivity. For instance, leadership and managerial styles are often the foci of studies in the managerial and HRD literature—e.g., Berr, Church, and Waclaski (2000) because of the impact they have in the practice of HRD professionals. The list of those needed practices can be extended to other areas and implemented under the general view of innovation.

The understanding of IHRDP and the emerging knowledge about them will provide several principles about organizational characteristics and culture, about people's participation in the adoption and implementation of innovation in organizations, and also about the creation of knowledge resulting from the adoption of innovative practices. These principles will also provide a framework for the understanding of other HRD and managerial issues surrounding people's development in organizations.

If it has become a commonplace in the HRD discipline to refer to HRD as innovative, the manager's identification and knowledge about those innovative practices, about the organizational characteristics that favor or deterred their adoption, and of their critical role in developing the core of the people's functioning of the organization, all that will help in the process about making managerial decisions that will ultimately help the adoption and implementation of innovative practices. This study will provide knowledge in that area.

Research Question

This study will address the lack of understanding about innovation, and the relationship between innovation and HRD by asking the following core question:

What is known about innovative Human Resource Development practices and how do they relate to the organization's characteristics?

More broadly, the research focuses in examining the effectiveness of various dimensions of the organization, the determinants, in the adoption and implementation of the different innovative practices in HRD across organizations.

In order to provide an answer to the research question, this study will address the following set of specific research questions. The research question and the specific research questions focus on the effective adoption and implementation of the innovative Human Resource Development practices, as described below.

Basic Information and Knowledge about Innovative Human Resource Development Practices

The first set of questions pertain the discovery of existing literature and the unraveling of what those practices are. Currently, there is no major research that provides this information. Also, these questions relate to the practices as reported by the companies. Since there is no existing inventory in the literature on HRD or other discipline, and due to the claims made by HRD professionals, having a knowledge about what these practices are becomes important. Once the information from the two sources is gathered, a comparison would be possible, exploring the main issues about those practices.

Research question 1. What are the innovative HRD practices found in the literature?

Research question 2. What are the innovative HRD practices adopted and implemented by companies in Minnesota?

Research question 3. How do the innovative HRD practices implemented in Minnesota companies compare to those found in the literature?

The Inventory of Organizational Innovativeness Factors and their Association with the Internal Moderators

The instrument used in this research includes questions related to the Inventory of Organizational Innovativeness (IOI), and three sets of questions on the organizations internal moderators—those related to managerial demographics, the job function regarding innovation, and the business innovation unit characteristics. With these questions, the aim is to explore associations between the IOI factors and the internal moderators.

Research question 4. How do managerial demographic characteristics relate to the adoption and implementation of innovative HRD practices in those companies?

Research question 5. What are the job function characteristics that may enable the adoption and implementation of the innovative HRD practices in those companies?

Research question 6. How do business innovation unit characteristics relate to the adoption and implementation of innovative HRD practices in those organizations?

Predicting the Adoption of Innovative HRD Practices

In addition to describing what the IHRDPs are, and how the IOI factors that relate to their adoption are associated with the organization's internal moderators, a step further consists of exploring what the variables are that explain and predict the adoption and implementation of IHRDPs. This question goes back to the literature discussion about what predictors enable the innovation process in the organization, and in particular what they are in the area of Human Resource Development.

> Research question 7. What are the organizational characteristics that enable the adoption and implementation of innovative HRD practices in those organizations?

In this study I will provide a description of what HRD professionals in the participant organizations perceived as being innovative practices. Furthermore, I will analyze the relationship between the organization's background characteristics with the adoption and implementation of the innovative practices in each organization, so as to provide an answer to the research questions described above. As such, this research is defined as a relationship research (Gall, Borg, & Gall, 1996).

For purposes of this research, three definitions are used, the same that were provided to all respondents in the survey—a definition of innovation, Human Resource Development, and organization or unit (see Table 1-1).

Summary

For professionals in the discipline of Human Resource Development, innovation has been recognized as an important issue, both from the theoretical perspective and for the impact on practice. However, very little research has been conducted about the relationship between these two areas of knowledge. With very few exceptions, the

Table 1-1

Operational Definitions

Definition	Original	Instrument
Innovation	Innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is objectively new as measured by the lapse of time since its first use of discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation" (Rogers, 1995, p. 11).	It is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little whether or not an idea is objectively new as measured by the lapse of time since its first use of discovery. If the idea seems new to the adopter, it is an innovation. This definition applies to Innovative Human Resource Development Practices.
HRD	Human Resource Development is a process of developing and/or unleashing human expertise through Organization Development (OD) and Personnel Training and Development (T&D) for the purpose of improving performance (Swanson, 1998).	Human Resource Development (HRD) is a process of developing and/or unleashing human expertise through Organization Development and Personnel Training and Development for the purpose of learning and improving performance.
Organization/Unit	"My organization" refers to the organization one normally works and excludes any associated organization (Tang, 1999)	Organization or unit is the job setting one normally and directly works in, which excludes any associated organization or unit. It is the setting where the innovation adoption and implementation is processed and/or takes place.

discussion of innovation and HRD has not even been framed in the context of the mainstream research of innovation.

This study addresses the problem of lack of understanding, and more specifically lack of research on the relationship between Human Resource Development and innovation. The importance of addressing such a relation from a research perspective is three-fold. First, because the resulting added knowledge to a discipline that is continually striving for defining and building a body of knowledge on its own merits. Second, because of the strategic characteristics of HRD and innovation, and the strategic importance of innovation inside organizations when it comes to developing a workforce capable of providing competitive edge. Third, because of the implications for practice of the previously almost nonexistent knowledge of how innovation works in the context of HRD, and particularly in relationship with HRD practices.

In order to address the lack of knowledge about the relationship between HRD and innovation, the stated overarching research question becomes: *What is known about innovative Human Resource Development practices and how do they relate to the organization's characteristics?* Specific research questions are stated to explore more detailed information on that relationship.

CHAPTER 2

REVIEW OF THE LITERATURE

Innovative HRD practices are, by definition, innovation that takes place within the area of human resources. Due to the nature of the problem addressed in this study, and the lack of HRD research related to innovation, literature on innovation that lies outside the HRD discipline was reviewed in order to properly frame this study. This literature was an essential source of information for this research in order to justify the study, to establish specific research questions, and to respond to the first three research questions related to innovative practices. The few works that have somehow approached innovation from the perspective of HRD were included in this review as well.

There are at least three bodies of literature that are particularly relevant to this research. They include general literature on innovation and innovation research; Human Resource Management and innovation; and HRD and innovation. The general review of the literature aims at providing with a theoretical reference to analyze and understand the dynamics of the adoption and implementation of the IHRDP compiled through the survey used in the current research.

Overview on Innovation

Innovation is seen in today's world as the means by which organizations can respond to the challenges of rapid changes in the market, to a growing and stronger competition, and to provide strategic and competitive edge in a complex, intricate and global economy. Although practically everyone has this view, innovation has nevertheless been defined, understood and explained differently, through the use of many approaches and perspectives.

Definition of Innovation

One of the most extensive debates about basic issues regarding innovation was how to define it. Several researchers have come up with many definitions with a variety of foci. In an attempt to provide with a taxonomy for those definitions Zaltman, Duncan, and Holbek (1973) indicated there are three types of definitions of innovation—those that refer to innovation as an invention, those that consider it a process, and those that conceptualize innovation as a product. Following that classification Table 2-1 displays a set of selected definitions found in the literature. There are two distinguishing characteristics in those definitions: they include the idea of newness, and the idea that innovation has a purpose—to bring beneficial change.

Within the last four decades where the topic received more attention from scholars, the foci of those definitions are clearly marked by the context in which they were developed—see for example, Haeffner's (1973) definition that places innovation in the context of industrialization, and they have certainly evolved in time.

Among the many definitions of innovation, the most common and the one that has received more attention and has been applied more widely is that by Rogers (1995), who is regarded as one of the leading researchers and scholars in the area of innovation. Rogers has devoted many years to innovation research, particularly from the perspective of the diffusion of innovations. The definition he provides, which is the one used in the current study, states that

> An *innovation* is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is objectively new as measured by the lapse of

> time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation. (p. 11; emphasis in the original)

The two main characteristics in this definition are: a) the description of what the innovation is—idea, practice, object; and b) the concept of *subjective* newness—new to the adopter, not necessarily new for everybody. This definition is broad enough so as to include the main important components of the innovation process.

Embedded in that definition, although not explicitly spelled out, is the idea of *usefulness*—for the person or group or organization using the innovation. That is the purpose of any innovation as stated in the Grønhaug and Kaufmann's (1988) definition: "to be genuine an innovation has to be useful or, more correctly, perceived to be useful". That usefulness needs to result in an economic advantage for the adopting person, group or organization. Paraphrasing the economist Schumpeter, Roberts (1998) understood innovation as happening "through the gathering of commercially viable ideas or inventions by entrepreneurial figures who instigated product development and diffusion" (pp. 3-4). As Damanpour (1991) put it clearly in the context of an organization, "the adoption of innovation is generally intended to contribute to the performance or effectiveness of the adopting organization" (p. 556). This understanding applies to innovation in the context and purpose of the firm or other types of organizations, but it can be certainly extended to innovation diffusion in social groups where there is a clear social benefit resulting from the adoption of an innovation. The usefulness of an idea can be perceived once the innovation process is completed (Van de Ven, 1986).

Table 2-1

Selected Definitions of Innovation

Author	Definition	Focus
Amabile (1988)	A product or process is innovative to the extent that appropriate observers independently agree it is innovative. Appropriate observers are those familiar with the domain in which the product or process was introduced.	Invention
Haeffner (1973)	Innovation: creating, developing and marketing new industrial products and processes.	Invention Process
Coopey, Keegan, & Emler (1998)	Innovation is a particular form of change characterized by the introduction of something new. This "something" may relate to a product, service or a technology or it may involve the introduction of new managerial or administrative practices or changes in other elements of the organization. Ultimately innovation brings about beneficial change.	Process
Knight (1967)	An innovation is the adoption of a change which is new to an organization and to the relevant environment	Process
Damanpour (1991)	Innovation is defined as adoption of an internally generated or purchased device, system, policy, program, process, product or service that is new to the adopting organization.	Product
Grønhaug and Kaufmann (1988)	Innovation represents something *new*. To be genuine an innovation has to be useful or, more correctly, perceived to be useful.	Product
Van de Ven and Angle (2000)	As long as the idea is perceived as new to the people involved, it is an "innovation," even though it may appear to others to be an "imitation" of something that exists elsewhere.	Product
Zaltman, Duncan, and Holbek (1973)	Innovation is any idea, practice or material artifact perceived to be new by the relevant unit of adoption.	Product

Nevertheless, innovation is considered as such only if it progresses beyond the concept and gets realized. As Damanpour (1987) put it "innovation does not occur when a new idea is generated but rather when that new idea is put into use". If not, some authors may consider it an invention—invention represents a new conception whose usefulness, acceptance and/or impact, has not yet occurred (Grønhaug & Kaufmann, 1988).

Subjectivity and Objectivity

In the literature and practice of innovation, one of the most important questions is: *What is new?* When are practices or ideas or processes or products considered new so as to be considered innovations? As indicated above, the existing literature has many explanations. However, the overwhelming majority of scholars coincided on that as long as the adopter perceives the innovation as new, it would be enough for it to be considered an innovation. The definition of innovation provided by Rogers (1995) above states properly the *subjectivity* approach, as do many other researchers (Van de Ven & Angle, 2000; Zaltman et al., 1973).

But not everybody agrees on the subjective approach. Amabile (1988), for example, argued that the subjective perception of something being new is not enough to be considered innovation, and introduced the idea that an innovation will be considered as such when third parties agree it is an innovation. Her definition stated that "a product or process is innovative to the extent that appropriate observers independently agree it is innovative" (p. 147). Similarly, when talking about radical product innovations, Hage and Hollingsworth (2000) stated that a characteristic of innovations is that they "were previously unavailable" (p. 976), or that innovation "refers to technology actually being

used or applied for the first time" (Utterback, 1982, p. 30). According to these definitions then, innovation needs to be *objectively* so.

This discussion is important because underlying that dichotomy reside the two most important approaches to innovation—creativity versus adoption. Objectivity alludes to a creativity process that concludes with an innovation, but not all organizations or social groups are in the capacity or need of creating innovations. These latter may value more the adoption and subsequent implementation of innovations since it provides organizations the means to reach the competitive edge through innovation. In that sense, Mohr (1969) has indicated that "innovation is meant to exclude creativity *per se* and to include the notion of adopting something non-traditional whether it was invented within or outside of the organization concerned" (p. 113) [emphasis in the original].

Thus, the concept that will be used for this study is that of an innovation as a subjective matter, and what it is relevant is the adoption (and the subsequent implementation) of an innovation.

General Theories on Innovation

Theories on innovation have aimed "to demonstrate the existence of empirically distinguishable dimensions of innovation" (Damanpour, 1991, p. 556). Current theories on innovation can be grouped in six different areas: a) innovation process; b) innovation types; c) organizational characteristics; d) innovation attributes; e) environmental factors; and f) innovation radicalness (see Table 2-2). Throughout this study I will refer mainly to the first four of those theories.

Table 2-2

Theoretical Approaches to Innovation

Innovation Dimension	Sample Literature
Innovation Process: Developed/Adopted	Haeffner (1973); Rogers (1995)
Innovation Types: Technological/Administrative	Damanpour (1987); Damanpour, Szabat, & Evan (1989); Fennell (1984); Ravichandran (2000a)
Organizational Characteristics/Factors	Kimberly & Evanisko (1981); Marshall & Vredenburg (1992); Mohr (1969); Pierce & Delbecq (1977)
Innovation Attributes	Boyd & Mason (1999); Holloway (1977); Moore & Benbasat (1991)
Environment	Ravichandran (2000a); Roberts (1998), Rothwell (1992)
Innovation Radicalness: Radical/Incremental	Godoe (2000); Hage & Hollingsworth (2000); Ruppel & Howard (1998)

The Genesis of Innovation: Three Overarching Frameworks

Understanding how innovation is developed or adopted is a central topic in the innovation literature. Is the innovation a discovery the organization made? Was that a product or process already in place in other organization but new to a different one that is implementing it? How either of the situations affects the way the innovation is understood? In an attempt to provide an answer, theories on innovation have focused on either the creation or the adoption of an innovation—a discussion that follows to some

extent the debate surrounding the different types of innovation definitions explained above.

Rogers (1995) distinguishes three core theories about the innovation and its genesis in organizations—the innovation development process, the innovation decision process, and the organizational innovation process. The following description draws from Rogers' (1995) work, although it also draws from the work of other researchers.

The Innovation Development Process

Theories on the Innovation Development Process put the emphasis on *creation*. From the onset of the studies on innovation, researchers have been interested in the steps taken to develop and to use innovations in an organization. According to these theories, organizations engage in activities towards the creation of an innovation that could later on be adopted, and diffused by the organization. In these theories, the key element in the innovation process is *creativity*, which has been traditionally related to the research and development function within organizations (Rothwell, 1992), which materializes ideas into products. In this framework, innovation has been essentially driven by scientific research (Roberts, 1998).

Rogers (1995) indicates the process of developing and creating an innovation is comprised of six stages: a) needs (recognition of a problem, which stimulates research and development activities); b) research (basic and applied); c) development (putting a new idea in such a form that meets the needs); d)commercialization (conversion of an idea into a product or service); e) diffusion and adoption; and f) consequences (changes that occur as a result of adoption or rejection of an innovation). With little variation, Rogers' theory is similar to those innovation process models described by, among others

Amabile (1988), Haeffner (1973), Poole and Van de Ven (1988), and Zaltman, et al. (1973).

The Innovation Decision Process

Rogers (1995) also describes the theory on the Innovation Decision Process, according to which there are a series of actions and choices over time "through which an individual (or an organization) evaluates a new idea and decides whether or not to incorporate the innovation into ongoing practice" (p. 161). As it is described, this theory may or not be related to the innovation *development* process. The major distinction is that the innovation decision process may relate to an innovation that has been developed by somebody else.

In Rogers' work, the innovation decision process model is made up of five distinctive stages: a) knowledge (about the existence of an innovation); b) persuasion (to form a favorable or unfavorable attitude toward innovation); c) decision (the choice to adopt or reject the innovation); d) implementation (when the innovation is put into use); and e) confirmation (the reinforcement or reversal about the decision to adopt or reject).

These two frameworks—the Innovation Development and the Innovation Decision processes—, originally developed to explain the social adoption of innovations, serve as the basis for the understanding of how innovations happen in organizations, for which a different model was developed.

Organizational Innovation

A different theory describes solely the innovation process in an organization. It combines theories that explain the innovation process as it happens when individuals and social groups are engaged in the adoption and diffusion of an innovation, with theories

about the adoption of innovation by organizations. This is the framework that has received most attention during the past 40 years in the organization literature.

The emphasis of this perspective is not in the development or creation of an innovation, but rather in the process that leads to its *adoption in the organization*. The main assumption is that not all organizations are in the position or do not have the interest to create their own innovations.

There are two major stages in the innovation process that occurs in an organization: initiation and implementation (Rogers, 1995). Initiation is composed of two sub-stages: agenda-setting (definition of an organizational problem that may create a perceived need for an innovation), and matching (fitting an organizational problem with an innovation). The implementation sub-stages are: redefining (re-invention of the innovation to accommodate the organization's needs and structure), clarifying (the widespread use of the innovation), and routinizing (when the innovation is incorporated in the organization).

Zaltman et al. (1973) developed a similar theory, based on "the point of view of the individual adoption unit" (p. 58). Their framework is too composed of the two main stages as described by Rogers (1995)—initiation and implementation. In Zaltman et al. work, the initiation stage is made up of three sub-stages: knowledge-awareness, formation of attitudes toward the innovation, and decision. The implementation stage is composed of two sub-stages: initial implementation, and continued-sustained. Other studies have focused on similar stages, but for the purpose of this study these are the two more relevant models (see Table 2-3).

Table 2-3

Organizational Innovation. Rogers', and Zaltman, Duncan, and Holbek's Theoretical Models

Author	Initiation (Sub-stages)	Implementation (Sub-stages)
Rogers (1995)	• Agenda-setting • Matching	• Redefining • Clarifying • Routinizing
Zaltman, Duncan, & Holbek (1973)	• Knowledge awareness • Formation of attitudes toward innovation • Decision	• Initial implementation • Continued-sustained

Types of Innovation

The development of innovation theories has been driven, in great part, by the historical evolution of innovation—and the types of innovations identified over time—starting in the early 20th century, at the beginning of the industrial revolution in the United States and other countries. Originally construed in the framework of a manufacturing-based economy, innovation has evolved during the last century up to the point where it has become crucial to adapt and to respond to the changes and new conditions set forth by a predominantly service-based economy—at least in industrialized countries. In this evolution, technological innovations where first identified and used as the reference point for the understanding and development of the many theories explaining innovation. Then came administrative innovations, a different type of innovation that demanded new frameworks of analysis.

Technological Innovations

Technological innovations "are those that bring change to organizations by introducing changes in the technology" (Damanpour, 1987, p. 677), including products, processes and technologies (Gopalakrishnan & Bierly, 2001). Historically, theories of organizational innovation have explained innovation mostly from the perspective of *product* innovation, which included technological processes to enhance the productivity of a firm. Firms were driven by the notion of creating technologies to produce new, better goods.

This characteristic determined in great measure the type of research approach towards innovation—mainly from the economics and engineering sciences. In many studies, this type of innovation is explained as an innovation that will "occur as a result of the use of a new tool, technique, device, or system by which the employees, the units, or the organization extend their capabilities" (Damanpour, 1987, p. 677). In explaining the importance of technological innovations, theorists emphasized the role of research and development as the core competitive function.

Furthermore, the need to produce new, innovative goods for an ever-changing market determined the type of relationship with the firms' external environment (Utterback, 1982). It has been noted that that relationship has driven companies through five different paradigms or models of innovation: a) technology-pushed model, which is marked by a progression from scientific discovery through placing "a stream of new products into the market-place" (Rothwell, 1992, p. 73); b) market-pull model, where innovations resulted mainly from customer needs; c) coupling model, which look for a combination of science, technology and market-place; d) parallel (or integrated) model,

characterized by interfunction and increased integration, vertical and horizontal, with other firms, enabling relationships and strategic alliances between companies and customers; and e) systems integration and networking model (Rothwell, 1992).

According to this recount then, the "natural" setting for the studies on technological innovations has been the manufacturing enterprises (Gallouj & Weinstein, 1997). Sundbo (1997) adds that in this type of innovation there are two main paradigms—the first paradigm, technological development, is emphasized as the core innovation process, whereas the second paradigm emphasizes the entrepreneurial act as the core innovation process.

Research conducted under this framework has contributed a great deal of understanding on innovations, setting the basis for the overall innovation research even today.

Administrative Innovations: Their Importance for Human Resource Development

Theories of organizational innovation distinguish another type of innovations—administrative innovations. Administrative innovations are those that involve new procedures, policies and organizational forms (Ravichandran, 2000b), allocation of resources and structuring of tasks (Evan, 1966). They are particularly important for this study since they provide the direct framework for the analysis of IHRDP.

In the innovation literature of the past 40 years, but particularly during the last 15 years researchers have shifted their focus of attention towards administrative innovations and have emphasized the distinction with the technological innovations. For example, Coopey, Keegan, and Emler (1998) defined innovation as

> a particular form of change characterized by the introduction of something new. This 'something' may relate to a product, service or a technology or it may involve the introduction of new managerial or administrative practices or changes in other elements of the organization. (p. 264)

whereas Damanpour (1991) indicated that innovation is the "adoption of an internally generated or purchased device, system, policy, program, process, product or service that is new to the adopting organization" (p. 556).

In both definitions, as in many others, practices or services point out to a different phenomenon—a concept that goes beyond the production of a tangible good in which processes and devices are used. According to these definitions, innovations can also consist of ways of *doing* things.

The idea of administrative innovations is directly related to management in the organization, since it is through management where those policies or practices get implemented—throughout "the social structure of the organization" (Daft, 1978, p. 198) because the "domain of the administrative core includes the organization itself" (p. 206). As Gopalakrishnan and Bierly (2001) put it, administrative innovations "pertain to organizational structures and administrative processes and [that] they are more directly related to the management of the firm" (p. 109).

The theoretical distinction between administrative innovations and technical innovations is important. One issue is that factors that favor the adoption of either a technical or administrative may vary among innovations. Furthermore, the same factors may influence them differently, since the drivers and underlying processes of administrative innovations could be different from those of technological innovations.

From a research perspective, findings about technological adoptions cannot be easily generalized to administrative adoptions (Ravichandran, 2000a). Damanpour (1987) has indicated that organizational innovativeness studies have not differentiated between types of innovations or distinguished between the stages of adoptions. He found that organizational characteristics did not explain equally the adoption of three types of innovations, and that they were "better predictors of technological innovations […] than administrative innovations" (p. 685). He and his colleagues also studied the dynamics of the influence of both the technological and administrative innovations, concluding that "administrative innovations influence the adoption of technical innovations over time, while the influence of technical innovations is more immediate" (Damanpour, Szabat, & Evan, 1989, p. 598).

The most important distinction is that they relate to a more general differentiation between technology and social structures, they involve different decision-making processes, and they represent changes introduced in a broad range of activities within organizations (Damanpour, 1988). From the organizations' perspective, "administrative and technical innovations imply potentially different decision-making processes" (Damanpour, 1991), and thus result in what Daft (1978) called the dual-core model of innovation—the administrative core of functions, and the technical core.

One conclusion is that "organic", nonroutine organizations tend to facilitate the adoption of technological innovations, whereas "mechanistic" or highly structured organizations allow for the adoption of administrative innovations (Daft, 1978, p. 207), a claim that has been supported by many researchers (Damanpour, 1988; Kimberly & Evanisko, 1981).

Administrative innovations involve organizational structure and administrative processes and "are indirectly related to the basic work activities of the organization and more directly related to its management" (Damanpour, 1988, p. 548). This idea directly relates to the strategic management perspective in the framework of the resource-based theory of the firm. Consequently, one of the key, strategic areas where administrative innovations are related to management is people innovation. People innovations are performed by "(a) altering the personnel by dismissing and/or hiring and (b) modifying the behavior or beliefs of the people in the organization via techniques such as education or psychoanalysis" (Knight, 1967). This latter conceptualization of administrative innovations directly provides the appropriate framework for understanding IHRDP, and matches the resource-based theory of the firm perspective indicated above.

Research on administrative innovations is new and is growing rapidly. This is due in part to the fact that the study of technological innovations were extensive and generalized so as to include administrative innovations—although it has been suggested that making a distinction between the two of them, technological and administrative innovations, "often results in a fragmented classification of the innovation process" (Van de Ven & Angle, 2000, p. 12). Research on administrative innovations is also less developed because of the recent recognition that innovation itself "requires more than the creative capacity to invent new ideas; it requires managerial skills and talent to transform good ideas into practice" (p. 3). And finally, in part due to the recent evolution in managerial and other organizational-related disciplines, including the area of human resources.

Teece (1980) has pointed-out to yet another issue surrounding administrative innovations—the economic impact derived from the implementation of this type of innovations. Teece indicated that those "improvements in administrative techniques and in the organization economic activity may be just as important as technological innovations in terms of their productivity enhancing characteristics" (p. 464). He concluded that due to the similarities between the diffusion processes of technological and administrative innovations, other approaches from the economics of technological innovations maybe as well applied to administrative innovations. In that sense, an approach from the HRD discipline, especially if taken from the perspective of the resource-based theory of the firm, can bring more knowledge to the area of administrative innovations.

Theories of Innovation in Organizations

In this section I discuss innovation theories that explain the conditions that make possible the adoption and implementation of innovation in organizations. Since the adoption and implementation of innovative HRD practices that are the subject of this study take place in organizations, this theoretical approach provides the framework for this research discussion.

Theories of innovation in organizations have a variety of foci. They can be grouped around five different perspectives for the purpose of the current study: innovations in organizations can be studied a) from the perspective of creativity; b) by the innovation stages; c) by the type of innovation process; d) according to the characteristics of the innovation itself; and e) from the perspective of the characteristics of the organizations. Although there are notorious differences between those theoretical

frameworks, in many studies they have been combined. Also, there are "traditional" approaches that have received more attention from researchers. They are briefly described next.

Creativity Theories

One set of theories approaches innovation from the perspective of creation—on how the creativity process occurs in the organization that results in innovation. In other words the innovation development process in an organization will be successful if proper attention is given to the employees' creativity and the organization has the needed characteristics to support that process. In order to understand this process in organizations, some researchers have used the parallel of creativity as it happens with individuals. Amabile (1988) stated that "in articulating a theory of organizational innovation, it might be reasonable to consider the process of organizational innovation as similar, in broad sense, to the process of individual creativity" (p. 162). The emphasis put in the role individuals have in the organization's innovation process has been labeled the "humanistic approach", because it explains "innovation behaviour in terms of the personality characteristics of organizational participants" (Slappendel, 1996, p. 108).

Creativity in organizations has been approached from different perspectives. Amabile (1988) and Tan (1998) examined the factors that contribute, enhance, foster and sustain creativity in an organization. Their concern relates to what to do as organization in order to be more creative and thus innovative.

A somehow different perspective is that represented mainly by Kirton (1976, 1980, 1984, 1988). His focus of analysis is the individual and his or her capability to be an adaptor or an innovator. He states that "everyone can be located on a continuum

ranging from an ability to 'do things better' to an ability to 'do things differently'" (Kirton, 1976, p. 622), and places in each side of the continuum the adaptive and the innovative personality, respectively. Adaptors are those that "produce a sufficiency of ideas, based closely on, but stretching, existing agreed definitions of the problems and likely solutions" (Kirton, 1984, p. 137). Innovators "are more likely in the pursuit of change to reconstruct the problem, separating it from its enveloping accepted thought, paradigms and customary viewpoints, and emerge with much less expected, and probably less acceptable solutions" (p. 137). In this perspective, the environment and the organizational characteristics play less of a role on influencing the person's creativity—thus, creativity and innovation are part of the individual's personality trait.

Creativity in organizations has been continuously linked to other areas in recent years, particularly in the area of problem-solving, a concept close to the idea of innovation (Ford, 1999). However, even though many scholars have pointed out to the importance of creativity as part of the innovation process in organizations, theories in this area have received less attention and have been somehow neglected. One of the major criticisms about these studies indicated that "organizational variables act on innovation behavior in a manner over and above that of the aggregate of individual members of the organization" (Rogers, 1995, p.391). In other words, as important as creativity is the innovation process "is not an individual activity—it is a collective achievement" (Van de Ven, 1986, p. 597).

The Stage Theory

According to this theory, innovations in an organization can be explained by distinguishing the discrete stages of the innovation process.

Authors do not have a unique set for those stages, and they come up with a different one that depends on the type of innovation process they are trying to explain. Rogers (1995) has originally used this approach to describe the diffusion process. He distinguishes five stages in the innovation-decision process: knowledge, persuasion, decision, implementation and confirmation (see Table 2-4). Other theorists, like Zaltman et al. (1973), have distinguished five stages: knowledge awareness, formation of attitudes, decision, initial implementation, and continued-sustained implementation. Poole and Van de Ven (1988) described a model that includes invention, development, implementation, diffusion, and institutionalization. From Table 2-4 it can be seen that even though theorists have different conceptualization of the innovation process and its stages, those stages share many similarities about the cornerstones in the process of innovation.

The stage theory is the theory that has been used the most. But because of its "snapshot" approach it has been widely criticized as well. Wolfe (1994) has indicated that this model does not look into the variant perspective of innovations, and thus does not allow for an understanding of how the innovation process evolves. Wolfe indicated that due to the static nature of this approach, scholars usually focus their research question around the issue of "adoption" rather than "implementation", because they concentrate on the managerial decisions leading towards the adoption of the innovation, but not necessarily about the outcome—if the innovation was in fact implemented. Furthermore, Van de Ven and Rogers (1988) noted that the different structural variables used for analysis in the stage theory "were not very adequately measured, nor […]

accurately operationalized" (p. 636), and thus "ignores innovation-to-innovation variances" (p. 633).

Nevertheless, the stage theory has contributed to the understanding of innovations confirming the existence of stages that take place in the innovation process and to explain whether those stages occur in a given order (Wolfe, 1994).

The Process Research (Dynamic) Theory

In contrast to a static perspective, the process research theory suggested by Van de Ven and Rogers (1988) means an over-the-time study of the innovation and represents a "change from the 'variance' research [of innovations] to a 'process' research" (p. 636). It "investigates the nature of the innovation process; how and why innovations emerge, develop, grow, and […] terminate" (Wolfe, 1994, p. 409).

By definition this theory advocates a longitudinal type of study "to better describe the processes, sequences and conditions central to innovation" (Wolfe, 1994, p. 412). Moreover, it proposes a specific epistemology since it stresses the use of interpretive research "to studying organizational topics, especially organizational culture" (Van de Ven & Rogers, 1988, p. 637) and the extensive use of case studies.

One of the issues raised in innovation research is that innovation studies should focus on one organizational innovation over time. It has been criticized that earlier studies on innovation were conducted by using a composite score of innovations as the dependent variable. In that case, several innovations were studied and aggregated, and the organization was reduced and treated as an individual. Furthermore, critics of this approach pointed out to the fact that data collected usually came from the executive officers of the organization, leaving open the question about how accurate that recount

Table 2-4

Innovation Stages. Selected Authors

Author	Stages						
Rogers (1995)		Knowledge	Persuasion	Decision	Implementation	Confirmation	
Haeffner (1973)	Specification of innovation need	Product ideas	Development	Pilot plant	Trial production and trial sales		Exploitation
Amabile (1988)		General problem or innovational direction is set	Stage is set for generating the innovation	The idea is actually produced	Innovation is tested and implemented	Outcome is evaluated	
Holbek (1988)		Organization becomes aware of innovation, with the formation of attitudes toward the innovation, and with the innovation's development (Gathering and processing of information)			Innovation is put into effect, and becomes integrated into the ongoing operations of the same or different organization (Development of rules and procedures)		

Table 2-4 (continued)

Innovation Stages. Selected Authors

Zaltman, Duncan, and Holbek (1973)	Knowledge awareness	Formation of attitudes	Decision	Initial implementation		Continued-sustained implementation
Grønhaug and Reve (1988)	Creation of something new			Adoption of something which is new to the adopter	Diffusion	
Poole and Van de Ven (1988)	Invention	Development		Implementation	Diffusion	Institutionalization

was about the behavior of the organization. Studies conducted that way usually reported low relationships between the independent variables and the innovation dependent variable (Rogers, 1995). Instead, Rogers champions the idea that studies should focus on an innovation in an organization over time.

Attributes Theory

The study of attributes represents another significant area within innovation research. The focus of this theory is the characteristics of an innovation that ultimately lead the organization to its adoption and implementation.

Much of Rogers' (1995) work on innovations relied on this perspective, which provided a description of the main attributes of innovation. The five innovation attributes are: relative advantage (perception of the innovation as being better than the idea it supersedes), compatibility (the degree to which an innovation is perceived as being consistent with adopters' existing values, experiences and needs), complexity (degree to which the innovation is perceived as relatively difficult to understand and use), trialability (degree to which an innovation can be experimented with on a limited basis), and observability (degree to which innovation results are visible to others).

Other researchers have extensively explored this area as well. In a meta-analysis of about 100 articles on innovation, Tornatzky and Klein (1982) found five more attributes in addition to those researched by Rogers (1995). Their findings included cost, communicability, divisibility, profitability, and social approval.

The study of innovation attributes has distinguished between primary attributes and secondary attributes (Downs & Mohr, 1976). To avoid research inconsistency, it has been proposed to focus on the *perception* of innovation attributes, which is behavioral in

nature (Moore & Benbasat, 1991). After all, the same definition of innovation above is also behavioral in nature.

Most of the research on innovation attributes has focused on product innovation, as this continues to be critical for companies (Boyd & Mason, 1999). However, increasing research is being performed in either process or administrative innovations. Crum, Premkumar, and Ramamurthy (1996), for example, studied the use of electronic data interchange as facilitator in product carrier and its impact on supply chain management. Also in electronic innovation, Wilson, Ramamurthy, and Nystrom (1999) explored two attributes of innovation in the use of image technology in 70 hospitals. Similarly, Gopalakrishnan and Damanpour (1994) analyzed applicability patterns using two innovation processes and two innovation attributes. Weiss and Dale (1998) have studied the adoption of innovation against existing technology, and explored the diffusion prospects by using two innovation attributes. In a similar approach, Tabak and Barr (1998) explained the attributes that most likely impact managers decisions in adopting technological innovations in hospitals.

Despite the usefulness of this theory, critics indicate that independent of the attributes, there are other factors that will contribute to the selection of a particular innovation, much like the way factors influence the development or enhancement of innovation creativity.

Innovation and the Organizational Characteristics Theory

Innovation has been studied at four different levels—individual, group, organizational, and environmental. Of those, an area that has received much attention from scholars, and that has become decisive in innovation research is the area of

innovation in organizations. For that purpose, researchers have studied the organizational characteristics or factors that determine the adoption and implementation of innovations, and how they interact with each other.

As in the case of the theories discussed above, there are not uniform research results under this theory. Studies have showed disagreement about what those characteristics are. But more importantly, those same studies disagreed on the direction of the relationship between organizational characteristics and innovation. While some of those studies have shown a positive relationship between the explanatory variables and the dependent variables (this latter usually being the organizational innovativeness), some other studies indicated a negative relationship for the same variables. Table 2-5 summarizes some of those studies. Furthermore, researchers may find a negative relationship where a positive has been described previously, and vice versa. Downs and Mohr (1976) have noted that factors found to be important for one innovation could be found not important for other innovations. They suggested a potential problem with the design of the research that leads to that disparity: "The dependent variable, aggregate adoption of a mixture of innovations, generally represents a large variety of values on both primary and secondary attributes of the innovations considered, all blended together so as to obscure totally the special implications of each" (p. 708).

Some studies have raised questions about the innovation research focused on organizational characteristics. Fennell (1984), for example, found that two linked innovations do not follow similar adoption processes. Kimberly and Evanisko (1981) in turn concluded that "results at the empirical level often are noncomparable and occasionally contradictory" (p. 689) and discussed the different influence of variables

towards technological and administrative innovations. But by large the most recognized critic has come from Downs and Mohr (1976), who argued that "perhaps the most alarming characteristic of the body of empirical study of innovation is the extreme variance among its findings" (p. 700). Damanpour (1991) has pointed out that even though the instability of the determinant-innovation association is mostly taken for granted among researchers, if studies were to use theory accumulation and theory building to explain those associations a more elaborate research may result that do not indicate such instability.

Whatever the design approach and the results studies about the organizational determinants of innovation—the organizational characteristics that facilitate innovation—have not focused on the same set of characteristics. Those studies have usually brought together two sets of organizational characteristics—the first one related to the *structure* characteristics organization, and the other one related to the *people* factors—and have marked the evolution of the innovation literature. For this research, that distinction is important since it helps to understand the factors influencing the adoption or not of innovative practices related to human resources in organizations.

Organizational Structure Characteristics and Innovation

Earlier studies on innovation and organizational characteristics analyzed innovation mainly from the perspective of the *structural* characteristics of the organization—e.g., size, complexity, centralization, et cetera. Much of this approach is directly linked to the concept of technological innovations and the research in that area, particularly due to the influence of studies from the engineering and economic disciplines. Even Rogers (1995) and the most known researchers analyzed innovations

from that perspective (see Table 2-5). By far, the most commonly studied category under this theory is the size of the organization, followed by centralization (or decentralization), formalization, stratification, and complexity. Other researchers included the external environment as a determinant as well.

One characteristic of this theoretical approach is that it does not provide with a common set of organizational structural characteristics or factors that can help understand the process of adoption and implementation of innovations in organizations. Depending on the researcher and the type of organization and innovation examined there will be as many factors that could be used to explain the innovation process.

In spite of this fact, innovation research focusing on organizational structural characteristics still draws the attention of many researchers. The main reason perhaps, it has been argued, is that "structural variables are the primary determinants of organizational innovation" (Wolfe, 1994, p. 409). Recent research focusing on the adoption of a single innovation found that "the same structural form [factor] that works best at the adoption stage also works best at the implementation stage" (p. 8)—a topic close to the discussion of the ambidextrous model of innovation, where factors are examined according to their behavior on either one of the innovation stages, the adoption or the implementation.

The continued advancement of innovation research moved the focus so as to include other characteristics beyond the structural, including in the analyses *organizational culture* factors. But still, under this approach the predominant focus was structural characteristics. In that direction, Mohr (1969) described a group of "interrelated factors" (p. 63) that correlated to innovation. They included size, wealth,

Table 2-5

Directional Relationships between Organizational Characteristics and Innovation. Selected Authors

Author	Organizational Factor	Relationship with Innovation
Hage & Aiken (1970) [in Zaltman et al., 1973]	Complexity	Positive
	Formalization	Negative
	Centralization	Negative
	Stratification	Negative
	Production	Negative
	Efficiency	Negative
	Job satisfaction	Positive
Zaltman, Duncan, & Holbek (1973)	Complexity (initiation stage)	Positive
	Complexity (implementation stage)	Negative
	Formalization (initiation stage)	Negative
	Formalization (implementation stage)	Positive
	Centralization (initiation stage)	Negative
	Centralization (implementation stage)	Positive
	Interpersonal relations	Mediating
	Dealing with conflict	Mediating
Pierce & Delbecq (1977)	Differentiation	Positive
	Professionalism	Positive
	Decentralization	Positive
	Formalization	Negative
	Stratification	Negative
	Size	Positive
	Age	Negative
Kimberly & Evanisko (1981) for administrative innovations	Centralization	Positive
	Specialization	Positive
	Size	Positive
	Differentiation	Positive
	External integration (communication)	Positive

Table 2-5 (continued)

Directional Relationships between Organizational Characteristics and Innovation. Selected Authors

Damanpour (1991) (meta-analysis)	Specialization	Positive
	Functional differentiation	Positive
	Professionalism	Positive
	Formalization	Negative
	Centralization	Negative
	Managerial attitude toward change	Positive
	Managerial tenure	Positive
	Technical knowledge resources	Positive
	Administrative intensity	Positive
	Slack resources	Positive
	External communication	Positive
	Internal communication	Positive
	Vertical differentiation	Negative
Rogers (1995)	Complexity	Positive
	Formalization	Negative
	Centralization	Negative
	Interconnectedness	Positive
	Organizational slack	Positive
	Size	Positive
	External (system openness)	Positive

availability of resources, environment (market conditions, technological changes, clientele needs and demands, labor market), attitudes of an individual toward change, the 'cosmopoliteness' of an individual, the competence of an individual, and material and status interests. Many other studies have followed this approach, without making a clear distinction between the two types of organizational characteristics—thus not controlling for the potential variance due to the different type of characteristics analyzed. Zaltman et al. (1973), for example, studied innovation in organizations by analyzing the relationship between some organization structural factors, like complexity, formalization,

centralization with organizational culture factors including interpersonal relations, and the ability to deal with conflict.

Furthermore, that type of research has expanded to include yet another set of characteristics—those external to the organization. Rogers (1995) included the individual (leader) characteristics as a determinant outside the area of organization structural characteristics, and those related to the system to which the organization belongs—much like the openness suggested by Zaltman et al. Amabile (1988) identified three environmental factors—organizational climate or corporate culture, management style, and resources. In his meta-analysis on innovations Damanpour (1991) identified those variables suggested by both Zaltman et al. (1973) and Rogers (1995), and others. In his work, Damanpour includes specialization, functional differentiation, professionalism, managerial tenure, technical knowledge resources, administrative intensity, external communication, internal communication, and vertical differentiation.

Organizational Culture Characteristics and Innovation

Research on organizational characteristics and innovation that focused only on organizational culture predictors is new and scarce. Mainly because up to recently people have become more and more the focus of development efforts in organizations, and because it has been recently that theorists and managers alike have put the emphasis on the potential of people to provide competitive edge. Studies on innovation and organizational culture characteristics seem to have started with the development of studies around Human Resources in organizations.

As indicated in the section above, organizational culture characteristics were studied in conjunction with structural characteristics. Hage and Aiken (1970) introduced

efficiency and job satisfaction, and Zaltman et al. (1973) talked about interpersonal relations and dealing with conflict (in fact, both associated with conflict management). Pierce and Delbecq's (1977) professionalism relates very much to Kimberly and Evanisko's (1981) specialization, although they are not understood as being the same. In his meta-analysis Damanpour (1991) reviewed many organizational culture characteristics used in innovation research up to the late 1980s, but he did not make any differentiation between them and the structural characteristics either.

Culture in Organizations

Culture in organizations, as an overarching concept, has been widely studied in the recent managerial literature. Studies on culture and organizations build largely upon anthropology concepts (Hofstede, 1981, 1983), particularly with regards to values and symbols. But they are also based on psychology constructs, specially personality and the relationship between psychology and culture (Bond & Smith, 1996; Schwartz & Bilsky, 1987). Those approaches have largely marked the discussion on organizational culture, but whatever the approach taken two issues remain central in the studies of organizational culture—how to define organizational culture and how to study it.

The concept of culture has been adapted from large groups in society to organizations. Because "culture determines the identity of a human group in the same way that personality determines the identity of an individual" (Hofstede, 1981, p. 24), the concept of culture "can also be applied to other collectivities or categories: an organization, a profession, a family." (p. 24). Organizations can then be considered a separate culture, where patterns of values, attitudes, beliefs and behavior are to be found among members of the organization. In making the parallel, researchers have

emphasized the overarching nature of culture, and for the most part refer to the "cultural characteristics of the organization as a whole" (Alvesson & Berg, 1992, p. 68).

Culture in an organization has been defined in many ways, with the emphasis put on the idea of shared values, beliefs, and attitudes among members of the organization. Among the many studies in organizational culture, Schein (1984) provided the most inclusive definition, stating that it

> is the pattern of basic assumptions that the group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal integration, and that has worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems (p. 3).

In order to further understand this concept, Schein's (1984) has suggested three different levels of analysis. The first level consists of those visible artifacts—e.g., manner of dress, visible or audible behaviors, employee orientation materials, etc—where data on how and what can be easily obtained, but are more difficult to interpret since there is no explanation of why a group behaves the way it does. To analyze why members behave the way they do the next level of analysis focuses on the values that govern behavior, which is the second level proposed by Schein. Values are hard to observe directly, since they represent only the manifest or espoused values of a culture: they focus on what people say, what they ideally would like those reasons to be, and what are often their rationalizations for their behavior is the reason for their behavior. Yet, the underlying reasons for their behavior remain concealed or unconscious (p. 3).

Therefore, another level of analysis is needed:

> to really understand a culture and to ascertain more completely the group's values and overt behavior, it is imperative to delve into the underlying assumptions, which are typically unconscious but which actually determine how group members perceive, think and feel (Schein, 1984, p. 3).

These basic assumptions are acquired by an organization throughout a normal developmental process, which also results in a "world view" or "cognitive map" about reality. These assumptions are "predominantly implicit" (Bate, 1984, p. 45) in members' minds, shared among them, and transmitted to new members.

Organizational Culture and Innovation

Researchers have indicated that the importance of organizational culture resides in the fact that it can influence outcome variables such as productivity (Denison & Mishra, 1995), leader decision making (Sapienza, 1985), and performance (Alvesson, 1993). In the same way, they have linked organizational culture with innovation (Woodman, Sawyer, & Griffin, 1993). The importance of the organizational culture has been stated even under the presence of other organizational factors that may be in the organization's forefront—like technology (Claver, Llopis, Garcia, & Molina, 1998).

Because culture is mostly used as an umbrella concept, and since culture can have many expressions it is not suffice to state that culture indeed influences innovation. In this study I am interested in some organizational culture aspects that may have influence in the adoption and implementation of IHRDP.

There is no single set of characteristics to analyze the influence of culture in the adoption and implementation of innovations, as in the case of the organizational structural characteristics, and not all innovation cultures are the same (Weiss & Delbecq,

1987). Different studies point to different constructs or dimensions or shared values. One characteristic found in those studies is that some of those dimension are broad, while some others can be more specific. O'Reilly (1989) conducted a study with 500 managers analyzing culture as the central norms that characterize an organization and found six such values that influence innovation (see Table 2-6). Hauser (1998) identified some general patterns of organizational culture that effectively promote innovation. Amabile, Contri, Coon, Lazenby, and Herron (1996) used eight constructs related to the work environment to assess creativity and innovation in organizations, two of which were found to have a negative direction with innovation.

The organizational culture dimensions that appear to be more consistently studied and related to innovation are managerial support, rewards system, leadership, and risk-taking (see Table 2-6), although this is only limited sample of those characteristics that can be found in the literature. Although not explicitly stated those studies' assumptions are that those characteristics are the most powerful and have more incidence in the innovation process.

The examination of the organizational culture is important because only repeated efforts to innovate can really describe the innovative nature of the culture in the organization. This "'innovative attitude' is a key factor for the success" of corporations (Claver, Llopis, Garcia, & Molina, 1998, p. 1). Contrary to the different directions organizational structural characteristics may have on innovation, there seems to be a widespread agreement about the positive impact organizational culture may have on innovation—unless the culture dimension is formulated in negative terms, as in the case of organizational impediments in Table 2-6.

Table 2-6

Organizational Culture Characteristics that Determine Innovation. Selected Bibliography

Characteristic/Dimension	Author	Direction
Management support	Chandler, Keller & Lyon (2000)	+
Organizational rewards system		+
Workload pressure		-
Organizational encouragement	Amabile, Contri, Coon, Lazenby, & Herron (1996)	+
Supervisory encouragement		+
Work group supports		+
Freedom		+
Sufficient resources		+
Challenging work		+
Workload pressure		-
Organizational impediments		-
Commitment to innovation	Claver, Llopis, Garcia, & Molina (1998)	
Awareness of technology		
Risk-taking		
Technological change refusal awareness		
Risk-taking	O'Reilly (1989)	
Rewards to change		
Openness		
Common goals		
Autonomy		
Belief in action		
Communication with stakeholders	Hauser (1998)	
Values and norms for conflict resolution		
Trust		
Pluralistic cultures		

Table 2-6 (continued)

Organizational Culture Characteristics that Determine Innovation (Selected Bibliography)

Organization support	Gudmundson, Tower, & Hartman	+
Empowerment	(2003)	+
Truth and rationality	Detert, Schroeder, & Mauriel (2000)	
Nature of time and time horizon		
Motivation		
Stability/change		
Orientation to work, task and coworkers		
Isolation/Collaboration		
Control, coordination and responsibility		
Orientation and focus		

The organizational culture, by definition a concept about people behavior in organizations provides a unique framework for the analysis and the understanding of IHRDP.

The Integrative Model of Innovation in Organizations: A Dynamic Model for the Study of the Innovative Human Resource Development Practices

The model used for this research draws on the concept of organizational culture—although the main approach undertaken comes from the area of innovation. The model is called the *Integrative Model of Innovation in Organizations*. It is an integrative, dynamic model for innovation in organizations developed by Tang (1998), which he used for the further development of the survey instrument used in this research (Tang, 1999).

The model presented by Tang (1998) is based on the use of internal environmental factors or organizational culture characteristics. The most important

feature of this model is it describes those characteristics interaction inside the organization. In that sense, this model builds upon the organizational characteristics theory, although it brings an integrative perspective to the analysis of those characteristics. Therefore, the model attempts to provide a dynamic perspective by stressing the relationship of those constructs (see Appendix I). There are clear advantages about this model. First, it draws on factors that traditionally have been examined separately by the innovation literature. This model combines factors like support and leadership into one perspective. Second, it thus analyses innovation from the perspective of the interaction of those characteristics—combining more than one factor.

As indicated by the author, the model presents a "representative perspective on the factors that affect the innovation in organizations" (Tang, 1998, p. 297), and taps into three main areas related to innovation that had been the focus of prior research—creativity, dynamics and organization. At the core of the model reside the processes of project raising and project doing, which will result in the new products, processes or services. These processes have two enablers—knowledge and skills, and integration of individuals, teams and functions, which will in turn interact based on the flow information and communication. The organization will be innovative if there is enough guidance and support to respond to the external environment (Tang, 1998).

An approach like this, that uses several constructs, has one important resulting effect. By approaching innovation this way, "the unit of analysis is no longer the organization but the organization with respect to a particular innovation, no longer the innovation, but the innovation with respect to a particular organization" (Downs & Mohr, 1976, p. 706). From this perspective, organizational characteristics can be viewed "as

variables that characterize the circumstances surrounding a particular decision to innovate" (p. 706).

A Comprehensive Perspective of Innovation in Organizations

Existing literature on the predicting factors of innovation has been characterized for stressing the use of either structure or internal characteristics (as stated in the above review) or for emphasizing a group of those variables. However, at the current pace of economic development and advancements in technology, a more inclusive perspective would be more useful in exploring those predictors. An initial attempt in that sense has been made years ago by Zaltman et al. (1973), but a more organized analysis could be developed.

Human Resource and Innovation

The interest on the link between innovation and human resource has grown rapidly in recent years, particularly due to the emphasis put on the human resources of organizations as a means to become competitive. This interest has reached its peak in the context of the *global economy* or the *knowledge economy*, where the human factor plays a central role. Historically however, human resources have not always been perceived as having the central role. From the perspective of the classical economic theory and its three factors of production—labor, land and capital—Reed (2001) recounts the emphasis put on land during the Agrarian revolution, and the extensive use of capital and machinery during the Industrial revolution. In the latter, labor was assumed to be mainly a physical activity oriented at the production of goods. Reed's contention is that in the current context of economic development, the emphasis is put in labor as the main factor of production—but with a different meaning: "Today the most important driver of value

creation is the enterprise and creativity of individuals, assets that only themselves can own" (p. 5). Thus the need to turn to people in organizations—more so if organizations want to be innovative.

The need to become innovative in the use of human resource as one of the main economic drivers in today's economy can be explained from many perspectives, but the most common explanation associated with innovation is the need to develop competitive advantage through the use of human resource. Pfeffer (as cited in Flood & Olian, 1995) has stated that "as other sources of competitive success have become less important, what remains as a crucial, differentiating factor is the organization, its employees, and how they work" (p. 3), in which case those resources becomes strategic for an organization.

The field of Human Resource is appealing to implement innovation efforts due to four main aspects described by Flood and Olian (1995). First, human resource is valuable, because human resource pools become differentiated in the type and level of proficiency of the employees' skills—that is, employees are not longer perfectly substitutable. Second, human resource for a firm is required to be rare if it is to be competitive, since high quality employees are difficult to find and train even in time of high unemployment. Third, human resource need to be hard to imitate, which derives from unique human resource processes. And fourth, human resource is non-substitutable, unless the organization is to face costs and damages.

Along with these perspectives, the interest in innovation and human resources has also been fostered by the recent discussion around administrative innovations.

Innovation and Human Resource Management

Literature that directly places Human Resource in the framework of innovation has focused mostly on Human resource *Management* (HRM). For research on innovation and HRD is scarce, although more interest on the topic has been evident in the past five years. That is not to say that HRD professionals and scholars have not been interested in innovation—indeed they have been. HRD literature reveals scholars' concerns and curiosity about innovation, but only a few works have been developed towards an understanding of that relationship—beyond the point of just acknowledging it.

Therefore, in order to understand the relationship between innovation and human resource I first looked into the literature on innovation and human resource management. For this purpose, HRM literature was reviewed where studies were framed in the innovation theory or any of its aspects as described above.

General Trend

Literature on innovation and HRM mostly follows the general trend of studies on innovation—that is, it adheres to the theoretical approaches of innovation in organizations indicated above. Moreover, innovation HRM literature heavily relies on the literature of administrative innovations since, as indicated by Wolfe (1995), "HRMIs [human resource management innovations] are intangible, administrative innovations" (p. 315), so the "adoption of progressive HR management practices can be considered similar to the adoption of other administrative innovations" (Tannenbaum & Dupuree-Bruno, 1994, p.172). Therefore, lessons from the literature on administrative innovation are used to explain adoption patterns (Johns, 1993).

Further, the link between HRM and innovation has been also analyzed from the organization's strategic point of view. "The development of HRM policies in tandem with strategy is accompanied by a heightened interest in fostering innovation in order to be more competitive" (Kossek, 1987, p. 71), since it has become "increasingly apparent that […] innovations arise not only from new ideas, but also from effective organizational implementation of innovative ideas" (p. 71). The resulting effect is that the acceptance of human resource as a source of competitive advantage "brought legitimacy to HR's assertion that people are strategically important for firm success" (Wright, Dunford, & Snell, 2001, p. 702).

Notoriously, the "innovation general trend" HRM literature that provides innovative-specific frameworks to analyze HRM practices is larger, among other things because it started earlier than HRD literature specific to innovation. However, the strategic approach has helped to develop a deeper understanding from the HR perspective (although not exclusively) of why innovations happen in organizations.

Focus on Organizational Characteristics

Derived from the general trend, studies on innovation and HRM tend to focus on organizational characteristics or factors influencing the adoption and implementation of those practices. Tannenbaum and Dupuree-Bruno (1994), in a research conducted with state agencies in New York, analyzed organizational size, climate (both organization-wide and in the Human Resource Department), structure (decentralization and formalization), as well as external conditions, as predictors of innovation adoption and implementation. Similarly, Kossek (1987) examined organizational size, both as a function of number of people and revenue, as well as environmental factors, and their

impact in the adoption and implementation of HRM practices in different industries—for which purpose she also utilized some historical and market trends. Using three case studies Wolfe (1995) elaborated on two interrelated areas that, in his opinion, have the most relevance for HRM innovation. The first one is the role of the champion and the power he or she can use to promote and advocate an innovation. The other area is organizational context—intra- and extra-organizational—since innovation does not occur in a vacuum. Wolfe focused on the intra-organizational context and its connection to the role of the champion and power because of its importance as a determinant in the decision-making process.

The analysis performed by those authors illustrates the importance given to the organization's factors and how they favor innovation. No significant literature has been found regarding the examination of HRM innovative practices from the perspective of the stages of the adoption, for instance; or from the perspective of a longitudinal study in which qualitative analysis is to be emphasized (Wolfe, 1994).

The HRM innovation literature on organizational factors reports findings that are not necessarily consistent with those reported in Table 2-5 above with regards to the direction of the relationships. Tannenbaum and Dupuree-Bruno (1994), for example, found that formalization has a positive relationship with the adoption of training practice, and a negative relationship between decentralization and recruitment. This may very well suggest that the adoption and implementation of those practices and their relationship with the organizational factors under analysis may depend on the type of innovation being adopted, as indicated by Kimberly and Evanisko (1981), in which case some factors may have more weight than other.

The Dependent Variable

Another characteristic of studies on Human Resource Management and innovation is they consistently used a Human Resource Management practice as the dependent variable(s)—as opposed to using these practices as explanatory variables of organizational outcomes, like performance indicators, for example. This approach, which could serve a specific type of analysis does not necessarily follow approaches used on studies of innovation in other areas.

The general literature on innovation and organizational characteristics does not follow a unique approach. The most common approach consisted of a composite score based on the number of innovations adopted by the organization. In their research on organizational change in schools in San Francisco and Illinois, Baldridge and Burnham (1975) ranked the schools in the study as high (adoption of 34% or more of the possible innovations) or low (less than 34%) innovators, according to the number of innovations adopted, while Bigoness and Perreault (1981) analyzed organizations in the shoe industry and how these organization related to the adoption of 10 innovations. In a research about innovation in the health care industry, Kimberly and Evanisko (1981) studied the adoption of 12 technological and 8 administrative innovations, and in his meta-analysis of organizational innovation Damanpour (1991) studied innovation determinants where the dependent variable was the number of adopted innovations—a range of at least two and up to 26 innovations reported in the literature reviewed. The use of such a composite dependent variable may not be considered optimal based on specific research approaches and needs (Downs & Mohr, 1976), although there is disagreement about this topic (Damanpour, 1991) and researchers still may consider it valid.

In the general area of innovation, although through fewer studies, a single innovation has been used as the dependent variable too. The main concern with this approach is that it raises issues of generalizability (Kimberly & Evanisko, 1981) or that they are not representative since the adoption of a single innovation maybe idiosyncratic (Bigoness & Perreault, 1981). In other words, analyzing the adoption of one innovation may not indicate if the organization as such supports an innovative culture.

Table 2-7

Sample of Dependent Variables in Human Resource Management Innovation Research. Selected Studies

Author	Study Setting	Dependent Variable
Fennell (1984)	173 private firms in Illinois reporting adoption of the innovations studied	2 practices related to employee assistance, and insurance coverage.
Osterman (1994)	694 manufacturing establishments	4 work practices
Tannenbaum & Dupuree-Bruno (1994)	40 New York State agencies	4 HRM facets: Training, recruiting, employee involvement, and selection.
Wolfe (1995)	1 international organization 1 company 62 corporations	Organization development practices Project planning Health programs
Ruppel & Howard (1998)	252 information systems executives	Telework practices

HRM innovation studies have used HRM practice as the dependent variable—in other words, it has become increasingly a common approach that studies simultaneously

analyze the impact of some determinants over one or more than dependent variables. In some other studies the dependent variables could be an HRM area where the adoption of those innovative practices took place (see Table 2-7).

More limited appears to be the use of HRM innovative practices as explanatory variables. For example, Osterman (1994) used other practices regarding wages, employment security, and so forth "as supporting HRM practices that are […] necessary for the successful implementation of flexible work organization" (p. 176), this latter being the HRM innovation practice studied as dependent variable. Agarwala (2001) studied three dimensions of human resource innovation practices—introduction, importance, and satisfaction—as the explanatory variables for organizational commitment, thus focusing on an organizational behavior characteristic and therefore taking a different stance from Osterman's (1994) study.

Practice Identification

One resulting fact from the analysis performed above is that innovation literature of HRM provides with a wide sample of practices considered innovative by the adopting organizations. Some of those practices are described very generally like, for example, "hiring practices" (Kossek, 1987), whereas other are described more specifically like "telework" (Ruppel & Howard, 1998). This is useful for the research here proposed. First, because it provides examples of how those practices where approached and studied. And second, because many of the identified practices could be in fact considered HR *Development* practices if we are to follow the most common definition of HRD (McLagan, 1989).

Human Resource Development and Innovation

Typical HRD literature, that is literature that explicitly identifies as HRD, or that has been published in the most known publications or presented at gatherings in HRD, that focuses on innovation is scarce. There exist studies on innovation from other disciplines describing what we could consider HRD practices although they are not identified as such. As indicated above, some researchers describe under Human Resource Management innovation practices that could be considered part of HRD. Similarly, studies from other fields also link HRD interventions to innovations, although they may not be explicitly or implicitly identified as HRD interventions.

Literature on HRD is not however unfamiliar to the topic of innovation. A review of HRD literature is described next. For this purpose, three main sources of information have been chosen. One is the entire collection of the *Human Resource Development Quarterly* journal (the refereed section), a leading publication on the HRD field. The second one is the collection of *Human Resource Development International* (peer-reviewed articles section). The third one is the Proceedings of the annual conferences of the Academy of Human Resource Development (years 1995-2003).

HRD Literature and the Innovation Theory

It has been stated above that typical HRD literature on innovation theory or its elements, or about the main aspects of the innovation process is almost nonexistent. There are however a few notorious exemptions. The first work in this area is that of Torraco (1998). He provides a macro reference to understand the relationship between HRD and innovation, and in order to do so he uses a framework based on the critical science research techniques. Embedded in the mainstream of the innovation literature,

Torraco's work shares common elements with the current research, although there are some distinctions as well. First, although not explicitly stated Torraco points out to the importance of the strategic role of innovation and HRD. Second, in doing so he identifies the HRD role as a *support* for achieving innovation in the organization and concludes that "there is a critical need for HRD to take a lead in fostering innovation in organizations" (p. 203) because human capability is critical for innovation. Again, this is a shared point with this research, and directly relates to the strategic Human Resource perspective.

Third, Torraco emphasizes creativity in organizations as the main source of innovation, and in fact he equals creativity with innovation. In that respect, Torraco's work relates more to the innovation development process described by Rogers (1995). By adopting this approach, the fundamental statement it can be derived from Torraco's work is that innovation occurs in an organization only if the new idea—the innovation—is *created* in the organization. In this research I take a different approach, since I am using a wider understanding of innovation—an idea that is new for the organization, regardless of where it was created. For Torraco, creativity adopts the form of knowledge in sequential steps that end up in the innovation creation. Finally, although there is no mentioning of factors affecting the creativity potential in the organization, the knowledge process becomes Torraco's only description of the innovation process characteristics.

The other typical HRD studies reviewed, although related to core innovation issues, only tangentially refer to the HRD topic under analysis as it relates to the innovation process. One is the study carried out by Watkins, Ellinger, and Valentine (1999). These three authors conducted a research about the use of technical managers as instructors in one automotive company. The study, targeting 19,000 engineers in that

company focused in the factors that could explain support and commitment for the proposed innovation. For that purpose, the researchers surveyed 207 managers with an instrument that was based on the Concerns-Based Adoption Model.

Although this is an important study and has many implications for HRD, it somehow distances itself from the general trend of innovation studies or even in HRM. First, the dependent variable is not the innovation, or any aggregate about innovation as in the case of the majority of studies in several innovation areas, including HRM. The dependent variable, as described by the researchers is the managers' "*support* for the innovation" (emphasis added) (Watkins, Ellinger, & Valentine, 1999, p. 72), an approach that highlights the interest in the shared values and its implications for the organizational culture. Second, explanatory variables include change management in the form of the "belief of the innovation developers that this instructional role [the actual innovation] was actually an extension of the manager's change management role" (p. 71). Third, because the research solely places the emphasis in the *feelings experienced* (mostly expressed in negative terms) by people involved with the innovation—most of the literature in innovation rather uses individual perception (Amabile et al., 1996). This constitutes a unique approach, and in fact focuses mostly outside or in the final stages of the innovation process. Finally, no other references are made with regards to other aspects of innovation factors or processes.

Using a similar approach, Dooley, Metcalf, and Martinez (1999) researched the role of professional development and training in the adoption of computer technology and telecommunications in a school district in Texas. They, too, matched the role of training with the Concerns-Based Adoption Model, as well as with the diffusion process

described by Rogers (1995). With this respect, they concluded that in fact their training and development program have "matched Rogers' diffusion of innovation research and the Concern-Based Adoption Model for innovation and diffusion" (p. 48). The first issue that becomes apparent from this study is that, as in the case of Torraco (1998) they identified the role of HRD as a support for the adoption of the described innovation. Second, although they assimilate their study to Rogers' (1995) there is no major explanation about the adoption of the innovation and how it relates to Rogers' model. Finally, they emphasized the concerns towards the adoption of the innovation, but little is explained about their interaction with the innovation process.

Another such study is the work of Russ-Eft (1998). Using critical incidents Russ-Eft researched leadership competencies that where matched with two models, one of which refers to six factors influencing corporate creativity. Therefore, the first characteristic of Russ-Eft's work is that it equals creativity with innovation just the same way as Torraco (1998) did. Second, using the six factors that influence corporate creativity as described by Robinson and Stern (as quoted in Russ-Eft, 1998), the competencies are described in an isolated manner, mainly with the purpose of elaborating a profile of those competencies, which is explained by the stated research question—"What are leadership competencies needed in today's organizations? To what extent are these leadership competencies similar or congruent with the factors influencing corporate innovation and creativity as identified […]?" (p. 210). Third, the study does not describe how those characteristics get embedded in the innovation process. In that sense it provides with some insights about some of the innovation characteristics, but does not provide a more general analysis of how HRD relates to innovation. Finally, although

leadership falls in the area of HRD, no innovation in HRD and, to this effect, no HRD practices are identified in this study.

A somehow different approach is presented by Sta. Maria and Watkins (2001), who studied the adoption of the ISO 9000 quality certification system by Malaysian government agencies. They focused their research on the context of the changes brought about by the adoption of the innovation, and examined the extent of the perceptions of the innovation implementation and the learning organization culture. For the former they used the Concerns-Based Adoption Model in order to understand the innovation process. Two are the main issues highlighted by this study in regards to innovation. As in the previous articles reviewed, the innovation this study focuses on is not an HRD practice—it is an international quality certification system. Second, the innovation process is examined mainly through the lens of the concerns about the adoption of the innovation, an approach that focuses in the post-stages of the innovation process, once it has adopted and implemented.

Several conclusions can be drawn from the analysis of the above studies. First, there is a variety of issues and approaches, ranging from general perspectives to specific studies of innovation adoption. In general, they do not follow the most used theories and models for understanding innovation and HRD. Those studies do not use the organization factors theory. Therefore, with the exception of Torraco's (1998) work, all of these studies are not framed within what it could be called the mainstream theories of innovation.

Second, four of the studies (Dooley et al, 1999; Russ-Eft, 1998; Torraco, 1998; Watkins et al, 1999) characterize the HRD intervention or HRD role under study as a

support in the sequence of the innovation process, as a contribution towards the adoption of the innovation. However, Torraco is the only one explicitly highlighting the strategic nature of such contribution. They do not focus on HRD itself as innovative, or about the innovative characteristics of HRD practices.

Third, there seems to be an incomplete understanding of global issues surrounding innovation. Two of the studies (Russ-Eft, 1998; Torraco, 1998) equaled innovation with creativity. The innovation theory states that creativity is one of the elements that can be used to analyzed and understand the innovation process, particularly when adopting innovations that are new for everybody—not only the adopting organization, that is when the innovation under study was created inside the organization. Thus, creativity can lead to innovation, but innovation is not necessarily the result of an immediate and direct creativity effort inside the organization. Also, those studies provide partial accounts of the innovation process, with the exception of Torraco (1998) that again appears to be the most comprehensive study in that sense.

Fourth, three of those studies (Dooley et al, 1999; Sta. Maria & Watkins, 2001; Watkins et al, 1999) approached innovation from the concerns perspective, and for that they used the Concerns-Based Adoption Model as a way to explore commitment towards the adoption of the innovation. Commitment to innovation is certainly an important element in the studies of innovation, but as most of the literature suggests innovations are adopted and implemented because of many organizational factors different than the reactions expressed by adopters. But commitment to innovation is a post stage factor, sequentially after the decision of adoption has been undertaken. In other words, commitment to innovation by users or costumers will come after a decision to adopt it

has been made. To some extent, those studies resemble a balance about the adoption of an innovation. But innovation may follow a different pattern. If the organization leadership had decided to install personal computers for all employees, some of them will reject the idea, thus not showing commitment, among other things because of threats posed by the innovation—loosing jobs because of new technology, for example. In those cases, the innovation will be adopted and implemented, regardless of the employees' feelings about it. In some other cases the commitment is more important. Klein and Sorra (1996) would argue that employees' commitment is decisive for the implementation after senior management has made the decision to adopt and implement the innovation, but the failure of the innovation implementation does not mean the failure of the innovation.

Finally, only Sta. Maria and Watkins (2001) used a quantitative methodology; Dooley et al (1999), Russ-Eft (1998), and Watkins et al (1999) used a qualitative approach, although not longitudinal as suggested by Van de Ven and Rogers (1988). This is another departure from the mainstream literature on innovation and the research on human resource management innovation which extensively use quantitative approaches.

This diversity of contents and approaches reveal a true interest in the topic of innovation and HRD, but with the exception of Torraco's (1998) work they are far from being considered studies truly embedded in the mainstream of the innovation literature.

HRD Literature and Innovative Practices

Other studies in the HRD literature include references to innovation but in an incomplete manner. Usually, they describe an intervention or practice and in most cases

briefly explain how that relates to innovation. Their intent is not to study those practices as innovation or within the innovation process.

One set of such studies is composed of manuscripts or works that claim the described HRD practices to be innovative. Characteristics of such studies, though, are a) they do not elaborate on the characteristics or conditions under which the practice (innovation) is adopted and implemented, b) they do not describe the characteristics of the innovation process of that practice, and c) they do not frame their analysis as an innovation-related study or in the innovation theory. Examples of this approach include the work on leadership development program (Young and Dixon, 1995), on-line instruction (Johnson, Palma-Rivas, Suriya, & Downey, 1999), appreciative inquiry (Beck, 2001; Egan & Lancaster, 2002), and the creation of a women's network (Bierema, 2002).

A second set of studies is composed of those that claim a link between some HRD interventions or practices and the resulting innovation in the organization. Most of the studies reviewed described the learning organization as the main contributor to innovation in organizations. Marquardt and Alexander (1999) analyzed how learning organizations efforts resulted in innovation and innovative knowledge; Van Lakerveld, Van den Berg, De Brabander, and Kessels (2000), using a questionnaire that asked about an innovation that had been implemented, concluded that learning organization tend to be more innovative; and Bates and Holton (2000) stated that learning in an organization results in innovation. Another type of studies in this group stated the linkage between knowledge and knowledge management and innovation. Examples of these works are Hernandez's (2001) study on organization learning and tacit knowledge, Aliaga's (2001)

work on knowledge management, Kubo, Saka, and Pam's (2001) study on knowledge sharing, and Iles and Yolles' (2002) study on knowledge creation, translation and migration in small and medium-sized enterprises. Yet, there is a third, diverse type of studies that relate some HRD practice with innovation, like the on-site study type of training adopted in the context technical innovation (De Jong, 1991), and the performance analysis model stages (Fisher & Sleezer, 1999). In the works described in this paragraph, authors did not analyzed at a deeper level the relationship between those practices with innovation. However, the logical conclusions are that they a) described the HRD practice as a factor in the creation of innovation, and b) that the innovation is therefore on a different area—other than HRD itself.

A third group is formed by those studies that call for innovative practices to be part of the HRD dimension in the organization's work in order to be successful. Russ-Eft (1993) examined factors providing best prediction of high team orientation for an organization, including innovation on the job; Poell, Van der Krogt, and Wildemeersch (1999) studied 16 actor strategy configurations, including reflective innovation where employees usually set out to investigate the introduction of some innovative method into their work; Poell, and Van der Krogt (2000) examined action learning and proposed three clusters, one of which is reflective innovation; Holton and Kaiser (2000) studied the relationship between the learning organization factors and innovation as products; and Naquin and Holton (2002) developed an instrument related to a competency model in leadership that includes innovation as a factor of analysis. As in the previous groups, there is no further development about the links between these HRD practices or

interventions and innovation. It is clear that a major assumption made in these works is that the ultimate goal is for the organization to be innovative.

Summary

This study of IHRDP builds on the theory of innovation—which explains how those innovations take place; what the determinant factors are; what the innovation process is. Two specific areas of the innovation theory guided this research. First, the theory of administrative innovations; second, the theory of organizational characteristics and innovation.

Innovation is an area that has been little explored in the HRD discipline. Typical literature in HRD shows a very few attempts to place the analysis about the relationship between HRD and innovation in the framework of the most relevant innovation theories. Only some of those are successful—even if only partially.

Innovation is an area that has been studied with more interest in the last four decades or so, and has evolved significantly—not without hurdle. In this evolution, one issue that has generated continued discussion is the way innovation is defined. While one group will indicate that innovation needs to be new to everybody, the most used definition is that of Rogers (1995) that defines innovation as those ideas, practices or objects that are perceived to be new for the adopting unit. This is the definition used in this research.

The definition used also reflects the types of innovation to which researchers refer, and the source of innovation as examined by the innovation literature. Three overarching frameworks have been proposed to study innovation in general—the development perspective, which puts an emphasis on creativity; the decision perspective;

and the innovation in organizations—which analyzes innovation in a particular social setting. In organizations, innovations can be those created in the organization, or those that have been created elsewhere but that are adopted as new in the organization. In this case, stages are distinguished, among which the adoption and the implementation are the most over-arching concepts.

Theories examining the types of innovation distinguish between two main types—technological and administrative, the former historically being the first to appear. This distinction has influenced how people understand innovation and the research approaches towards innovation. Administrative innovations are those referred to managerial or people innovations in organizations, and provide the direct innovation theoretical framework of analysis for this study on IHRDP.

Innovation in organizations have been studied from different theories—depending on the focus of those studies—whether they emphasized the origin (creativity), the process (stages), the research approach, or the characteristics of the innovation (attributes). One of the areas is the study of innovations from the perspective of the determinants in the organization. From this point of view, the organizational characteristics is the theoretical approach that has focused on those characteristics that may have influence on the adoption and implementation of innovations in the organization.

There have been two main branches that respond to the types of organizational characteristics that are considered determinants. The first one is the organizational *structure* characteristics, that relate mainly to how the particular organization is set up—size, centralization, formalization, stratification, complexity, etc. Those determinants

may change from organization to organization and those categories may have a different direction, as studies have shown. Although determinants cannot be completely analyzed in an isolated way, the second approach that has become increasingly important under the organizational characteristics theory is that organizational culture. For this research, the organizational culture approach provides a particularly important framework, since the innovative HRD practices are by nature practices about people and thus relay on the shared values of the members of the organization. The role of organizational culture in the adoption of innovation has received more attention in the recent years, but marginally so in the area of innovation and HRD. As in the case of the organizational structural characteristics, no agreement exists among researchers about a single set of characteristics or dimensions within the organizational culture that enable the adoption of innovation. The model used for this research relies mostly but not solely within this perspective of organizational culture elements.

If research on innovation and HRD in general is scarce, it is even more so in the case of HRD and the adoption of innovative practices, in which case the adoption of innovation practices in the area of Human Resource *Management* constitutes the best reference for this study. Researchers and professionals in HRD however have not been short of showing interest in this regard. In fact, main trend HRD literature is plenty of examples with claims about HRD practices that are innovative. As in the case of the general approach between innovation and HRD, those claims are not framed within the main trend of innovation research.

CHAPTER 3

RESEARCH METHOD

This research investigated the adoption and implementation of innovative HRD practices in Minnesota top 100 companies, as defined by their revenue. In order to study what the innovative HRD practices were in those companies, as well as the factors that determined their adoption and implementation, the following methodological components were addressed: a) research design; b) instrument and variables; c) population and sample; c) data collection; and e) data analysis methods.

Research Design

This study was classified as descriptive-correlational relationship research. The main proposition undergirding this study, informed by several prior studies, is that the adoption and implementation of the innovative HRD practices is related to organizational characteristics. Thus, this research about the innovative HRD practices adopted and implemented by the organizations builds upon the theoretical aspects of the existing theories on innovation—in particular those related to the organizational characteristics.

Literature that provides the theoretical basis for this study is reviewed in Chapter 2. As summary, the main areas of innovation supporting this research were administrative innovations and the studies of organizational determinants.

Instrument and Variables

The instrument used in this research has two sections. The first section is the *Inventory of Organizational Innovativeness*, and the second section contains the internal organizational moderators questionnaire. These two sections were preceded by a set of definitions of (a) innovation, (b) Human Resource Development, and (c) organization or

unit to help answering the instrument (see Table 1-1), and were followed by an inventory of IHRDP section. The core of the instrument was however the *Inventory of Organizational Innovativeness*. This is an existing instrument created by Tang (1999), based on his Integrative Model of Innovation (Tang, 1998), explained earlier.

Following the discussion in the literature, the instrument focuses on the IHRDP that have been both adopted and implemented. Wolfe (1994) has suggested new research to move towards focusing on implementation (p. 409) because it "reduces ambiguity and inconsistency concerning the innovation stage upon which investigation focus" (p. 417). Therefore, the study concentrates in the IHRDP as an outcome.

The Inventory of Organizational Innovativeness

The first section of the instrument contains Tang's (1999) *Inventory of Organizational Innovativeness.* This inventory attempts to "represent key concepts in the model of organizational innovation" (Tang, 1999, p. 42) that determine the adoption and implementation of an innovative HRD practice, as stated by the responsible party (the respondent) in charge of implementing those practices in each company. These are usually the heads of the HRD/HR functions in the selected companies, HRD supervisors, or HRD managers as explained in the section on population and sample.

The instrument deals with practices oriented at people development in the organization—Rogers' (1995) "software information."

Factors. As explained above, Tang (1998, 1999) based his model and instrument in the general literature on innovation, and used and extensive array of works as the basis for his theoretical framework. His instrument specifically refers to characteristics of the organization's internal environment—thus, the external environment is left out as

dimension of analysis. He created his instrument around 9 different factors, plus one general category "Summary Assessment Items" (see Table 3-1). The respondents were not sent the instrument with the factors names—just the questions. Some of the factors names have been slightly changed to relate them to a more descriptive category or to a category already existing in the innovation literature, so as to facilitate the analysis (see Appendix I).

Questions. All of questions in the original Tang's (1999) *Inventory of Organizational Innovativeness* were kept in the instrument sent to participants. Only a very few of them were slightly modified; it was done so to improve the wording and thus the reading, and only in fewer cases to relate the question to the context of the HRD discipline and consequently to apply them to HRD practices.

The inventory, as reported by Tang (1999), originally consisted of 50 questions, of which four were deleted by the author "as they were found to have little cross-correlation with the rest" (p. 50)—thus ending up with a 46-item questionnaire. Forty four of the 46 questions are grouped in the factors described above. The last two items were not categorized in any of the factors since they were "summary assessment items" (p. 50). For the purpose of this study they were included as well. Thus, the instrument sent to participants included all 46 items from the original Tang's (1999) *Inventory of Organizational Innovativeness*. Questions in sequential order are shown in Appendix II.

In order to answer the questions in the instrument in a more focused way, respondents were prompted to respond by thinking of the most recent innovative HRD practice they had adopted and implemented. They were asked to write the innovative HRD practice down and refer to it to answer the questions.

Table 3-1

Inventory of Organizational Innovativeness: Factors and Reliability

Organizational Innovativeness Aspect (Adapted Label in parenthesis)	*Description*	*Cronbach's ά*
Leadership	Consultative and flexible style.	0.82
Support	Management support through suitable resources, work practices, and organizational structure.	0.85
Task (Job Empowerment)	Employee empowerment to take initiatives for opportunity/problem sensing and solving.	0.81
Behavior (Individual Behavior)	Requires people that are good at different roles to collaborate.	0.71
Integration (Work Integration)	Work units perform different functions to integrate their unique expertise through working together.	0.74
Raising Project (Project Initiation)	Organization relies on multiple sources for ideas.	0.8
Doing Project (Project Implementation)	Organization relies on multiple channels and mechanisms to bring ideas to further development.	0.85
Knowledge and Skills	Creative-related skills and domain-related knowledge.	0.76
Information and Communication	Information and exchange of information.	0.75

Respondents answered questions by choosing a score following a Likert scale, with the following values:

1 = Disagree
2 = Slightly disagree
3 = Neutral
4 = Slightly agree
5 = Agree

Questions from the guiding statement and the *Inventory of Organizational Innovativeness* in this section are to deal with research questions number 2: "What are the IHRDP adopted and implemented by top companies in Minnesota?", number 3: "How do the IHRDP implemented in those companies compare to those found in the literature?", and number 7: "What are the organizational characteristics that enable the adoption and implementation of innovative HRD practices in those organizations?"

Practices and Internal Moderator Questions

The instrument's second section was made up of two types of questions created specifically for the purpose of this research. They have been added to the instrument because of the analytical possibilities they bring, by distinguishing categories according to which responses can be grouped for a comparison—like organization type, industry category, timeframe of the implementation, number of innovative HRD practices adopted, etc. Damanpour (1991), for example, analyzed the role of what he calls moderators in the relationship between the organization characteristics and the innovation adopted and implemented. He concluded that those moderators need to be distinguished because the innovation implementation may have different determinants in one organization or another. To similar conclusion arrived Sta. Maria and Watkins (2001).

In the first part there are questions to gather information surrounding the innovative HRD practices themselves—the practice, adoption and implementation timeframe, number of innovations implemented, and other characteristics (see Appendix

III). But more importantly, they intended to provide respondents with a framework of reference by giving them the opportunity to reflect on and situate the innovations they adopted and implemented, providing a context from where to draw their responses.

Also, questions in this first part will provide data about what are the innovations they claimed they adopted and implemented, so as to build an inventory. They will also allow for an analysis based on the organization's or unit's characteristics—e.g., type of industry, size of the HRD department, etc.

The second set of questions in this section deal with internal moderators information. Those questions aimed at gathering additional information on the respondents' internal moderators—i.e., managerial demographics, job function, and business innovation unit characteristics. Managerial demographics variables have been included based on the assumption that demographic characteristics are related to cognitive abilities, attitudes, and expertise (Bantel & Jackson, 1989), including functional experience. Since stimuli for innovation comes from external sources (Myers & Marquis, 1969), education and training play an important role in the process of adopting human resource innovation, in which case innovation takes place due to information provided by HR people who is educated and bring information from universities (Tannenbaum & Dupuree-Bruno, 1994) or prior or current training.

Research questions 4, 5, and 6 relate to these questions—"How do managerial demographic characteristics relate to the adoption and implementation of innovative HRD practices in those companies?" "What are the job function characteristics that may enable the adoption and implementation of the innovative HRD practices in those

companies?" "How do business innovation unit characteristics relate to the adoption and implementation of innovative HRD practices in those organizations?"

Those internal moderators will also be examined in the way they relate to the IOI factors.

Questions about Predicting the Adoption of Innovative HRD Practices

Responses to questions in both questionnaires—the IOI and the internal moderators—will be used for research question 7 "What are the organizational characteristics that enable the adoption and implementation of innovative HRD practices in those organizations?" For that purpose, linear regression analysis was used, and three models were examined, as described next. All three models had the total number of adopted and implemented HRD practices as the dependent variable.

Model 1: The IOI organizational internal characteristics and innovative HRD practices. This model explored solely the influence of the IOI factors in the adoption and implementation of innovative HRD practices in Minnesota companies. The intent in this case was to first test if Tang's (1999) model and its theoretical underpinning could be confirmed.

Model 2. The IOI organizational internal characteristics and the internal moderators in the adoption of IHRDPs. In this model, the IOI factors were explored along with the interaction of the managers' demographic background characteristics from the internal moderators. The managers' information used in this model are the highest level of educational achievement, the years of service in the same organization, and any prior work experience she or he may have had in that or any other organization. The inclusion of these three variables relate to theoretical standpoints and prior research in the

field. Specifically, the first two were included because it has been stated that stimuli for innovation comes from external sources—education and training (Myers & Marquis, 1969; Tannenbaum & Dupuree-Bruno, 1994). The Prior Work Experience variable relates to the issue of specialization (Bantel & Jackson, 1989; Kimberly & Evanisko, 1981; Love, Huang, Edwards, & Irani, 2004; Manski, 2004; Stata, 2004).

Model 3: A comprehensive model of organizational internal characteristics and organizational structure characteristics for the adoption of innovative HRD practices. One of the issues discussed above is that of researchers choosing the use of one set of characteristics over another one. In addition, those studies have clearly emphasized he use of organizational structure characteristics—in detriment of an analysis using internal characteristics. One of the explanations could be the technological and economic evolution that led to emphasizing firm-related factors, market situations, and economic conditions. These were clearly present in the case of research for technological innovations. Research performed that way, however, may have overseen the *joined* influence of internal characteristics, more specifically people-related, and organizational culture factors. In the managerial literature the recognition of such factors roles led to the development of the resource-based view of the firm, and particularly of the strategic human resource management.

Therefore, for this research, the internal characteristics factors contained in the IOI questionnaire were examined along one organizational structure factor—the organization size. A proxy was used in this case—the company's revenue. In many studies on innovation, and in particularly in early research, the size of the company has

been associated with innovation (Kimberly & Evanisko, 1981; Pierce & Delbecq, 1977; Rogers, 1995; Slappendel, 1996; Zaltman et al., 1973).

Information on the company's revenue was collected from the *Star Tribune 100* (see Table 3-3).

Definitions

The first section was preceded by directions and an introductory set of three definitions as explanatory notes to guide respondents. The first definition is an adapted version of the definition of innovation used by Rogers (1995); the second definition is a definition of the discipline of HRD (Swanson, 1998), so for respondents to focus on HRD issues; and the third definition describes the meaning of organization or unit for the purposes of this study (Tang, 1999). Table 1-1 in Chapter 1 describes the definitions as they were adapted from their originals.

Inventory of Existing Innovative Human Resource Development Practices

The final portion of the instrument consisted of a sample inventory of existing IHRDP as reported by the literature. The intent of including an inventory is to help respondents by having a reference of what those innovative human resources development practices may be. The use of a sample inventory is a practice that has been utilized before. Tannenbaum and Dupuree-Bruno (1994) stated that "providing respondents with a stimulus list of innovations has been used frequently in previous innovation research" (p. 181). That approached was followed in this study.

The sample inventory has been collected specially for this research. In doing so, many sources have been used (Agarwala, 2001; Beck, 2001; Bierema, 2002; Egan & Lancaster, 2002; Evans, Farquhar, & Landreth, 1989; Forrester, 2000; Iles & Yolles,

2002; Johnson, Palma-Rivas, Suriya, & Downey, 1999; Joseph, Rajendran, Kamlanabhan, & Anantharaman, 1999; Kubo, Saka, & Pam, 2001; Leung, 2001-2002; Osterman, 1994; Poell, Van der Krogt, & Wildemeersch, 1999; Reed, 2001; Ruona, Lynham, & Chermack, 2002; Sivadas & Dwyer, 2000; Tannenbaum & Dupuree-Bruno, 1994; Van Lakerveld, Van den Berg, De Brabander, & Kessels, 2000; Watkins, Ellinger, & Valentine, 1999; Wolfe, 1995; Young & Dixon, 1995). These practices were included after the second section of the instrument.

This sample inventory also relates to research questions number 1: *What are the innovative HRD practices found in the literature?* and number two *What are the innovative HRD practices adopted and implemented by companies in Minnesota?*

Validity and Reliability of the Inventory of Organizational Innovativeness

Validity and reliability for the *Inventory of Organizational Innovativeness* are provided by the author. The article where this instrument is taken from explains in detail the building process of the instrument (Tang, 1999), as well as validity and reliability information.

For validity, the author used several techniques to check for proper wording, and proper construct. He examined item correlation, which led to the decision for deleting four items whose correlation coefficients were too low, as well as factor analysis to check item loading in their own factors.

For reliability he used internal-consistency measures. Using the sample responses, Tang (1999) analyzed Cronbach's ά where all factors exceeded 0.7, thus concluding that "the items in the final version of the *IOI* [Inventory of Organizational Innovativeness] are aligned with the factors" (p. 45). The factors Cronbach's ά are

reported in Table 3-1. Internal consistency was further analyzed for this study. All scales reported Cronbach's ά of 0.67or higher—with the exception of Job Empowerment, which shows an ά coefficient of 0.46.

Review by a Panel of HRD Practitioners

The two sections of the instrument and the set of definitions were sent to a group of four HRD practitioners for review. One practitioner worked for a large corporation, one for a large consulting firm, one for a small engineering firm, and one as an independent consultant.

The intent was to gather information on their reactions to the instrument—as would the actual respondents, as practitioners. They were asked to review the clarity and validity of the instrument. One of the concerns with this type of research is that respondents need to have a clear understanding of the questions asked. Thus, the contribution of these professionals from a practice perspective was very important because they would read and respond the instrument from the perspective of a HRD professional working on the field. Specifically, the review panel members were asked to respond to the following four questions:

1. Are each of the questions clear and understandable?
2. Does each question make sense in the context of the focus on innovation?
3. Given the focus on innovation, have I missed anything I should ask about?
4. Are there questions you believe to be inappropriate or irrelevant?

As expected, the panel responses provided helpful information about the entire instrument. There were observations in the form of comments about the Inventory of

Organizational Innovativeness (Tang, 1999) but they were mainly questions to the researcher, or re-wording of the questions for clarification.

Their comments though referred in the majority of the cases to questions in the second section of the instrument—those about the innovative HRD practices and internal moderators questions. With some exceptions detailed below, changes dealt mostly with wording or minor rephrasing for clarity. Also, some of the questions' answer options were modified and improved. Their comments did not change the core of the questions and response options, but were oriented at refining the way they were asked and the options provided.

Exceptions to the suggested changes included the re-location of one of the questions, the deletion of another for irrelevant, and the addition of another question. Those suggestions were followed and included in the final version of the instrument.

Two of the panel reviewers asked about the inclusion of an "example of a HRD innovation." Since that option was considered from the beginning, the final version of the instrument included such examples in the form of a sample inventory, with examples collected from the literature.

In addition, three UMN faculty members were asked to review the instrument and made suggestions for changes as well. As in the case of the panel reviewers, their comments targeted mainly the second section, with little wording suggestions or questions about some of the items. In any event, their comments were as useful to improve the overall quality of the instrument

Consequently, the resulting instrument is an improved version from the original.

Variables

Independent variables. The *Inventory of Organizational Innovativeness* was designed based on Tang's (1998) integrative model of innovation that intended to capture the dynamic interaction of organizational characteristics that lead to the adoption and implementation of an innovation in the organization. The importance of that inventory to this study derives from its dynamic perspective, the inclusion of more organizational characteristics than the traditional factors, and the simultaneous use of those diverse characteristics as opposed to single, sometimes isolated factors.

Independent variables derived from the inventory are the nine factors, re-labeled for this research, in addition to the general assessment items. Those variables are described in Table 3-1.

Practices and internal moderators variables. In addition, other variables were examined—those included in the second section of the instrument on practices and internal moderators information. Those questions and variables will help understand the particular conditions and characteristics for the organization and the people involved in the adoption and implementation process, since "theory development requires distinguishing organizational types along other continua" (Damanpour, 1991, p. 559). These are also categorized as independent variables. These variables are described in Table 3-2.

Dependent variable. In order to measure the organization innovativeness, the dependent variable used in this study was the number of innovations adopted and implemented (Damanpour, 1991; Kimberly & Evanisko, 1981; Wolfe, 1994).

Some researchers have criticized this approach, but a composite number of innovations adopted and implemented is being used for many reasons. First, from a theoretical perspective it has been indicated that organizational innovativeness is more accurately represented when multiple rather than single innovations are studied (Damanpour, 1991). Second, this is probably the first study directly and explicitly focusing on innovation and HRD and its practices, so using a composite number can help understand the general perception of the IHRDP and provide some baseline data.

Table 3-2

Practices and Internal Moderators Variables

Variable description
Time of adoption and implementation
Business industry
Unit in the organization for which the innovative HRD practice was adopted and implemented
Respondent's role in the adoption and implementation process
Respondent's perception of reason for adopting and implementing
Unit size
HRD group size
Respondent's demographic information
Respondent's education level
Respondent's prior work experience

Third, and more importantly, knowing about other innovations adopted and implemented can give a sense of common organizational characteristics that lead to the adoption and implementation of the innovation, whether they are part of a more articulated strategy or

a single effort, and can thus indicate whether the HRD unit or function is familiarized with innovation. Damanpour (1991) stated that

> studies that use a single innovation ignore the fact that organizations, especially large ones, adopt many innovations in a given time period. Results of those studies may reflect the attributes of the innovations studied more than the characteristics of the organizations. […] When multiple innovations are studied, the influence of innovation attributes decreases. When all innovations adopted are studied the role of organizational characteristics becomes more evident. Therefore, determinants of innovation and the strength of their influence depend on whether or not a comprehensive group of innovations related to various parts of an organization is studied. (p. 562)

Information for the dependent variable comes from section two and was collected through the first question before the *Inventory of Organizational Innovativeness*.

A second dependent variable had been originally planned to be used in this study—whether the participating company had adopted and implemented an IHRDP. Because its associated statistical analysis involved the use of logistic regression and all participants indicated they had adopted an IHRDP, its inclusion became futile and that dependent variable was taken off the analysis.

Population and Sample

The population was composed of the Minnesota top 100 publicly held companies. These companies are ranked by revenue as described in the annual report *Star Tribune 100* (Star Tribune, 2003), with a slight re-composition described below.

Since the instrument was sent to the entire group of 100 companies, the population and the sample are the same.

These companies have been selected specifically because of their size, although in the innovation literature "there is some evidence that large organizations adopt disproportionately more innovations than smaller organizations" (Slappendel, 1996, p. 115). In fact, many studies reported size as positively associated with innovation, although "size itself is not related to innovativeness by logical necessity" (Slappendel, 1996, p. 116).

For this study, companies were primarily classified according to their last reported annual revenue, but they were as well classified by number of employees and industry categories (see Table 3-3).

Classifications for revenue and number of employees used neutral-worded labels, so as not to imply an intrinsic ranking order. From Table 3-3 it could be seen that the frequency of companies by revenue and number of employees are almost proportionately distributed. That was not however the case of the distribution according to industry. They were led by companies in the manufacturing category (29%) and with the least of them in utilities—energy and telecommunication, 4%. They were all headquartered in Minnesota.

These classifications were based mainly on the Star Tribune (2003) report, supplementary information provided by its leading author (P. Kennedy, personal communications, October 30, 2003 and January 12, 2004), and publicly available information through electronic databases (Thomson-Gale, 2003).

Table 3-3

Minnesota Top 100 Companies, by Revenue, Number of Employees, and Industry, 2003. Percentages

	%
Revenue	
Upper segment	34.0
Middle segment	31.0
Lower segment	35.0
Total	100.0
Number of Employees	
Higher segment	20.0
Mid-higher segment	21.0
Middle segment	20.0
Mid-lower segment	21.0
Lower segment	18.0
Total	100.0
Industry	
Retail / Service	26.0
Manufacturing	29.0
Health Care	14.0
Financial Service	8.0
Utility	4.0
Computer / Information Technology	19.0
Total	100.0

Data Collection

For data collection, a survey methodology was used with the Minnesota top 100 companies. The complete process included several steps. The first step consisted of double-checking if the companies listed in the *Star Tribune 100* report were still headquartered in Minnesota. For that purpose, information from the Thomson-Gale

(2003) electronic database was reviewed against each of the companies listed in the Star Tribune (2003) report. It turned out that two companies had relocated outside Minnesota, reducing the company number to 98. In order to compensate for these two companies entries, a follow-up was conducted with the leading author of the Star Tribune report, who provided the two replacement companies—that is companies number 101 and 102 (P. Kennedy, personal communication, October 30, 2003).

Once the number of companies was completed back to 100, addresses and telephone numbers were obtained from the same electronic database. Similarly, information was collected as to the person to whom the instrument was to be sent, for which purpose public information from that database and from LexisNexis (2003) were consulted and the names of the heads of the human resource function in the 100 organizations were obtained.

The survey protocol consisted of a pre-notice letter, two mailings, and telephone contacts. A pre-notice letter was sent first, briefly describing the research and indicating a questionnaire would follow to participate in this research. Two weeks after the first contact, pre-notice letter had been sent a mailing package was sent to all companies. This time the package included a) a letter inviting the HR official to participate; b) a copy of the questionnaire; c) the consent form for confidentiality and anonymity purposes (see Appendix IV); and, d) a form respondents could fill out and send back if they were interested in receiving a copy of a summary report of findings. Also included in this package was a self-addressed pre-stamped envelope that respondents could use to send their responses back. After a period of two weeks, a first follow up letter was sent again to the companies that had not responded—a code was used to identify the returns. The

mailing contained exactly the same pieces as in the first mailing. After over two weeks, telephone contacts were initiated with those organizations that had not responded.

A change was however introduced for the second mailing. Because the first mailing produced a very low number of responses, in the second mailing participants were provided with three other ways to respond: in addition to returning the responded questionnaire by mail, they could now send their responses via fax, they could participate over the internet via a web site where a copy of the instrument was placed, or they could set up a telephone appointment to respond over the telephone. Moreover, some of the respondents chose to send their answered questionnaires via electronic mail. Overall, 40 companies answered the instrument—a 40% response rate (see Table 3-4).

Table 3-4

Response Rate, by Companies' Revenue

	N	Percentage of Participating Companies
Revenue		
Upper segment	18	45.0
Middle segment	9	22.5
Lower segment	13	32.5
Total	40	100.0

Nonresponse Bias Analysis

One of the critical issues in this type of research is that of obtaining an adequate response rate—and thus avoiding bias due to nonresponse. Consequently, all efforts were oriented towards reaching and obtaining responses from all *Star Tribune 100* companies.

For this research, after receiving the responses from 40 companies, the following questions were examined in order to analyze if bias existed (Miller & Smith, 1983; West, 1963): Are the 40 respondents representative of the population of 100 companies included in the study? Are the responses of the 40 companies like those that the remaining companies would have given had all 100 companies responded? The answers to these questions were critical, since only if the 40 respondents represented the population I could then generalize our results to the 100 companies included in the study. Otherwise it posed threat to the external validity of the survey and the research. To address those questions different statistical tests were performed, as reported in Table 3-5.

Nonresponse analysis was conducted by examining the distinguishing variable that characterized this group of companies—revenue, which determined in the first place their choosing to be included in this study. However, two other types of data were added as well which were also available for all companies included—job number, and industry. This was the core information for all companies included in the *Star Tribune 100* companies.

Early respondents are those that responded to the first mailing and first follow-up. The first follow-up was considered early respondent because only one company responded at that point, thus making another categorization negligible for statistical

analysis purposes. Late respondents are those that responded to the second follow-up—responses by mail, over the web site, fax and electronic mail. Electronic mail and fax responses have been grouped together with mail due to their low number.

Table 3-5

Nonresponse Bias Analysis, by Revenue, Job Number and Industry. Statistic and Significance

Descriptor	Group of Analysis	Statistic	P-value
Revenue	Population / Respondents	Chi-Square	> .25
Job number	Population / Respondents	Chi-Square	> .25
Industry	Population / Respondents	Chi-Square	> .25
Revenue	Respondents / Nonrespondents	Wald	.212
Job number	Respondents / Nonrespondents	Wald	.630
Industry	Respondents / Nonrespondents	Wald	.203
Revenue	Early respondents / Late respondents	Wald	.976
Job number	Early respondents / Late respondents	Wald	.482
Industry	Early respondents / Late respondents	Wald	.064
Revenue	Mail, e-mail, fax / Web-based respondents	Wald	.751
Job number	Mail, e-mail, fax / Web-based respondents	Wald	.816
Industry	Mail, e-mail, fax / Web-based respondents	Wald	.474

The described groups of analysis were used following the approach followed by many researchers in different studies, including among others Brennan and Hoek (1992), Cohen and Machlin (1998), and more specifically Miller and Smith (1983, pp. 47-48).

In the analysis between the population and the respondents groups (see Table 3-5), the null hypothesis was that the distributions of companies in the population and among the respondents were the same. The alternative hypothesis was that those

distributions were not the same. For the remaining groups of analysis—e.g., a) respondents / nonrespondents, b) early respondents / late respondents, and c) mail, e-mail or fax / web-based respondents—the null hypotheses for all three cases were that all the coefficients of the variables included did not have an effect on the dependent variable being either one in each group of analysis (respondents / nonrespondents, early respondents / late respondents, mail, e-mail or fax / web-based respondents) because those coefficients were equal to zero. The alternative hypotheses were in all three cases that they did have an effect on the dependent variable taking either value.

With a significance level set at $P = .05$ we can see from Table 3-5 that the separate analyses do not show statistically significant differences between the groups. Accordingly, it was concluded that: a) the 100 companies and those that responded have the same distribution when analyzed by revenue, job number, and industry categorization; b) that the companies that responded and those that did not respond were not affected by their revenue or job number or by the type of industry; c) that revenue, job number or industry type did not affect participants being early or late respondents; and, d) that the means of response were not affected by their revenue, job number and industry type. In consequence, it was concluded that there is no association between respondents and revenue, job number and industry categorization, and that these latter did not influence respondents and nonrespondents or them being early or late respondents, or them participate by mail, e-mail and fax or over the world wide web. That is to say, revenue, job number and industry did not influence the number of companies that responded, or the pace, or the ways they used to respond.

Therefore, based on the analyses for revenue, job number and industry category, it can be inferred that the 40 respondent companies are sufficiently like the population of 100 companies included in this study to generalize that the reported organizational factors that favor or impede the adoption and implementation of innovative HRD practices of the 40 companies do not differ from those that would have been reported had all 100 companies responded.

Data Analysis

Data collected through the instrument was compiled and analyzed using different statistical analysis methods. Descriptive and correlational statistics, along with ANOVA analysis and the use of logistic and multiple regression analysis were used throughout the research as indicated below.

For research question 1, "What are the innovative HRD practices found in the literature?" descriptive analysis were performed, mainly through the use of frequency distribution.

For research question 2, "What are the innovative HRD practices adopted and implemented by companies in Minnesota?" descriptive statistics were used. Those included frequency distributions. With data collected through the instrument, an inventory was created of the adopted and implemented IHRDP in the *Star Tribune 100* Minnesota companies.

For research question 3, "How do the innovative HRD practices implemented in those companies compare to those found in the literature?" descriptive analysis too were used, mainly frequency distributions.

For research questions 4, "How do managerial demographic characteristics relate to the adoption and implementation of innovative HRD practices in those companies?", 5 "What are the job function characteristics that may enable the adoption and implementation of the innovative HRD practices in those companies?", and 6 "How do business innovation unit characteristics relate to the adoption and implementation of innovative HRD practices in those organizations?" descriptive and correlational analyses were used. They included frequency distribution, crosstabulation and ANOVA.

For research question 7 "What are the organizational characteristics that enable the adoption and implementation of innovative HRD practices in those organizations?" descriptive and correlational analyses were performed. They included frequency distribution, descriptive statistics, ANOVA and linear regression analysis. For the linear regression model, Tang's (1999) nine factors' original items are primarily used. Three models are used in the regression analysis: one, with the IOI factors only; two, the IOI factors and the managers' demographic information; and, three, IOI factors and the company's revenue.

Research Limitations

The first limitation comes from the theoretical perspectives of analyzing innovation in the context of large companies. As indicated above, size has been correlated with the adoption of innovation (Slappendel, 1996). Studying the adoption and implementation of innovative human resource practices within these companies will certainly be different if a study were to include companies of other sizes. Therefore, a bias may exist in studying these companies that most surely will adopt some sort of innovation. However, caution should be exerted with this consideration, since the

relationship between size and innovation is not conclusive and has not yet been proved with regards to the types of practices studied in this research. Therefore, future research should include companies from different sizes, since the results can provide a framework to replicate this study in other companies, settings and states.

Second, this study is based in self-reported data. In that sense, the respondents may not have an accurate perception about the innovation being innovative, about the time frame in which was implemented or about other factors determining its adoption and implementation.

Third, even though a definition of HRD was provided to each participant, some of the practices reported may be considered as a Human Resource *Management* practice. Since there is still an ongoing debate between these two disciplines with regards to their own competency areas, caution is needed, and future research should address this issue as well.

Fourth, since the instrument was sent to the heads of the human resource function in each organization, and although it was specifically indicated in the questionnaire in the form of a question no conclusive information can be obtained as to where the adoption of the IHRDP took place. Further studies could address this issue by limiting the response to a clearly defined unit or boundaries.

Fifth, the study focused on the innovative HRD practices adopted and implemented. However, this research does not allow for the analysis of the impact of such practices—such an impact is drawn on theoretical basis. Future research should therefore include a follow-up of the practices being implemented in the same organizations, as well as elaborating ways of measuring the impact of those practices.

Finally, the instrument used includes a defined set of organizational characteristics, and it maybe argued that an expanded set of characteristics is needed. However, such an enterprise is potentially impossible. The current set provides a good set of indicators that help understand the process of adoption and innovation of IHRDPs.

Summary

This is a relationship study aimed at studying the adoption and implementation of innovative HRD practices in Minnesota op 100 companies, as identified by the Star Tribune (2003).

For that purpose, an instrument was sent to respondents in those companies—the heads of the human resource function in those organizations. It consisted of two sets of different questions. The first one was the *Inventory of Organizational Innovativeness* created by Tang (1999) and based on his *Integrative Model of Innovation in Organizations* (Tang, 1998). This instrument contained the core questions for this study. Additionally, a second set of questions was included—practices and internal moderators questions to allow for further analysis. Both sets of questions were preceded by a definition of innovation, HRD, and organization or unit, and followed by an inventory of practices obtained from the literature.

The instrument was sent to the 100 companies, and a response rate of 40% was attained. In order to analyze if response bias existed, several statistical methods were used to clarify if this group represented the entire population of 100 companies. Results from those tests were indicative that the 40 respondent companies indeed represented the 100 companies to which the questionnaire was mailed, and thus the results from this study could be generalized to the 100 companies.

CHAPTER 4

RESULTS

This chapter presents the results of the analyses performed with the data collected from the respondent companies, as well as the literature review. The results and findings are reported in direct connection to the seven specific research questions.

Data Treatment

Before conducting the analyses for this research and following Tang's (1999) procedure, seven reverse items of the *Inventory of Organizational Innovativeness* (IOI) were adjusted. Also, since individual items were categorized in factors in the original study (Tang, 1999), data from the 40 respondents in this study were grouped into the same factors. Therefore, analyses were conducted using those factors rather than responses to individual items.

Demographic Information and Descriptive Data

In addition to Tang's (1999) IOI, data collection in this study included internal moderators information, and additional profiling information about their companies (see Table 4-1). Demographic data for all respondents revealed that the majority of participants were women. Of the respondents, 27 were females (67.5%) and 13 males (32.5%). Participants age groups indicated they were mostly people age 35 and over, with the biggest proportion of respondents belonging to the age group of 51 to 60 years old (30%). The vast majority of them have complete college as their highest education attainment level, and only 5% of them reported to have incomplete college.

Table 4-1

Demographic and Descriptive Data

		N	%
Gender	Male	13	32.5
	Female	27	67.5
Age	25-30	3	7.5
	31-35	0	0.0
	36-40	7	17.5
	41-45	6	15.0
	46-50	11	27.5
	51-60	12	30.0
	61 or older	1	2.5
Educational Level	Incomplete college	2	5.0
	Complete college	25	62.5
	Master's degree	10	25.0
	Doctoral degree	3	7.5
Years of Service in this Organization	Less than 1 year	3	7.5
	1 to 2 years	7	17.5
	3 to 5 years	8	20.0
	6 to 10 years	4	10.0
	More than 10 years	18	45.0
HR Group Size	1-10	19	47.5
	11-20	7	17.5
	21-30	6	15.0
	31-50	2	5.0
	51-100	2	5.0
	101 and over	4	10.0
Business Location	Saint Paul	4	10.0
	Minneapolis	9	22.5
	Other Twin Cities area*	18	45.0
	Greater Minnesota	9	22.5

* 7-County Metropolitan Area

Additional company profiling data related to each of the participants revealed that about half (45%) of them indicated they have been with the company for more than 10 years, and only 7.5% of the respondents indicated they had been less than one year with the organization. In terms of their company's Human Resources group, about half of the respondents belonged to rather small groups—between one and 10 members. On the other hand, 10% of them were members of a team with more than 100 members. The overall Human Resource group size mean was 37 members (SD=74.56). Participant companies had an average reported revenue of US$ 3,793.74 million (SD=8,371.19), with a wide range between US$ 41.50 million to 43,917.00 million. The range in number of company-wide employees was 55 to 306,000, with a mean of 17,684 (SD=50,315). About one third of the participating companies were headquartered in Saint Paul and Minneapolis, and 45% were headquartered in one of the cities of the 7-county Metropolitan Area, which includes suburban areas of Saint Paul and Minneapolis. Twenty two percent of the participating companies were headquartered in greater Minnesota.

Innovative Human Resource Development Practices: State of the Literature and State of the Practice

The following presentation of results focuses on innovative HRD practices as reported in the literature and in practice. The results for this and the following sections are organized in response to the specific research questions.

The Innovative Human Resource Development Practices as Reported in the Literature

Research question 1 asked: *What are the innovative HRD practices found in the literature?* By stating this question, the intent was twofold—to build an inventory that

could be used in the data collection process, by including it in the instrument, and to make a comparison with those practices as implemented by the Minnesota top 100 companies.

With regards to the IHRDP reported in the literature, 66 were identified for the purpose of this study. As in the case of those IHRDP reported by the companies included in this research, those practices were classified following McLagan's (1989) *Human Resource Wheel* (see Table 4-2).

The vast majority of the innovative HRD practices found in the literature can be categorized within the Organization Development component of HRD. In contrast, 18% were found to be Training and Development innovative practices, and 6.1% were classified as Career Development innovative practices.

Of those categorized as Organization Development innovative practices, the largest percentage (16.7%) were in the Process Improvement area, followed by 10.6% of those practices that were adopted and implemented in the Executive/Leadership Development area. A single third group was identified as those in the Knowledge Management area with only 7.6% of all the IHRDP found in the literature review for this research. Most reported practices in the Training and Development area were scattered in different categories. All these practices are reported in Appendix V.

It is important to point out to the prevalence of IHRDP in the OD component of HRD. In particular because the literature reviewed covers over 10 years of research, a period of time where it could be assumed Training and Development had a more widespread recognition.

Table 4-2

Innovative Human Resource Development Practices as Reported in the Literature, by Area. Percentages

Area	%
Training and Development	18.2
General	3.0
Cross-Functional	1.5
Evaluation	1.5
Methods	3.0
Needs Analysis	1.5
Strategy	3.0
Technology	1.5
Topic Specific	3.0
Organization Development	75.8
Coaching	1.5
Culture Transformation	3.0
Executive/Leadership Development	10.6
Job Description	1.5
Job Enrichment	3.0
Knowledge Management	7.6
Learning	3.0
Life and Career Planning	4.5
Mentoring	1.5
Methods	3.0
Organizational Climate	1.5
People-Policy	1.5
Process Improvement	16.7
Quality and Productivity System	4.5
Quality Circles	1.5
Quality of Work Life	1.5
Reengineering	3.0
Statistical Process Control	1.5
Strategic Planning	3.0
Structural Change	1.5
Team Building	3.0
Career Development	6.1
Total	100.0
N	66

Innovative Human Resource Development Practices Adopted and Implemented by Minnesota Top 100 Companies

For research question 2, *What are the innovative HRD practices adopted and implemented by companies in Minnesota*? a list was built with the participants' responses. Specifically, data came from the information on the HRD practice those respondents identified as being innovative (statement at the beginning of Section I), and from those they have adopted and implemented in their organizations (see question 3 in Section II). Those innovative HRD practices were examined and identified in HRD categories according to the McLagan's (1989) *Human Resource Wheel*.

There were 71 innovative HRD practices reported by companies—an average of 1.78 per company. Table 4-3 describes the HRD areas where those innovative practices were adopted and implemented. The vast majority of the practices reported by the respondents were categorized as Organization Development innovative practices. Innovative practices in both Training and Development and Career Development made up only 14.1% of the total.

Of the reported innovative practices in Organization Development, about one quarter of the total practices were in the area of Executive or Leadership Development, followed by Team Building. The IHRDPs in the Training and Development area were mostly focused on general aspects and compliance. A detailed inventory of the innovative HRD practices as described by respondents in this study is reported in Appendix VI.

Table 4-3

Innovative Human Resource Development Practice as Reported by Minnesota Companies, by Area. Percentages

Area	%
Training and Development	8.5
General	2.8
Compliance	2.8
Topic-Specific	1.4
Other Development	1.4
Organization Development	85.9
Coaching	2.8
Customer Satisfaction	1.4
Executive/Leadership Development	25.4
Knowledge Management	2.8
Learning	5.6
Mentoring	1.4
Process Improvement	4.2
Quality Circles	1.4
Quality and Productivity Systems	2.8
Quality of Work Life	7.0
Structural Change	2.8
Survey Feedback	9.9
Team Building	11.3
Values Clarification	4.2
Work Redesign	2.8
Career Development	5.6
Total	100.0
N	71

Again, it is interesting to see that most of the IHDP adopted fell into the OD component, although in this particular case it could be assumed OD as a whole had at this piont received more attention from organizations and HRD professionals than the traditional Training and Development. The other interesting point is that one quarter of

those practices was in the area of Executive/Leadership Development. Both the emphasis on OD and Executive/Leadership Development maybe indicative of the stress put beyond training and development for the development of organizations at the beginning of the new century.

In addition, participant organizations also reported Human Resource Development-*related* innovative practices. The importance of these practices resides in the fact that they are closely related to HRD, as proposed by McLagan (1989) and hence their inclusion in this research. HRD-related innovative practices as reported aligned in three of the four of McLagan's (1989) Human Resource wheel areas (see Table 4-4).

Table 4-4

Human Resource Development-Related Innovative Practices Reported in this Study, by Area

Area	%
HR Planning	49.0
Performance Management	22.4
Selection and Staffing	28.6
Total	100.0
N	49

About half of those HRD-related innovative practices fell on the area of Human Resource Planning, again an indicator of the role strategic, plan management style in place in those organizations. Although smaller in number, Performance is another good

indicator of new strategies adopted in those organizations. An inventory with the detail of those practices as indicated by participants in this study is reported in Appendix VII.

Comparison between the Innovative Human Resource Development Practices in the Literature and those Found in this Research

This section addresses research question 3: *How do the innovative Human Resource Development practices implemented in Minnesota companies compare to those found in the literature?* Literature research on innovative Human Resource Development practices— covering a period of over 10 years—found 66 discrete practices, whereas in the current study respondents reported 71 IHRDPs—in addition, 49 other innovative practices reported by participating companies in this study were HRD-related.

Although those numbers *per se* do not provide basis for an in-depth analysis—e.g., innovativeness based on the number of practices adopted, trends, type of practices, industry, etc.—they however provide grounds for analyses based on the areas in which they were applied. In both cases—the current study and the practices found in the literature—the innovative HRD practices have been categorized according to McLagan's (1989) taxonomy for the human resource discipline.

The most important finding is the distribution of IHRDP across the HRD components. In both cases most of the IHRDP were applied in Organization Development—85.9% in this study's survey of IHRDP and 75.8% in the literature (see Table 4-5). On the other hand, innovative HRD practices in the area of Training and Development were notably less. Of those practices reported in this study 8.5% were in the Training area, compared to 18.2% of those found in the literature.

Table 4-5

Innovative Human Resource Development Practices. Comparison between Current Study's Survey and Literature

	Current Study's Survey	Literature
Training and Development	8.5%	18.2%
No. of Categories	4	8
Emphasis	• General • Compliance	• General • Methods • Strategy • Topic Specific
Organization Development	85.9%	75.8%
No. of Categories	15	21
Emphasis	• Executive/Leadership development • Team Building • Survey Feedback • Quality of Work Life • Learning	• Process Improvement • Executive/Leadership development • Knowledge management
Career Development	5.6%	6.1%

This reveals a very important issue, although but no means conclusive—the apparent increasing importance of Organization Development and the need to be innovative in Organization Development practices. Given the economic context of the literature covered and of this study—a sustained and competitive economy, in addition to an ever changing technology—it is not surprising that innovative practices were largely concentrated in Organization Development in both the literature but more so in the survey. Another explanation relate to more availability of such practices in the OD area.

That in turn points out to the most significant difference between the findings from the literature and the findings from the survey: they greatly differed on their main focus within Organization Development. Whereas the single area with the largest number of practices found in the literature was Process Improvement, the area with the largest number of IHRDPs reported in this study's survey was Executive/Leadership Development. It is not only that there is a difference in terms of the focus between these two sources—it is also the dimensions of the changes, with Executive/Leadership Development taking more than one quarter of the total IHRDPs reported in this research survey.

Data on practices reported in the survey for this study also reveal that the sub-areas or categories within Organization Development with larger number of practices were more spread as opposed to those found in the literature were larger number of practices were more concentrated in a few categories—team building, survey feedback, quality of work life and learning in the case of the survey, and executive/leadership development and knowledge management in the case of the practices found in the literature.

The summary reported in Table 4-5 also provides additional interesting information. Innovative practices in Training and Development in both the literature and the survey stress the importance of general training. In the survey the second largest group of practices is related to compliance issues, whereas the emphasis among the practices found in the literature was on methods, strategic issues or specific topics.

When the IHRDPs from both the survey and the literature are examined individually, only a few of them are common to both sources—for purposes of this

comparison variations in the practices have been already taken into account. They include coaching, e-learning (on-line instruction), job rotation, knowledge sharing, leadership development program, mentoring program (systems), orientation for new employees, quality of work life, and supervisory training.

Organizational Innovativeness and Innovative HRD Practices in Minnesota Top 100 Companies

In order to explore research questions 4 through 6, an overall analysis of the data reported by participants was performed. Data for the nine factors of the core IOI instrument were first examined for normal distribution. Normal quantile plots for each factor revealed normal distributions. Similarly, normal distributions were found for the innovation effectiveness (question No. 45 in section 1) and overall organization effectiveness (question No. 46 in section 1) individual items.

After confirming normal distributions, descriptive statistics were examined for the nine factors of the Inventory of Organizational Innovativeness (IOI), as well as the two general assessment items contained in questions 45 and 46 of Section 1 in the core questionnaire. Table 4-6 shows that the mean for all factors and the two items were by far above the mid-point on the scale of 1 to 5, and are by far above the standard deviations. The differences between those means are in general small (0.81 between the highest and the lowest). Respondents on average agreed more with Leadership and Individual Behavior, and disagreed with Information and Communication as the decisive factors in the process of adopting and implementing innovative Human Resource Development practices in the Minnesota Top 100 companies. Standard deviations for all nine factors are below the unit value. On the other hand, agreed highly with their

organizations' overall Organization Effectiveness, a mean even higher than Leadership and Individual Behavior. But at the same time, overall they agreed less about the importance of the organization Innovation Effectiveness, topping only Information and Communication. In these two overall assessment items, the standard deviations for each item reveal more variability in the responses than in the case of the nine factors.

Table 4-6

Innovative HRD Practices. Descriptive Statistics for the Inventory of Organizational Innovativeness Factors and Overall Assessment Items (N=40)

	Minimum	Maximum	Mean	SD
Leadership	1.75	5.00	4.31	0.78
Support	2.57	5.00	3.90	0.71
Job Empowerment	2.20	4.60	3.94	0.45
Individual Behavior	2.00	5.00	4.31	0.70
Work Integration	1.75	5.00	4.11	0.85
Project Initiation	2.67	4.83	4.00	0.61
Project Implementation	2.20	5.00	3.90	0.76
Knowledge and Skills	2.00	5.00	4.29	0.71
Information and Communication	1.75	5.00	3.54	0.83
Innovation Effectiveness	1.00	5.00	3.90	1.17
Organization Effectiveness	1.00	5.00	4.35	1.08

Furthermore, following Tang's (1999) method the IOI factors were contrasted against the overall assessment items—Innovation Effectiveness (IE) and Organizational Effectiveness (OE) to add another layer of examination of the respondents' perceptions. For this purpose, organizations were organized in three groups—those that rated IE equal to OE (IE=OE), i.e. those working environments that are as conducive to innovation as

their organizations are effective overall (a condition proper of "ambidextrous" organizations); those that rated OE higher than IE (OE>IE), i.e. their organizations are weaker in innovation ("mechanistic" organizations); and those that rated IE higher than OE (IE>OE). Table 4-7 reports results for these analyses. First of all, only a small fraction indicated their organizations innovation effectiveness was higher than the overall organizational effectiveness. On the other hand, those that ranked their companies innovation effectiveness equal to their organizational effectiveness indicator (IE=OE), and those that ranked their organizational effectiveness higher than their innovation effectiveness (OE>IE) split almost equally among the remaining participants (45% and 42.5%, respectively).

Using ANOVA, the mean scores for the three groups and the differences between them were also examined. There was a statistically significant difference only in the Support factor between the IE=OE and the OE>IE group, with a significantly higher mean in the IE=OE group. This indicates Support for adopting IHRDP is perceived differently among companies considered to be equally effective in the functioning of the organization as a whole and in terms of innovation. With regards to the third category— IE ranked higher than OE— organizations are perceived as being more effective in innovation than in overall effectiveness (that is, not effective in other organizational processes) which may be unreasonable since for innovation to happen the organization must be effective in other processes as well (Tang, 1999).

Table 4-7

Innovative HRD Practices. Factor Means by Three Overall Assessment Groups

	Mean		
	IE = OE (N=18)	OE > IE (N=17)	IE > OE (N=5)
Leadership	4.31	4.25	4.55
Support	4.17 *	3.64 *	3.83
Job Empowerment	3.91	3.92	4.08
Individual Behavior	4.51	4.12	4.25
Work Integration	4.24	4.13	3.60
Project Initiation	4.16	3.84	4.00
Project Implementation	4.04	3.81	3.68
Knowledge and Skills	4.41	4.18	4.20
Information and Communication	3.68	3.43	3.40

* Statistically significant at $p<.05$

Internal Moderators, and the Adoption of Innovative Human Resource Development Practices in Minnesota Top 100 Companies

In this section I provide analyses about the organizational characteristics used by the core IOI instrument and how they relate to the internal moderators—those elements in the organization directly related to the adoption and implementation of the innovative Human Resource Development practices. For that purpose, I analyzed three sets of indicators—Managerial Demographic, Job Function, and Business Innovation Unit characteristics.

Managerial Demographic Characteristics and the Adoption of IHRDP

In research question 4 it was asked, *How do managerial demographic characteristics relate to the adoption and implementation of innovative HRD practices in*

those companies? Some of the managers' demographics have been reported already in Table 4-1. In addition, Table 4-8 reports two other types of data on managers' demographics. Those data were included to explore the impact of prior experience and gained knowledge in the process of adopting and implementing IHRDP.

Table 4-8

Additional Frequency Data for Managers' Demographics

		N	%
Prior Work Experience	Private organizations only, different than current	19	47.5
	Both private and public organizations	14	35.0
	Have worked for this organization only	7	17.5
Prior Experience with an Organization of Similar Size	Yes	18	45.0
	No	21	52.5

About two thirds of those respondents came from prior experience in the same or similar type of setting—private organizations, and only 17.5% indicated they had worked for the same organization. Respondents were almost evenly divided with regards to whether they had prior work experience with an organization the same size as the current one. The vast majority had completed a college degree or had a higher educational level, and 92.5% of them indicated they have had more than one year of service in the current organization (see Table 4-1).

The IOI nine factors and the two overall assessment items where analyzed against the managerial demographic data obtained in the questionnaire. Using analysis of variance (ANOVA), tests show statistically significant differences for gender in the Individual Behavior and Work Integration factors only (see Table 4-9). Age appears to have no statistically significant effect in any of the nine factors and the two individual assessment items. On the other hand, educational level is statistically significant in six of the 9 factors and in one of the individual items. Data showed respondents with Master's degree having a statistically significant different perception on Support, Job Empowerment, Work Integration, Project Initiation, Project Implementation, and Innovation Effectiveness, indicating they are more conducive to innovation. Those differences are found with participants having a complete college degree, with the exception of Work Integration and Project Implementation in which case the differences are in relationship with those with a doctorate degree. Those with incomplete college agreed on perceiving Information and Communication as more conducive to innovation than those with complete college.

Years of service in the organization—along with educational level—appears to be the managers' characteristic that shows most of the statistically significant relationships with the factors related to the adoption and implementation of innovative Human Resource Development practices. In fact, seven out of the nine factors and one of the two effectiveness assessment items involve significant relationships between the different groups. The group that indicated having been in the job between one to two years involves all of the statistically significant relationships found. In all those factors,

Table 4-9

ANOVA Test on IOI Factors and Managerial Demographic Characteristics

	Leadership	Support	Job Empower	Individ Behav	Work Integrat
Gender					
Male	4.17	3.70	3.75	3.88 *	3.71 *
Female	4.38	3.99	4.02	4.52 *	4.31 *
Age					
25-30	4.83	3.71	3.93	4.75	4.50
31-35	----	----	----	----	----
36-40	4.04	3.86	3.86	4.32	4.18
41-45	4.88	4.10	4.00	4.33	4.29
46-50	4.25	3.87	4.05	4.39	4.07
51-60	4.06	3.83	3.82	4.08	3.85
61 or older	5.00	4.71	4.20	4.75	5.00
Educational Level					
Incomplete college	4.63	4.07	4.00	4.25	4.25
Complete college	4.22	3.70 *	3.85 *	4.28	4.02
Master's degree	4.60	4.41 *	4.22 *	4.58	4.53 *
Doctoral degree	3.92	3.71	3.67	3.75	3.42 *
Years of Service					
Less than 1 year	4.42	3.57	4.00	4.25	4.08
1 to 2 years	3.64 *	3.22[a b c]	3.54 [a b]	4.04	3.54 *
3 to 5 years	4.41	4.09 [a]	4.03 [a]	4.28	4.03
6 to 10 years	4.31	4.36 [b]	4.05	4.63	4.63 *
More than 10 years	4.51 *	4.03 [c]	4.01 [b]	4.38	4.26
Prior Work Experience					
Private organizations, different than current	4.46	3.86	3.91	4.26	4.12
Both private and public organizations	4.00	3.95	3.99	4.38	3.96
Have worked for this organization only	4.54	3.90	3.91	4.32	4.39
Prior Experience with an Organization of Similar Size					
Yes	4.24	3.96	3.91	4.33	4.14
No	4.39	3.88	3.94	4.29	4.14

(Continued on next page)

Table 4.9 (continued)

ANOVA Test on IOI Factors and Managerial Demographic Characteristics

	Project Initiat	Project Implem	Knowl & Skills	Info & Comm	Innovation Effective	Organizat Effective
Gender						
Male	3.85	3.88	4.12	3.23	3.46	3.92
Female	4.08	3.91	4.36	3.69	4.11	4.56
Age						
25-30	3.50	3.27	4.40	3.42	4.33	4.67
31-35	----	----	----	----	----	----
36-40	3.98	3.86	4.20	3.71	4.14	4.43
41-45	4.39	3.90	3.83	3.67	4.17	4.33
46-50	3.97	3.78	4.55	3.27	3.82	4.55
51-60	3.96	4.13	4.27	3.52	3.50	4.00
61 or older	4.33	4.60	4.60	5.00	5.00	5.00
Educational Level						
Incomplete college	4.17	4.40	4.20	4.63 *	4.50	5.00
Complete college	3.82 *	3.75 [a]	4.18	3.35 *	3.60 *	4.16
Master's degree	4.40 *	4.34 [a b]	4.62	3.80	4.70 *	4.70
Doctoral degree	4.11	3.33 [b]	4.13	3.50	3.33	4.33
Years of Service						
Less than 1 year	4.06	3.07 [a b c]	3.60	3.00	4.00	4.00
1 to 2 years	3.45 [a b c]	3.37 [d]	3.94	2.86 [a b]	3.00 *	3.86
3 to 5 years	4.08 [a]	4.05 [a]	4.38	3.59	4.13	4.13
6 to 10 years	4.29 [b]	4.25 [b]	4.65	3.88 [a]	5.00 *	4.75
More than 10 years	4.11 [c]	4.10 [c d]	4.41	3.79 [b]	3.89	4.61
Prior Work Experience						
Private organizations, different than current	4.04	3.82	4.19	3.57	3.79	4.42
Both private and public organizations	4.02	3.96	4.37	3.45	4.00	4.07
Have worked for this organization only	3.88	4.00	4.37	3.64	4.00	4.71
Prior Experience with an Organization of Similar Size						
Yes	4.12	4.06	4.44	3.44	4.00	4.33
No	3.94	3.80	4.14	3.63	3.81	4.43

Asterisk and letters in superscript denote statistically significance at $p<.05$ (asterisks, between two groups; letters, between more than two groups).

respondents with one to two years of service disagreed with people with longer tenure about the importance of the following factors for the innovation process: Leadership, Support, Job Empowerment, Work Integration, Project Initiation, Project Implementation, Information and Communication, and Innovation Effectiveness.

Prior experience in same type or similar organizations, and prior experience in organizations of similar size do not have a statistically significant effect in regards to the factors and items related to the adoption and implementation of IHRDP.

Job Function Characteristics and the Adoption of IHRDP

Research question 5 asked: *What are the job function characteristics that may enable the adoption and implementation of the innovative human resource development practices in those companies?*

To analyze these relationships, three dimensions were explored that may relate to the adoption and implementation of IHRDP. The first was the issue of whether the adoption and implementation was original, which is an issue that has been widely discussed in the literature, and contrasted it to the issue of the innovation being adopted by the unit —thus, not being socially original. Since from the outset this latter approach was chosen and included in the definition of innovation—an innovation is such as long as it is new for the adopting unit— the topic was explored with respondents.

The second dimension explored was who the beneficiaries of the innovation were—where the adopted and implemented IHRDP took place. The discussion of this topic seemed interesting particularly vis-à-vis the need to understand the role of the HRD profession in supporting the business strategy. In the questionnaire four basic scenarios were identified for this function to happen—the unit, another unit inside the state of

Minnesota, a unit outside the state of MN but in the United States, and outside the United States. No respondent explicitly chose this latter. However, some generally included responses about applying the IHRDP "company-wide" or locally and internationally, but since the question restricted the choice to the geographically closest to respondent, and if the answer so indicated, the final response was restricted to the closest one.

The third and final dimension analyzed is the role the manager/supervisor/respondent had in the adoption and implementation of IHRDP. In this case, respondents were provided with three options to choose from—if they participated in identifying the IHRDP, if they participated in the development of the IHRDP, if they participated in the implementation of the practice, in addition to any combination of roles, or any other type of participation. Answers from respondents included a combination of the options given and are displayed in Table 4-10 along with the other dimensions.

Origin of the IHRDP. Questions that relate to the origin of the IHRDP were intended to explore with only a descriptive intent and thus on a very limited basis, the relationship between innovation as result of a creative process or as a result of an absorptive capacity process (Cohen & Levinthal, 1990), an issue that served as the basis for the distinction of innovation as original creation or adoption (Rogers,1995; Zaltman et al., 1973).

When first examined, it is revealing that 70% of the participants indicated the IHRDP was an idea that originated in their unit. To some extent this could be related to the type of practices found in this research and those found in the literature. As described in Table 4-5, coincidences between the two lists are rather small, and respondents might

have had a different conception of the practice or practices they adopted when confronted with the list provided in the survey. In any event, this also indicates the units in which respondents participated are highly stressing a creative process not explored in the current research as a separate, discrete topic.

Table 4-10

Frequency Data for Job Function Characteristics

		N	%
Origin	IHRDP originated in my unit	28	70.0
	IHRDP was suggested in my unit	5	12.5
	IHRDP idea came from outside my unit	2	5.0
	IHRDP idea came from outside organization	3	7.5
	Do not know	2	5.0
Application	IHRDP was applied in own unit	17	44.7
	Applied in a unit in MN, other than own	14	36.8
	Applied in unit outside MN, in the US	7	18.4
	Applied outside the US	---	---
Role	Participated in identifying IHRDP	6	15.0
	Participated in the development of IHRDP	10	25.0
	Participated in the implementation of IHRDP	3	7.5
	All of the above	13	32.5
	Participated in identification & development	3	7.5
	Participated in development & implementation	2	5.0
	Other	3	7.5

The analysis of the IOI nine factors and the two assessment items using ANOVA tests shows no statistically significant differences when it comes to where the IHRDP and its process of adoption was initiated (see Table 4-11), which indicates that whether the IHRDP was originated inside the unit or taken from outside it does not have any impact

on the perception about the nine factors and two items that relate to the adoption of those practices.

Application of the IHRDP. Similar analyses were performed with regards to the unit where the application of the IHRDP took place. In this case, over 81% of participants indicated they adopted the innovative Human Resource Development practice for their own unit or for a unit inside the state of Minnesota, whereas 18.4% of participant noted they adopted them for units outside the state of Minnesota where all these companies were headquartered (see Table 4-10).

Analysis of the IOI nine factors and the two overall assessment items indicates that in regards to the places were the adopted and implemented IHRDP were applied there are statistically differences in three of the nine factors (see Table 4-11). If the place in which the IHRDP was applied was in Minnesota but in a unit different than the respondent's, respondents did not agree on the factors Leadership, Project Implementation, Knowledge and Skills as being contributing to innovation. Those differences were with the application of the innovative practices in own unit—Leadership and Project Implementation—or with a unit outside MN but inside the US—Project Implementation and Knowledge and Skills. None of the remaining factors and the two overall assessment items were significant.

Participant's role in the process of adoption and implementation of the IHRDP. Following the different innovation process stages described in the literature (see Table 2-4), participants were also asked about their role in the process of adopting and implementing IHRDP, for which case three distinctive stages were distinguished—identification, development, and implementation, an any combination of them.

Table 4-11

ANOVA Test on IOI Factors and Job Function Characteristics

	Leadership	Support	Job Empower	Individ Behav	Work Integrat
Origin					
IHRDP originated in my unit	4.29	3.91	3.86	4.25	4.13
Was suggested in my unit	4.20	3.94	4.12	4.50	3.90
Idea came from outside my unit	4.13	3.50	4.20	4.25	4.00
It came from outside organization	4.75	3.95	3.93	4.42	4.50
Do not know	4.50	4.00	4.20	4.63	4.00
Application					
IHRDP was applied in own unit	4.62 *	3.97	3.98	4.46	4.32
Applied in MN unit, other than own	3.91 *	3.66	3.87	4.00	3.88
In unit outside MN, in the US	4.21	3.96	3.89	4.43	3.93
Applied outside the US					
Role					
Participated in identifying IHRDP	4.63	4.02	4.17	4.17	4.42 [a]
Participated in the development	4.00	3.61	4.04	4.23	3.75
Participated in the implementation	3.75	3.14 *	3.73	3.92	3.17 [a b c]
All of the above	4.25	4.20 *	3.83	4.48	4.33 [b]
Participated in identification & development	4.67	3.90	3.80	4.33	4.67 [c]
Participated in development & implementation	4.88	4.36	4.00	4.88	4.50
Other	4.83	3.76	3.87	4.17	3.92

(Continued on next page)

Table 4-11 (continued)

ANOVA Test on IOI Factors and Job Function Characteristics

	Project Initiat	Project Implem	Knowl & Skills	Info & Comm	Innovation Effective	Organizat Effective
Origin						
IHRDP originated in my unit	4.01	3.84	4.24	3.36	3.79	4.43
Was suggested in my unit	4.43	4.28	4.60	4.05	4.40	4.00
Idea came from outside my unit	3.67	3.60	4.10	3.88	3.00	3.50
It came from outside organization	3.61	4.00	4.20	3.75	4.33	5.00
Do not know	3.83	3.90	4.50	4.13	4.50	4.00
Application						
IHRDP was applied in own unit	4.01	4.02 [a]	4.36	3.63	4.06	4.71
Applied in MN unit, other than own	3.81	3.49 [a b]	3.90 *	3.38	3.50	4.00
In unit outside MN, in the US	4.33	4.23 [b]	4.71 *	3.43	4.00	4.14
Applied outside the US						
Role						
Participated in identifying IHRDP	4.14 [a]	4.27 [a]	4.07	4.21 *	4.00	4.83
Participated in the development	3.82	3.84	4.44	3.45	3.40	4.00
Participated in the implementation	3.28 [a b c]	3.00 [a b]	3.80	3.25	3.00	3.33
All of the above	4.26 [b]	4.09 [b]	4.37	3.54	4.23	4.62
Participated in identification & development	4.33 [c]	3.87	4.60	3.00 *	4.33	5.00
Participated in development & implementation	3.75	4.10	4.50	3.75	4.50	4.50
Other	3.83	3.33	3.87	3.17	4.00	3.67

Asterisk and letters in superscript denote statistically significance at $p<.05$ (asterisks, between two groups; letters, between more than two groups).

About a third of respondents said they were involved in the three main roles during the process—identifying, developing, implementing (see Table 4-10). Fifteen percent participated only in identifying the IHRDP, while 25% participated in the development of those practices. A few participated in any of the two pair combinations of the process, which indicates people responding to the questionnaire were either

involved in the three roles during the process, or acted distinctively in one of them—only a few of them combined two roles.

An ANOVA of the nine factors and the two assessment items reveals statistically significant differences in five of the nine factors—no differences in the assessment items (see Table 4-11). In four of those factors, those participating only in the implementation stage of the innovative HRD practice appear to be a distinguishing group. Managers in those companies that participated only in the implementation indicated disagreement with the factors Support, Work Integration, Project Initiation, and Project Implementation as being conducive to innovation than those that participated in all three roles (Support, Work Integration, Project Initiation, and Project Implementation), that participated in the identification and development stages (Work Integration, Project Initiation), or that participated in the identification stage only (Work Integration, Project Initiation, Project Implementation). Those that participated in both the identification and development stages indicated their disagreement about Information and Communication being conducive to innovation than those that participated in the identification stage only.

Business Innovation Unit Characteristics and the Adoption of IHRDP

Research question 6 asked: *How do business innovation unit characteristics relate to the adoption and implementation of innovative HRD practices in those organizations?* The main purpose was to explore other information that related to the business unit in its process of adopting and implementing an IHRDP, in this case from the perspective of internal moderators. Specifically, that information referred first to the size of the Human Resource group or unit in which the participant was working. An attempt was made to

explore whether there would be any relationship between the HR group size and the nine factors and two assessment items. Data for HR group size are displayed in Table 4-1.

Table 4-12

Frequency Data for Business Innovation Unit Characteristics

		N	%
Adoption Timeframe	Within the last year	28	70.0
	1 to 2 years ago	6	15.0
	3 to 4 years ago	4	10.0
	More than 4 years ago	2	5.0
Most Compelling Reason To Adopt IHRDP	To adjust to business market trend	16	40.0
	To enhance team work	9	22.5
	Response to a restructuring need	1	2.5
	To comply with planned program	1	2.5
	Requested by senior management	1	2.5
	Requested by unit where applied	1	2.5
	Other	11	27.5

Second, the time frame when the IHRDP was adopted and implemented was explored. The idea behind collecting this information was twofold—to have a time frame reference, and to provide participants the opportunity to place the IHRDP in a specific context. More importantly, knowing more about the time when the IHRDP was adopted would give an indication, yet preliminary on whether the innovation process was sustained or recent. The third and last item was the reason that determined the adoption and implementation of the IHRDP. The question dealt with both external and internal drivers, and gave the opportunity to explore more about the innovation process conducive

to the adoption and implementation of IHRDP. Data for the time frame and the most compelling reason are displayed in Table 4-12.

Human Resource group size and IHRDP. With regards to the HR group size, I have indicated that the most prevalent size is the HR group with up to ten members (47.5%), and that companies with between 1 and 30 members were the majority among the respondents or 80.0%—that is, only 20% of the respondents indicated their HR group was bigger than 30 people (see Table 4-1).

The HR group size variable was statistically significant in six of the nine IOI factors and in both general assessment items when examined using ANOVA tests (see Table 4-13). In those factors with statistically significant difference, the HR group with 11 to 20 people had always a different perception than other groups about the role of the factors in the adoption of IHRDP—i.e., they expressed disagreement on those factors to be conducive to innovation than their HR groups counterparts.

Managers in the HR group size of 11-20 indicated Support, Individual Behavior, Project Initiation, and Innovation Effectiveness in their companies to be less conducive factors to innovation than those in the HR groups of size 51-100 (see Table 4-13). Similarly, they also disagree about Support, Information and Communication, Innovation Effectiveness, and Organizational Effectiveness as contributing to innovation than those in HR groups with more than 100 persons. They also regarded Job Empowerment, Information and Communication, and Innovation Effectiveness as less conducive than did those HR groups in the smaller category (1-10 persons). Finally, they had the same disagreement on Work Integration, and Organizational Effectiveness as being conducive to innovation than those in the immediately higher category of HR groups (21-30).

Table 4-13

ANOVA Test on IOI Factors and Business Innovation Unit Characteristics

	Leadership	Support	Job Empower	Individ Behav	Work Integrat
HR Group Size					
1-10	4.21	3.92	4.04 *	4.36	3.99
11-20	4.18	3.41 [a b]	3.60 *	3.75 *	3.64 *
21-30	4.54	3.81	3.93	4.38	4.58 *
31-50	4.25	3.93	4.10	4.50	4.25
51-100	4.38	4.86 [a]	4.20	5.00 *	4.88
101 or more	4.69	4.32 [b]	3.80	4.56	4.38
Adoption Time Frame					
Within the last year	4.22	3.86	3.92	4.31	4.09
1 to 2 years ago	4.63	4.07	3.83	4.33	4.29
3 to 4 years ago	4.25	3.71	4.05	4.31	3.88
More than 4 years ago	4.75	4.29	4.20	4.25	4.38
Most Compelling Reason To Adopt IHRDP					
To adjust to business market trend	4.17	3.85	3.76	4.13	3.83
To enhance team work	4.06	3.71	3.93	4.36	4.11
Response to a restructuring need	4.00	3.29	4.20	4.50	3.00
To comply with planned program	4.75	4.14	4.00	4.50	4.75
Requested by senior management	4.75	4.14	4.60	5.00	5.00
Requested by unit where applied	4.50	3.43	3.80	3.50	4.00
Other	4.66	4.18	4.11	4.52	4.50

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Table 4-13 (continued)

ANOVA Test on IOI Factors and Business Innovation Unit Characteristics

	Project Initiat	Project Implem	Knowl & Skills	Info & Comm	Innovation Effective	Organizat Effective
HR Group Size						
1-10	3.96	3.83	4.38	3.70 [a]	4.16 [a]	4.26
11-20	3.64 *	3.49	3.77	2.75 [a b]	3.00 [a b c]	3.57 [a b]
21-30	4.14	4.07	4.27	3.58	3.67	4.83 [a]
31-50	3.92	4.10	4.50	3.63	3.00	4.50
51-100	4.67 *	4.60	4.80	3.75	5.00 [b]	5.00
101 or more	4.33	4.25	4.40	3.94 [b]	4.50 [c]	5.00 [b]
Adoption Time Frame						
Within the last year	3.99	3.89	4.29	3.45	3.89	4.29
1 to 2 years ago	4.14	4.00	4.30	3.79	4.17	5.00
3 to 4 years ago	3.92	3.60	4.15	3.56	3.75	3.75
More than 4 years ago	4.00	4.30	4.50	4.00	3.50	4.50
Most Compelling Reason To Adopt IHRDP						
To adjust to business market trend	3.93	3.79	4.19	3.53	3.69	4.13
To enhance team work	3.94	4.00	4.20	3.67	3.56	4.33
Response to a restructuring need	3.33	3.20	4.40	3.25	4.00	3.00
To comply with planned program	4.67	3.80	4.20	3.25	5.00	5.00
Requested by senior management	4.33	4.80	5.00	4.25	4.00	5.00
Requested by unit where applied	3.50	4.20	3.60	4.25	4.00	5.00
Other	4.18	3.95	4.49	3.36	4.36	4.64

Asterisk and letters in superscript denote statistically significance at $p<.05$ (asterisks, between two groups; letters, between more than two groups).

Innovative HRD practices adoption time frame. As displayed in Table 4-12, most of the innovative Human Resource Development practices were adopted and implemented within the last year, as reported by 70% of the participants. However, a vast majority or 85% of the participants indicated they adopted and implemented the IHRDP within the last two years. Fifteen percent of those respondents indicated, on the

other hand they adopted and implemented those practices more than three years ago. Data thus indicated the innovative Human Resource Development practices focus of this research were adopted and implemented more recently rather than in the past. This latter in turn may indicate that only a few of the companies undertook innovation as rather a sustained process.

The analyses indicate the Adoption Time Frame made no difference when analyzed against the IOI factors and the two overall assessment items. Their relationships showed no statistically significant difference based on the time frame (see Table 4-13).

Most compelling reason to adopt and implement an IHRDP. With regards to the reason why the IHRDP was adopted and implemented, Table 4-12 shows that the single most plausible reason to adopt and implement an IHRDP was related to external conditions. Forty percent indicated they adopted and implemented IHRDPs to adjust to the business market trend. This is consistent with modern literature of innovation and economics that highlights the role of innovation in acquiring competitive edge. The remaining responses dealt all with the internal drivers for innovation. The second largest group of respondents indicated they adopted and implemented the IHRDP to enhance team work (22.5%), which is a reference to performance and productivity. Companies and people in organizations will make the effort to enhance team work as a way to improve their work and therefore increase the overall company's performance. Only a few responses chose the other single options provided in the questionnaire—each with 2.5% of the responses. Other reasons make up to 27.5% of the companies. Responses

listed included reasons related to restructuring, strategic planning, culture change, and systems change.

As in the case of the Adoption Time Frame, the Compelling Reasons to adopt and implement IHRDP had no effect on the perception of the nine factors of the IOI and the two overall assessment items (see Table 4-13). Those relationships were found to be not statistically significant.

Enabling the Adoption and Implementation of Innovative Human Resource Development Practices in Minnesota Top 100 Companies

Research question 7 asked: *What are the organizational characteristics that enable the adoption and implementation of innovative Human Resource Development practices in those organizations?*

In order to further understand the organizational characteristics that favor the adoption and implementation of IHRDP, linear regression analysis was used, where the reported total number of adopted IHRDP was used as the dependent variable. It was originally planned for this research to also conduct a logistic regression analysis to explore the odds ratios conducive to the adoption or not of IHRDP, but since all respondents indicated they had adopted and implemented IHRDP that purpose became futile and it was then dropped from the research.

Prior to conducting the analysis using the linear regression model, original items in Tang's (1999) nine factors were recalculated with a special technique of analysis—factor scores. For that purpose, respondents' scores for the original single items of the IOI that had been loaded into factors (44 items, which excluded the two overall assessment items) were reloaded into the same factors, and weighted scores were

obtained. These factor scores were then used in the regression model. The advantage of this method is that weighted scores are standardized measures that can be used in statistical analysis like any other measurement (Halim, Kaplan, & Pollack, 2000; Jang, Vernon, & Livesley, 2001).

Enabling the Adoption of Innovative HRDP Practices: Three Regression Models

Results for the linear regression analysis are reported in Table 4-14. Three models were used in the regression analysis. Of interest for this research was the impact of the IOI factors in the adoption of IHRDPs. Thus, Model 1 explores the impact of just those nine IOI factors in the adoption and implementation of the IHRDPs in MN companies.

Additionally, since other variables may have influenced the adoption of those IHRDP a selection of those variables was explored. Model 2 used the same dependent variable (see Table 4-14) and in addition to the nine original explanatory factors, it included three variables from the managers' demographic data: Highest Level of Education, Years of Service in the organization, and Prior Work Experience in the same or different organization.

Finally, Model 3 was also included in this analysis. In addition to the nine factors of the original IOI questionnaire, an organizational structure variable was used. This was a proxy for the size of the company—the company's revenue, in current US dollars (see Table 3-4).

Models 1 and 3 were statistically significant—i.e. at least one of the explanatory variables has a nonzero regression coefficient (see Table 4-14), indicating the selected

variables constitute a group that when put together explains the adoption of the innovative HRD practices.

Table 4-14

Regression Models for Organizational Characteristics and the Adoption and Implementation of Innovative Human Resource Development Practices

	Dependent Variable: Total Number of Adopted Innovative HRD Practices (Standardized ß)		
	Model 1 Internal Characteristics (IOI Model)	Model 2 Internal Characteristics & Internal Moderators	Model 3 Comprehensive Model
Leadership	-0.321	-0.338	-0.334
Support	0.750 *	0.771	0.751 *
Job Empowerment	0.494	0.533	0.553 *
Individual Behavior	-0.021	-0.003	-0.046
Work Integration	-0.282	-0.275	-0.286
Project Initiation	-0.011	-0.122	-0.045
Project Implementation	0.550 *	0.607	0.527 *
Knowledge and Skills	-0.722 *	-0.720	-0.733 *
Information and Communication	-0.383	-0.286	-0.413
Highest Level of Education		0.081	
Years of Service		-0.186	
Prior Work Experience		-0.031	
Company's Revenue			0.205
R Square	0.46	0.50	0.50
Adjusted R Square	0.26	0.21	0.28
F	2.307	1.717	2.299
Sig.	0.049	0.134	0.048

* Statistically significant at $p<.05$

For Model 1 the corresponding *R*-square is 0.46, indicating that about 50% of the observed variation in the total number of IHRDP adopted by Minnesota Top 100 companies is explained by linear regression on organizational internal factors. Model 3 has a higher *R*-square value of 0.50, as well as a slightly higher adjusted *R*-square value than Model 1.

Further examination of Models 1 and 3 reveals their residuals are normally distributed, thus indicating the regression models are appropriate for the data (see Figures 4-1 and 4-2).

Results for Model 1: The IOI Organizational Internal Characteristics and Innovative HRD Practices

Results for Model 1 in Table 4-14 indicate three explanatory variables—Support, Project Implementation, and Knowledge and Skills—are significant ($p<.05$). Knowledge and Skills is the only predictor that is both significant and has a negative coefficient. The remaining six factors were not statistically significant.

Correlation coefficients for all nine factors reveal none was associated with the variable of total number of adopted innovative Human Resource Development practices. Correlation analyses for the nine factors show a correlation existed between them.

Results for Model 3: A Comprehensive Model of Organizational Internal Characteristics and Organizational Structure Characteristics for the Adoption of Innovative HRD Practices

Results for Model 3, the other model statistically significant, indicate the model has four explanatory variables that are statistically significant ($p<.05$). In addition to the three variables that were significant in Model 1 (Support, Project Implementation, and

Knowledge and Skills) the other significant variable in Model 2 is Job Empowerment (see Table 4-14).

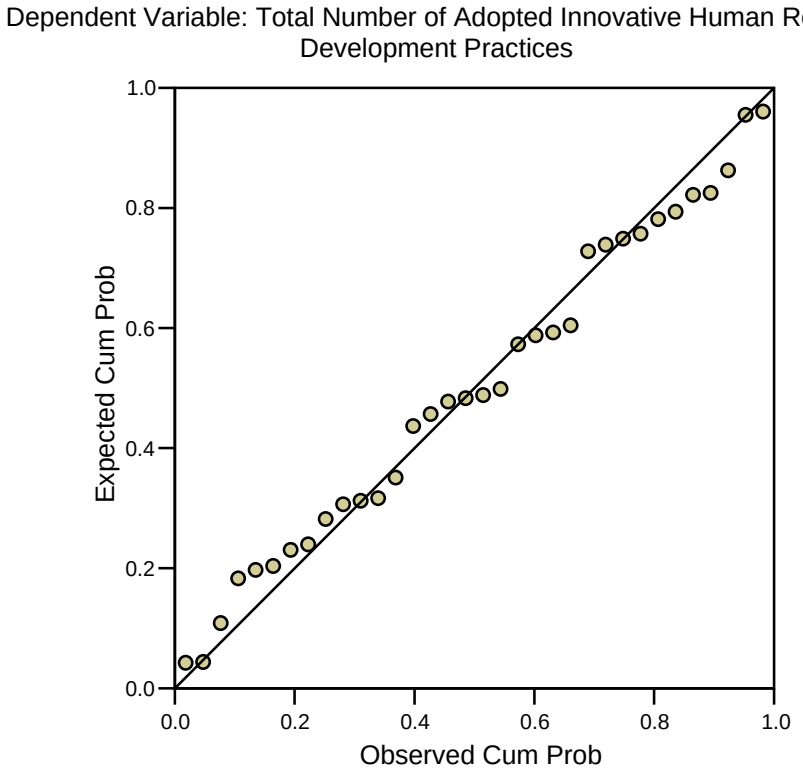

Figure 4-1. Normal P-P plot of regression standardized residuals for regression Model 1.

Correlation analysis indicates no correlation existed between the variable on the company's revenue and the total number of adopted and implemented IHRDP or the nine IOI factors.

Model 2 was not significant. Correlation analysis for the demographic variables included in Model 2 shows no correlation existed between the factors and those internal

moderators, with the exception of Years of Service in the organization with Support, Project Implementation, Knowledge and Skills, and Information and Communication.

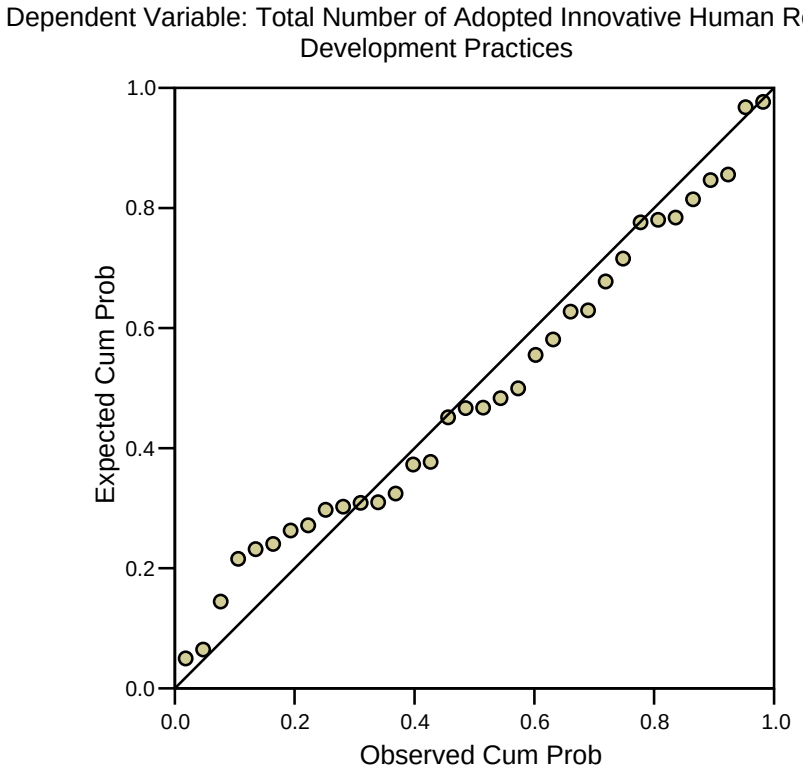

Figure 4-2. Normal P-P plot of regression standardized residuals for regression Model 3.

Summary

Findings in this research reveal 71 practices were identified as innovative Human Resource Development practices in Minnesota Top 100 companies, compared to 66 found in the literature. For comparative purpose only, those practices found in this research were contrasted with those in the literature. In both this research and the

literature review the wide majority of practices are in the area of Organization Development, although those accounted for in this study were larger in number than those in the literature. Conversely, more of those IHRDP found in the literature were in the Training and Development component of HRD than those found in this research. Among those in the OD component, the largest number of IHRDP in this study is in the area of Executive/Leadership Development, whereas the largest number of those in the literature is in the Process Improvement area.

Descriptive data for the factors and the two overall assessment items reveal all the items had an average above the 3.5 mid-point, and the averages were all far above the standard deviation. The highest ranking factors were Leadership, and Individual Behavior—the largest overall assessment item was the Organization Effectiveness. The lowest ranking factor was Information and Communication. An effectiveness index was created regarding innovation effectiveness and organization effectiveness. An ANOVA analysis reveals that Support is the only factor where significant difference is found between those groups created around the effectiveness index.

Further analyses of internal moderators are revealing. Data indicate that both Highest Level of Education and Years of Service show significant differences between groups when those variables are compared to the nine factors o the IOI. No other differences are significant based on demographics, including Age and Gender. Similarly, statistically significant differences were found among groups with regards to the place where the IHRDP were applied. One of the most interesting findings is the perceived participation in more than one role during the innovation process as conducive to the adoption and implementation of innovative Human Resource Development practices.

The IOI nine factors had a significant difference based on the size of the Human Resource Group, but no other business unit characteristics were significant.

Finally, the organizational internal and structure characteristics and moderators that may have an impact on the adoption of the IHRDP in the Minnesota Top 100 companies were explored. With that purpose three regression models were built that were based on the IOI nine factors, with the total number of IHRDP used as dependent variable. Factor scores were used for the regression analysis, and I found that Models 1 and 3 explain the adoption of the IHRDP. In Model 1, Support is statistically significant and contributes the most to explain the total number of IHRDP adopted and implemented by Minnesota companies. The other significant contributor is Project Implementation. One intriguing finding is that of Knowledge and Skills, a variable assumed to be contributor to innovation—it was found to have a negative and statistically significant relationship with the total number of innovative Human Resource Development practices adopted by Minnesota companies.

Model 3 was also statistically significant. In this case, in addition to the three explanatory factors indicated above, the other independent variable that was significant was Job Empowerment. The use of a combined model is also important for the used of characteristics that respond to both the internal and external environments.

CHAPTER 5

SUMMARY, DISCUSSION AND RECOMMENDATIONS

This chapter presents an overview of the study. It also discusses the findings described in Chapter 4, and it concludes with recommendations for future research in HRD and innovation.

Summary of the Study

This study aimed at understanding the innovative Human Resource Development practices in Minnesota companies, identifying what those are, and examining the organizational characteristics that influence their adoption and implementation. Specifically, this study tried to answer the overarching research question: *What is known about innovative Human Resource Development practices and how do they relate to the organization's characteristics?* Specific research questions were also set, and they are all discussed below.

Innovation is a topic that has been widely referred to in the Human Resource Development literature, and many HRD professionals have pointed out to innovation as a main factor in providing competitive edge. Moreover, because of the characteristics of the recent stage of economic development, vis-à-vis global trade and economics, and the technology surge, the focus on people has received more attention from managers and professionals in different areas. HRD professionals have perceived this as the context for becoming innovative in the area of Human Resource Development. But the perceived interest in innovation has not been matched with a corresponding body of research. In that sense, there is a lack of research and understanding about innovation and HRD, and more so about innovation and HRD practices.

The intention of this study was to contribute to the knowledge about innovative HRD practices; to know what those innovative HRD practices are as reported by companies and to contrast them with those existing in the literature; to examine the relationships between internal organizational characteristics and the innovative HRD practices; to explore the internal moderators and their relationship with the innovative HRD practices, including managerial characteristics, job function and business unit characteristics that relate to the adoption of innovative HRD practices; and to frame the discussion about the innovative HRD practices within the mainstream theory of innovation. The overall intent was for this study to make a significant contribution to the HRD literature.

For the purpose of this study, innovation literature was examined. It provided the descriptive framework in which innovative practices in HRD were studied. Since this is one of the first attempts—if not the only one—to thoroughly study HRD practices within the frame of the most known body research of innovation, the main issues surrounding innovation were explored. The innovation literature is ample, and one of the first issues discussed is that of the definition. Throughout this study, the definition of innovation provided by Rogers (1995) was used:

> is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is objectively new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation. (p. 11; emphasis in the original).

That is the definition used in the questionnaire sent to participants in this study.

A second, related issue widely debated in the literature is whether innovation is new in societal terms or if it is new for the adopting unit. From the definition described above, for this study innovation was used in the latter sense, particularly because the innovation process is somehow different in the context of organizations. In organizational settings the pattern of the innovation process can focus in either the creativity process or the adoption process, depending on whether the organization wants to create a socially recognized innovation or adopt and implement an existing one, respectively. Using many scholars research, the emphasis put in this study is that of the adoption and implementation of innovations, which has its own theoretical perspectives. On the contrary, studies focusing on creativity, conducive to the creation of innovations inside organizations tend to focus in those aspects supportive of the creativity among individuals in the organization.

A third issue surrounding the discussion of innovation is that of the innovation types. Research on innovation has distinguished between technological innovations and administrative innovations. Technological innovations "are those that bring change to organizations by introducing changes in the technology" (Damanpour, 1987, p. 677), including products, processes and technologies (Gopalakrishnan & Bierly, 2001). On the other hand, administrative innovations are those that involve new procedures, policies and organizational forms (Ravichandran, 2000b), allocation of resources and structuring of tasks (Evan, 1966). The differentiation is based on theoretical grounds, particularly with regards to those determinants that influence the adoption and implementation of innovations. From the perspective of the current study, innovative Human Resource

Development practices are considered administrative innovations. Prior studies on innovation and Human Resources have characterized innovative Human Resource practices as administrative innovations (Wolfe, 1995).

A final area of innovation in organizations relevant for this study is related to the determinants. Of interest is the understanding of those organizational characteristics that influence or deter the adoption of innovation in organizations. Most of the research on innovation—especially at the early stages—focused on a specific type of organizational characteristics, which were those related to the structure of the organization—e.g., size centralization, complexity, stratification, etc. Although these characteristics helped the understanding of innovation, they were however more related to technological innovations—given their coincidence in time—and paid less attention to those people's dimensions that could influence the decision of a unit or organization to adopt an innovation. The focus on organizational structural characteristics also coincided with the type of economic and industrial development stages in the second part of the 20th Century. The need to produce new, innovative goods for an ever-changing market determined the type of structure organizations needed to face those challenges and therefore the type of relationship with the firms' external environment (Utterback, 1982).

In contrast with the organizational structural characteristics, another type of research focused on the organizational culture characteristics. This type of research evolved from general studies about culture in organizations, and focuses on how culture, and its multiple dimensions influence the adoption of innovation. Since culture is an umbrella concept, it is difficult to come up with a single set of determinants that can explain innovation—much like in the case of organizational structural characteristics. An

understanding and analysis of the organizational culture is important not because of its support to isolated efforts to innovate, but mainly because only repeated efforts to innovate can really describe the innovative nature of the culture in the organization. This "'innovative attitude' is a key factor for the success" of corporations (Claver, Llopis, Garcia, & Molina, 1998, p. 1). The primary instrument used in this study, the Inventory of Organizational Innovativeness (Tang, 1999), is mostly based on organizational culture characteristics.

It has been noted that the HRD literature does not provide with a clear and thorough understanding of the link between innovation and HRD. The HRD literature refers to a diversity of innovation contents and approaches and reveals a true interest in the topic, but with probably a few exceptions HRD studies are far from being considered truly embedded in the mainstream of the innovation literature. Other group of studies in HRD mentions innovative practices, but they too fail to provide an in-depth explanation and knowledge of those practices and innovation. Based on the Human Resource taxonomy proposed by McLagan (1989), it was found that research on Human Resource Management has advanced in that direction, and indeed some of the HRM literature has focused in innovative practices. Thus, a study on innovative HRD needs to necessarily have the literature of innovative HRM practices as a reference.

In order to learn about innovative Human Resource Development practices, a survey was conducted with the Minnesota Top 100 companies, as identified by the Star Tribune (2003)—companies headquartered in the state of Minnesota. Of the whole group of 100 companies, data were collected from 40 participants that responded to a questionnaire that included the Inventory of Organizational Innovativeness. In addition

they also responded to a questionnaire on internal moderators—managers' demographics, job function, and business unit characteristics. Three definitions were also included—on innovation, HRD, and unit or organization. Participants were also provided with a list of innovative HRD practices that were extracted from the literature.

The response rate was 40%, and it was examined for bias, for which purpose several statistical tests were conducted. It was concluded there was no association between respondents and revenue, job number and industry categorization, and that these categories did not influence respondents and nonrespondents or them being early or late respondents. As a consequence, findings could be generalized to the Minnesota 100 companies originally included in the study.

In terms of the structure of the respondent companies, 34% had reported a revenue of 1 billion dollars or more for year 2002, 31% had a revenue between 200 million dollars and 1 billion dollars, and 35% had a revenue lower than $200 million. Twenty six percent of the respondent companies were retail or service companies, 29% were manufacturing, 14% were in the health care sector, 8% were financial services institutions, 4% were utilities companies, and 19% belonged to the computer or information technology sector.

Discussion

In this section key findings for this research are discussed. The discussion follows the order of the specific research questions stated in Chapter 1. In doing so, the theoretical definition of innovation practices *adopted and implemented* was follow. It was considered appropriate to refer to both stages because they refer to managerial decisions to effectively implement an innovation—a discussion highlighted by Wolfe

(1994). In fact, the questionnaire used for this research emphasized throughout the idea that the innovative human resource development practices participants were responding about were those that have been adopted and implemented—a dynamic perspective that was in opposition to the "snapshot" approach that did not indicate whether the innovations were effectively implemented after a decision was made to adopt them.

Innovative Human Resource Development Practices in Minnesota Top 100 Companies

The first three research questions asked: *What are the innovative HRD practices found in the literature? What are the innovative HRD practices adopted and implemented by companies in Minnesota? How do the innovative HRD practices implemented in Minnesota companies compare to those found in the literature?*

Reponses for these questions were used to build an initial informative inventory of those practices HRD scholars and practitioners claimed to be innovative. Since there is no such inventory of the same kind on innovative Human Resource Development practices, all effort was oriented at knowing and understanding the practices, organizing them, and exploring commonalities or differences. The intent was not to arrive at conclusive statements regarding types, patterns, trends, applicability or other aggregated characteristics. Therefore, to obtain a list of what those practices were in the existing literature, articles and research reports were examined. For that purpose, the HRD literature, and literature in the field of Human Resource Management were examined. Other literature was also reviewed—i.e., literature in the area of general management, industrial psychology, organization development, etc. After the review was concluded, it was categorized according to McLagan's (1989) taxonomy.

The first thing to notice in this study is the fact all participants indicated they had adopted and implemented innovative Human Resource Development practices. A related, noticeable issue is the number of practices reported by participant companies in this study. The average number of IHRDP was 1.78 per company. That number does not look as high it would have been expected, and it could be the basis to argue that these top ranking Minnesota companies would not to be as innovative as they should, as existing research indicates. For these companies are the largest ones in Minnesota, with annual revenues ranging between $42 million and $44 billion. That number looks even smaller specially considering that respondents had an open time frame to indicate the time when these practices were adopted. However, caution should be exercised, because it needs to be emphasized that this study focused on innovative practices in a particular area—Human Resources—and thus it did not capture all the companies' innovativeness. But again, even if restricted to Human Resources the number still looks low, since these are companies with as low as 100 or so employees and as large as 306,000 employees—a potential justification for larger and more complex HR groups. In any event, although no specific numbers are provided in the literature that relate to size, in general the number of innovations are related to size of the company—i.e., larger organizations adopt more innovations than smaller organizations (Slappendel, 1996). The relationship between size and number of IHRDP was not explored in this research, because it was beyond its scope.

Another interesting issue is that of the distribution of the IHRDP. Based on the classification performed specifically for this study, a surprising yet interesting finding is the fact that most of the IHRDP can be categorized as Organization Development (OD) practices. In the case of the innovative practices found in the literature, 3/4 of them were

in OD, and about one-fifth were in the Training and Development (TD) component of HRD. Those innovative practices reported by respondents in this study were largely in OD (86%) and less in TD (8.5%). The overwhelming presence of OD innovative practices in both sources may point out to the increasing importance of OD. Perhaps one aspect that can help understand this fact is the more dynamic development of OD in the last 25 years, and the opening of more areas of study and practice inside OD—conflict management, executive development, team building, etc. Areas included in OD may even be larger if other disciplines were explored further, including general management. It may also be that OD, because of its nature, gives a more ample space and opportunity for the flourishing of innovative practices. On the other hand, it could be that TD became a more limited area of study and practices, and therefore innovative practices are more about related issues like assessment and content areas, and less about delivery methods, and conceptual issues. Whatever the explanation, what the numbers show is that companies look more engaged in exploring more areas that relate to the work of people in organizations, and that that approach favors the application of innovative practices in Organization Development.

It is also noticeable the fact that in both groups of reported innovative practices one of the single most referred area of innovative practices is Executive/Leadership Development—more so in the most recent data provided by participants in this study. To some extent this is not surprising, given the emphasis in the most recent years on people and team development—the idea of people development and competitive edge—and the need to provide them with an efficient leadership.

In addition, innovative practices in OD as reported for this study have preeminence in what could be considered *non-traditional* sub-categories, including team building, survey feedback, quality of work life, learning, et cetera, covering a wide breadth of topics. These sub-areas scarcely had the same proportion in the classification for the literature practices, and indeed suggest companies most interest in exploring new areas that could add more to their business. Two of the areas listed above, for example, stand out as new trends in management and Human Resource Development—quality of work life, and learning. These two have been topics of much interest and discussion in the workplace, and have received much attention in the literature. The sub-areas in which the companies' IHRDP were classified clearly support the idea of becoming competitive based on people development.

It has been emphasized that this comparison is by no means conclusive, and rather exploratory. And as the differences in practices between the two sources are clear, it is revealing that only a few of the practices fall in categories that are common to both the practices found in the literature and those reported for this study. Some of those sub-areas are clearly core subjects in companies—coaching, job rotation, mentoring, and orientation for new employees—and fall within more traditional, yet effective approaches to engage people in the organization. The other sub-areas indicated more modern and proactive practices to develop people in organizations—i.e., e-learning (on-line instruction), knowledge sharing, leadership development, supervisory training, and quality of work life. Among those, it is interesting to note that technology had already been playing a role even when innovative practices were reported in the literature—which is clearly the case of on-line instruction. Although the commonalities described

are important, one legitimate question to ask is whether there should be more of them. Perhaps future examination of literature and studies in this area would reveal more common practices—and the role of technology in those practices.

Innovativeness in Minnesota Top 100 Companies

The innovativeness of the Minnesota companies was next analyzed—the adoption and innovation of innovative Human Resource Development practices. For that purpose, in the remaining of this chapter results from the core inventory—the Inventory of Organizational Innovativeness—and the additional data obtained for the internal moderators are discussed, including the results for both sets and how they relate to each other.

The core inventory factors—those belonging to the Inventory of Organizational Innovativeness— were first analyzed to have a general sense of the innovation behavior in these organizations. One prominent feature is the strength of the factors. As shown in Table 4-5, means for all factors are well above the mid-point in the five-point Likert scale used for the responses, and five of the nine factors have an overall mean of four or above. Relatively speaking, there are some factors that appear to be stronger than others as indicated by the Minnesota top companies. Respondents in those companies indicated they agreed with Leadership, Individual Behavior, Knowledge and Skills, Work Integration, and Project Initiation as factors conducive to innovation more than the other factors. They ranked less the factors of Job Empowerment, Support, Project Implementation, and Information and Communication.

It is interesting that almost all the factors that received the higher means—Leadership, Individual Behavior, Knowledge and Skills, Work Integration, and Project

Initiation—are markedly linked to individual aspects of the work, that relate to them immediately and directly, that are the responsibility of the person or that have a direct influence on his or her way of working. They contrast significantly with those factors that are embedded in the type of job and in the group, and about which individuals may not have a direct control —Job Empowerment, Support, Project Implementation, and Information and Communication (see Table 3-1 for a description of these factors).

Accordingly, it would seem as though the respondents agreed in the perception that the push for innovation in Minnesota companies comes from or relies upon more the individual's effort, the individual's initiative, or the individual's commitment—at least more than the organizational setting, or the conditions and mechanisms provided by the group or the organization. This is certainly related to two ideas introduced in Chapter 4—about the role of the respondent's education, and years of experience in the organization, as I will discuss below.

Means obtained from Minnesota companies on IHRDP are all higher than those reported in the original Tang's (1999) study—the only known study to which findings for this study can be contrasted. The ranked order of the factors means found in this research are substantially different from Tang's. In his study, factors ranked (highest to lowest): Job Empowerment, Knowledge and Skills, Individual Behavior, Project Implementation, Leadership, Work Integration, Support, Information and Communication, and Project Initiation. Tang's results have an almost opposite direction than those found in this study. In Tang's, some of the group- or organization-related factors have a more prominent role than those in the current research. Although there is no more information that would help draw more significant conclusions about these differences, four issues

surface that need to be taken into account to understand these differences. One, Tang conducted his study in Singapore, which can provide some clues about organizational culture differences, national culture dissimilarities, and job practices that may be different. Second, Tang surveyed a sample of multinational corporations, government organizations, and local companies in Singapore. Therefore, the composition and goals of those companies are at least partially different from those included in this research. Third, Tang surveyed managers and non-managers for his study, while I have targeted upper level management. Finally, those surveyed for Tang's study were mostly in the engineering and manufacturing sectors.

Yet another noticeable difference between these two studies lies on the means' range. In this study factors received high marks, all of them below 4.32 and above 3.5. The range in Tang's (1999) study was 3.82—3.24. Also, none of the factors in Tang's study averaged 4.00 or higher—as did five of the nine factors in this study.

Individually considered, Organization Effectiveness was perceived by Minnesota companies to be more important than Innovation Effectiveness. These two measures are overall assessment items regarding innovation in organizations and were part of the study. When both Organization Effectiveness—the overall effectiveness of the organization—and Innovation Effectiveness were contrasted, respondents for companies indicating that the company's Innovation Effectiveness was equal to the overall Organization Effectiveness were about the same number of respondents that indicated Organization Effectiveness was greater than Innovation Effectiveness. When contrasted, the only factor where a statistically significant difference was found among these two groups was Support (see Table 4-7). In that case, companies with the view that

Innovation Effectiveness was equal to the overall Organization Effectiveness (IE=OE) considered Support to be more important than those companies that rated overall Organization Effectiveness greater than Innovation Effectiveness (OE>IE). This is a somehow surprising finding—it is the only factor to be statistically significant between these two groups. Furthermore, it is intriguing also because if companies perceived Organizational Effectiveness was higher than Innovation Effectiveness (OE>IE) this is logically the group one would expect to consider Support as more important. On the other hand, the fact that the group IE=OE considered Support as more important relates to their perception in the first place that IE is equal to OE. It would have been expected that more factors be statistically significant, particularly among the group that stated that Innovation Effectiveness was equal to the overall Organization Effectiveness—due to the role those factors play in innovation.

Internal Moderators and Innovativeness in Minnesota Companies

Research questions 4 through 6 asked: *How do managerial demographic characteristics relate to the adoption and implementation of innovative Human Resource Development practices in those companies? What are the job function characteristics that may enable the adoption and implementation of the innovative Human Resource Development practices in those companies? How do business innovation unit characteristics relate to the adoption and implementation of innovative Human Resource Development practices in those organizations?*

In answering those questions, managerial demographics, job function, and innovation unit characteristics—the internal moderators—and their relationship with the IOI factors were explored.

Demographic Characteristics and Innovativeness in MN Companies

Gender. In the analyses, differences in the perception of the IOI factors were found in only three managerial demographic characteristics. The first one is gender, where females agreed that Individual Behavior and Work Integration were more conducive to the adoption and implementation of IHRDPs in their organizations. These perceptions could indicate women feel better integrated into their organization (Individual Behavior) and perceived their work units better integrate their expertise (Work Integration). These perceptions, which are significantly different from those expressed by the males in the study, might indicate to some degree a departure from traditional roles in organizations (Carter, 2003), although the results from this research may be inconclusive. It is worth-noting, however, that both factors refer to how women see themselves and their roles within the organization.

Educational level. The analyses also indicated differences in the perception of the IOI factors based on educational level. Those differences appear in six of the IOI factors and in one of the overall assessment items—Support, Job Empowerment, Work Integration, Project Initiation, Project Implementation, and Information and Communication; and overall Innovation Effectiveness.

Differences in perception involve mostly those with a Master's degree who, in contrast mostly with those holding a complete college degree, agreed with those factors to be more important for innovation. These results are consistent with prior research. Tannenbaum and Dupuree-Bruno (1994) have indicated that education is one of the factors that may help understand why organizations adopt and implement innovations. Education as conducive to the diffusion of innovation has also been highlighted by Oster

and Quigley (1977). Colleges are particularly critical for that purpose because they encourage students to try new methods in their fields of study. It is also important to note that respondents with a Master's degree—the predominant group in which most of the differences are found—account for only 25% of the total. At the same time it is also important to consider the hypothesis formulated by Tannenbaum and Dupuree-Bruno (1994), who have stated that while colleges may provide with ideas for innovation they can provide as well a bias of implementing new ideas.

The factors were a difference is found based on educational level are related to job conditions. Perception in those cases would seem more elaborated, more related to the complexities of the job, and more about the job itself. Therefore, this set of factors were differences are found based on educational level is unlike the set of factors where differences are found based on gender—which were primarily related to the individual.

Years of service. In this study I found that years of service is statistically significant in seven of the nine IOI factors and in one overall assessment item—Leadership, Support, Job Empowerment, Work Integration, Project Initiation, Project Implementation, and Information and Communication; and overall Innovation Effectiveness. Except for Leadership, the differences for this internal moderator are present in the same factors as those found for educational level.

The group of people with a little tenure with the companies—one to two years of service—disagreed with those factors above as being conducive to innovation than those with longer tenure. Respondents in this group accounted for only 17.5% (see Table 4.1). It is indicative the fact that those perceptions cover almost all of the factors—notably

with the exception of Individual Behavior, which is to some extent a measure of their own positioning in the company.

Although interesting because of the factors covered, this finding is not surprising. Prior research has found that people with more experience inside the organization—as well as outside—tend to be more innovative (Manski, 2004; Stata, 2004; Tannenbaum & Dupuree-Bruno, 1994).

It is also important to note that in those studies both educational level and years of service are related in terms of being conducive to innovation. In the case of experience Manski (2004) and Love et al. (2004) had indicated that it provides the basis for learning in the organization, which is reasonable particularly from the perspective of the theories on human capital, and from the perspective of the Human Resource Development discipline.

Job Function Characteristics and Innovativeness in MN Companies

Application of the IHRDP. The current study also found statistically significant differences for three IOI factors based on the place where the IHRDPs were applied—Leadership, Project Implementation, and Knowledge and Skills.

Perception differences for this moderator involve all factors wherever the IHRDP was applied in a Minnesota unit but different from their own unit. In those cases, they disagreed with factors as favorable for innovation than where the IHRDP was applied in their own unit (Leadership and Project Implementation) or when the innovative practices were applied in a unit outside the state of Minnesota but in the US (Project Implementation, and Knowledge and Skills).

Those findings are revealing and intriguing. Participants agreed with Leadership and Project Implementation as conducive to innovation when the IHRDP was applied in their own unit. This is something not surprising. Maybe in this case proximity plays a key role, since they are closer, know better how their units work, or because they are more aware of their positioning in the unit vis-à-vis the structure of the unit. What is somehow intriguing is that they scored better for Project Implementation and Knowledge and Skills in the event when those IHRDP were applied outside the state of Minnesota, in the US. Although data for the study cannot allow us to investigate this further, it seems interesting to know that their perception of other units in their own state will be more in disagreement than other location when it comes to the appreciation of the importance of these factors.

Participant's role. Findings in this study indicated differences in five IOI factors when examined by the role participants played in the process of adopting and implementing IHRDPs. Those factors were Support, Work Integration, Project Initiation, Project Implementation, and Information & Communication.

As in the other cases examined above, there is a group that involves most of the differences in factors—those that participated in the implementation only. On the other hand, it was solely in Information & Communication where the differences involved other groups. Those that indicated participating in the implementation stage only disagreed that the factors Support, Work Integration, Project Initiation, and Project Implementation were important for innovation in their companies. Interestingly, it would seem as though they agreed about the important role of those factors if they were involved in more than one role or in all roles, or if they role consisted in identifying the

IHRDP only. If in the former, that could indicate they felt more comfortable whenever they had access to more stages of the innovation process—thus indicating they are able to follow through more steps during the process. This could be related to the innovation stages theory, indicating that the fact companies' managers took on more roles is a signal of approaching innovation as a whole process, rather than segmenting their role into the different stages.

Those participating only in identifying the IHRDP appear to agree about the importance of Information and Communication as conducive to innovation, as oppose to those respondents that had a role both in identifying and developing the IHRDP.

These results may support the idea that participating in the implementation of the practice alone may not be as important as participating in any other role, and that multi-facet roles would have a significant impact than single roles.

Business Innovation Unit Characteristics

HR group size. Of the three moderators under the business innovation unit category, the size of the HR group was the only one with statistically significant differences within the factors. Those differences were present in six of the nine factors and in the two overall assessment items—Support, Job Empowerment, Individual Behavior, Work Integration, Project Initiation, and Information & Communication, in addition to the assessment items of Innovation Effectiveness, and Organizational Effectiveness.

Differences in those factors all involved the HR group with 11 to 20 members, who disagreed those factors and the items were important for innovation. Those differences were in most of the cases with larger groups, and in one factor and one

overall item they were with respect to the smallest group. Part of the explanation for those differences may be found in the fact that larger groups are more organized for planning and implementing innovations, and that in smaller groups there is more cohesiveness among members to get engaged in the process of innovation. Further research could look into those topics including the reach of the units' work: one of the issues not explored in this research was if those groups were business- or unit-specific or if they were a HR group that served a wider clientele. Question 9 in Section 2 requested respondents to indicate the HR group size in the state of MN, but not the reach of their responsibilities. Differences may be explained by the fact that groups of that size accounted only for 17.5% of all participants.

Enabling the Adoption and Implementation of Innovative Human Resource Development Practices in Minnesota Top 100 Companies

Research question 7 asked *What are the organizational characteristics that enable the adoption and implementation of innovative HRD practices in those organizations?*

In order to respond to that question, I explored the organizational internal factors that appear to be conducive to the adoption and implementation of innovative HRD practices in Minnesota top 100 companies and that would predict such adoption. For this purpose, linear regression analysis was used, and three models were constructed, each one with the core IOI factors and in addition a set of different variables. The dependent variable in the three models was the total number of IHRDP reportedly adopted and implemented by Minnesota top 100 companies. Much like other innovation studies, the assumption for including other models was that beyond the IOI factors there

were other factors that might also help explain the HRD innovation process in those companies.

The explanatory variables for Model 1 were all the IOI factors—alone, since this study was about the effect of these factors in the adoption and implementation of innovations in the area of Human Resource Development. Model 2 uses the same set of variables, and in addition I included a set of variables from the managers' demographic characteristics—part of the internal mediators questionnaire: educational level, years of service, and prior work experience. The inclusion of those variables follows prior research that indicated these factors, related to the individual, may in fact favor the innovation process. Included among these added factors was prior work experience as a measure of specialization (Kimberly & Evanisko, 1981) and also a proxy for combined experience. Love, Huang, Edwards, and Irani (2004) have further suggested that a key success factor for an organization is the amount and quality of experience—not organization size or number of assets. Data for this research point too on that direction, and it is particularly clear among those with three or more years in the job.

In Model 3 the same IOI nine factors were used, along with the size of the company—for which a proxy was used, the company's revenue. The inclusion of the latter responds to prior research that considers the size of the company as one of the organizational structure variables driving the quest for innovation. In this study, it was included in Model 3 to test whether a combination of a set of organizational internal characteristics and this structural indicator could also explain innovation in a significant way. After all, it may happen that even though those internal organization characteristics are particularly important for innovation the size of the organization could be a deterrent.

Also, size of the organization may provide some clues with regards to business environment, and technological level.

Analyses indicated linear regression Models 1 and 3 were statistically significant. That is, the IOI factors explain the adoption and implementation of innovative human resource development practices in Minnesota top 100 companies, with about 50% of the variation in the total number of IHRDP explained by these models, separately.

The IOI Organizational Internal Characteristics and Innovative HRD Practices

With regards to Model 1 that includes only the IOI factors, results from this research therefore supports Tang (1999) model and its theoretical underpinnings, taking up on the idea that these people-related internal factors do in fact help explain the process in those companies leading to the adoption and implementation of innovative Human Resource Development practices.

In Model 1, three of the factors are statistically significant—Support, Project Implementation, and Knowledge and Skills. Support appears to be the organizational internal characteristic that more powerfully contributes to the adoption and implementation of innovative Human Resource Development practices among Minnesota top 100 companies. Along with Support, Project Implementation contributes too to explain the adoption of IHRDP although its contribution is smaller than that of the Support variable. The contribution of both factors is significant, considering that they are related to all the resources and mechanisms in the organization that are relevant in the innovation adoption process—more so than those related to the individuals interacting with the organization or among them.

The regression model also reveals that one factor, Knowledge and Skills, is the only predictor that is both significant and has a negative coefficient. It is the second predictor that more powerfully explains the adoption and implementation of IHRDPs in those companies—but negatively so. It is certainly intriguing the presence of a negative coefficient like that, which strongly indicates that as Knowledge and Skills are built among the people in the organization the total number of innovative Human Resource Development practices decrease. This rather surprising finding is at odds with a generalized assumption that perceives knowledge and skills to be the basis for innovation, more so considering that the overall mean for Knowledge and Skills was 4.29, the second highest among the factors. One issue to consider is that that perception might be related to the process of *building* those knowledge and skills, which is clearly in contrast with what could be the managers' inherent creativity—an issue already highlighted when they indicated the innovative HRD practices, for the majority of the companies in the study, were *originated* in their unit (se Table 4-10).

A Comprehensive Model of Organizational Internal Characteristics and Organizational Structure Characteristics for the Adoption of Innovative HRD Practices

Model 3 has four explanatory variables that are significant. In addition to Support, Project Implementation, and Knowledge and Skills (all them statistically significant in Model 1) the other factor that is significant is Job Empowerment (see Table 4-14). Job Empowerment in this model is as strong an explanatory variable as Project Implementation, and stresses the idea that when put together with the variable of

company size in the model the nature of the job, its freedom and challenges pay off in terms of the potential for innovation.

Also relevant for this analysis is that Knowledge and Skills is negative and statistically significant in Model 3. Because its coefficient is as large as in Model 1, it may indicate a solid, yet intriguing variable result that may merit further exploration.

The variable indicating the size of the organization—the company's revenue—is not statistically significant, although its coefficient is positive, following prior research that found that type of association. Although not statistically significant, the inclusion of this variable in Model 3 proved to be important, specially in the context of analyzing the interaction of factors that can influence the adoption and implementation of innovatiove Human Resource Development practices.

Conclusions

The following conclusions are drawn from the findings above:

- This study is the first attempt to address the issue of innovation in the discipline of Human Resource Development, and in that sense this becomes a benchmark study upon which other studies can build continued research.
- The type of innovative HRD practices found in the literature and those reported in this research shows a clear emphasis on the Organization Development component of HRD, which may coincide with the historical trend of both the discipline and the organizations managerial approaches.
- The number of adopted and implemented innovative human resource development practices is important but only in a descriptive, non definitive way. No inferences can be made with regards to trends, frequencies, and cycles.

- Innovative practices reported for this study appear to be original since only a few coincide with those found in the literature.
- Both the description of the practices and the factors influencing the innovation process in the organizations included in this study indicate rather a creative process—as oppose to adopting the innovation.
- Top companies in Minnesota appear to be innovative in the area of Human Resource Development. All indicated they had adopted an innovative HRD practice. A large proportion of these companies are regarded as being effective either as an organization or for the innovation process.
- The average number of IHRDP adopted by Minnesota top 100 companies, 1.78, although not conclusive is rather indicative. It would seem rather low for these large companies.
- Demographic and background characteristics seem to play an important role for the innovation process in this study. Higher educational level and more years of experience, in particular, follow results from prior research. They are not, however, predictors of the adoption and implementation of innovative practices.
- In Minnesota top companies, prior experience in similar companies does not make relationship with the IOI factors significant. But on the other hand, factors are more associated with years of experience in the same organization. This may suggest that innovation is rather a process that follows the pattern of human capital development, in particular related to firm-specific experience and training.
- Results from the current study supports the theoretical underpinnings of the Inventory of Organizational Innovativeness, and thus confirm the importance of

its factors as being able to explain the adoption and implementation of innovation, in particular in the area of Human Resource Development.

- The selection of a set of variables that are predictors of innovation is still subject to more research, as results for variables used appear to be contradictory, as past research shows. Part of that is the negative coefficient for the Knowledge and Skills variable found in this research.
- As the IOI factors appear sufficient to explain the innovation process in the HRD area, other factors related to external conditions or the business environment seem important to be consider as well. A comprehensive analysis of both the organizational internal characteristics and the organizational structure characteristics may make more sense and be logical to use, since organizations are the result of the interaction of both sets of characteristics.

Recommendations

This study was conducted to address the issue of the adoption and implementation of innovative human resource development practices in Minnesota top 100 companies. Several issues can be explored with further research.

First, there is a need to conduct and replicate studies like the current one in order to know what the innovative human resource development practices are. The types of practices found in this study may or may not be the same if other types of companies or other states are to be explored. A cross-sectional study, involving similar types of companies in the United States maybe a starting point. Another potential area of research is that involving at least mid-size and large companies, to explore any differences in the types of innovative practices adopted. This would also allow to explore differences in the

factors used in this research that could lead to a more comprehensive analysis of the managerial culture of those organizations.

Second, researchers need to explore the issue of innovative human resource development practices distinguishing between the type of personnel involved. This study requested information from top officials in the HR areas of Minnesota top 100 companies. Further research could send the request for information to other layers in the companies' HR areas as well, including those with no managerial or supervisory responsibilities.

Third, building on prior research that distinguishes between those innovation that are internally created and those that are created somewhere else and adopted, further research should look into the issue of those innovative human resource development practices that are truly original—socially innovative—so as to measure the degree to which those organizations stress creativity to respond to their own needs.

Fourth, further research should also examine these same companies o a continuous basis—longitudinal research. Although some of the data collected in this research indicate the timeframe where those IHRDP were adopted, one way of understand whether these companies are truly innovators in this area is to replicate the study again later on, after some time have elapsed.

Fifth, researchers need to give more attention and examine one aspect of innovation that has received little attention—the internalization process, i.e., when the innovative HRD practice becomes part of the routine of the company. That is particularly important with regards to human resource development, because it provides a

way to clearly determine if the adoption and implementation of those IHRDPs were a fade or true responses to the organization's needs.

Sixth, further research should expand the analysis using the main factors identified here, and their relationships with structural and external environment factors as pointed out above. Although is a commonplace to refer to globalization and integration, those concepts may have a direct impact in the way organizations undertake their innovation process in order to respond to their needs and objectives. This point has been suggested by prior research as well.

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APPENDIXES

Appendix I

Factors in Tang's Integrative Model of Innovation

Original Version (Tang, 1999)	Adapted Version
Leadership	***Leadership***
Management leadership style	
Support	***Support***
Tangible and intangible support for innovation activities	
Task	***Job Empowerment***
Nature of work in organization	
Behaviour	***Individual Behavior***
Behavior traits, creative behaviors, motivation to innovate	
Integration	***Work Integration***
Team roles, cross-functional integration	
Raising Project	***Project Initiation***
Opportunity and problem finding	
Doing Project	***Project Implementation***
Problem solving, product and process development stages, uncertainty reduction	
Knowledge and Skills	***Knowledge and Skills***
Creativity, intelligence, insights, bisociation, domain-related knowledge and skills, tacit and explicit knowledge, knowledge creation, learning and training	
Information and Communication	***Information and Communication***
Flow of information, use of information technology, information as source of knowledge and stimulus for innovation	

Appendix II

Questions and Factors in the *Inventory of Organizational Innovativeness*, Original and Adapted Versions

Original Version (Tang, 1999)	Adapted Version
Leadership	***Leadership***
Our top managers are approachable and communicative.	Our top managers/supervisors are approachable and communicative.
Our supervisors often challenge us to be more resourceful.	Our top managers/supervisors often challenge us to be more resourceful.
Our top managers show great enthusiasm for innovation and work improvement.	Our top managers/supervisors show great enthusiasm for innovation and work improvement.
Our top managers don't value employees' opinions much.	Our top managers/supervisors don't value team leaders' and employees' opinions much.
Support	***Support***
My organization has active programs to upgrade employees' knowledge and skills.	My organization has active programs to upgrade employees' knowledge and skills.
There are many opportunities to exchange and generate ideas in my organization.	In my organization there are many opportunities to exchange and generate ideas.
My organization recognizes and rewards enterprising employees.	My organization recognizes and rewards enterprising employees.
My organization gives adequate resources to exploring and implementing innovative ideas.	My organization gives adequate resources to exploring and implementing innovative ideas.
In my organization innovative and enterprising employees are well paid.	In my organization innovative and enterprising employees are well paid.
My work schedule allows me time to think of creative solutions to problems.	My working environment and schedule allow me time to think of creative solutions to problems.
Innovation is clearly a part of my organization's mission or basic beliefs.	Innovation is clearly a part of my organization's mission or basic beliefs.
Task	***Job Empowerment***
My work is intellectually stimulating and challenging.	My work is intellectually stimulating and challenging.
There are many opportunities and freedom in my work to explore and try out new ideas.	There are many opportunities and freedom in my work to explore and try out new ideas.

Appendix II (continued)

Questions and Factors in the *Inventory of Organizational Innovativeness*, Original and Adapted Versions

Original Version (Tang, 1999)	Adapted Version
Task (ctd.)	***Job Empowerment (ctd.)***
I frequently encounter non-routine and challenging work in my organization.	I frequently encounter non-routine and challenging work in my organization.
The type of work we do requires very little imagination and creativity.	The type of work we do requires very little imagination and creativity.
There is much knowledge to gain from the work I do for my organization.	There is much knowledge to gain from the work I do for my organization.
Behaviour	***Individual Behavior***
I found my colleagues very helpful when I encounter difficulties with my work.	I found my colleagues very helpful when I encounter difficulties with my work.
In my organization people show little interest in each other's work.	In my organization people show little interest in each other's work.
I find my colleagues very helpful in sharing knowledge and information.	I find my colleagues willing to share knowledge and information.
In my organization very few people take the initiatives to raise new projects.	In my organization very few people take the initiatives to raise new projects.
Integration	***Work Integration***
Teamwork is poor in my organization.	Teamwork is poor in my organization.
In my organization different departments work together harmoniously.	In my organization different departments work together harmoniously.
In my organization there is a strong sense of mutual trust.	In my organization there is a strong sense of mutual trust.
My organization is unable to accumulate knowledge or learn and benefit from experience.	My organization is unable to accumulate knowledge or learn and benefit from experience.
Raising Project	***Project Initiation***
My organization actively collects ideas for improvements from employees.	My organization actively collects ideas for improvements from employees.
In my organization employees are active in making suggestions about work improvement.	In my organization employees are active in making suggestions about work improvement.

Appendix II (continued)

Questions and Factors in the *Inventory of Organizational Innovativeness*, Original and Adapted Versions

Original Version (Tang, 1999)	Adapted Version
Raising Project (ctd.)	***Project Initiation (ctd.)***
In my organization there are ways to support unplanned but worthwhile initiatives.	In my organization there are ways to support unplanned but worthwhile initiatives.
My organization evaluates project proposals with an open but pragmatic mind.	My organization evaluates project proposals with an open but pragmatic mind.
In the pursuit of innovation or new business, my organization tolerates mistakes.	In the pursuit of innovation or new business, my organization tolerates mistakes.
If my new idea is not accepted I can try it out elsewhere in the organization.	If my new idea is not accepted I can try it out elsewhere in the organization.
Doing Project	***Project Implementation***
Projects and jobs are well organized and executed in my organization.	Projects and jobs are well organized and executed in my organization.
In my organization projects start with clear objectives, schedule and resource requirements.	In my organization projects start with clear objectives, schedule and resource requirements.
Projects are monitored and reviewed regularly.	Projects are monitored and reviewed regularly.
My organization learns about what was done right or wrong at the end of each project.	My organization learns about what was done right or wrong at the end of each project.
My organization has clearly defined achievement goals and strategic directions.	My organization has clearly defined achievement goals and strategic directions.
Knowledge and Skills	***Knowledge and Skills***
My colleagues and I are able to come up with creative ideas when we face tough problems.	My colleagues and I are able to come up with creative ideas when we face tough problems.
My organization creates its own intellectual assets, e.g. special techniques, patents.	My organization creates its own intellectual assets, e.g. special techniques, patents.
In my organization there are many employees with strong knowledge and skills.	In my organization there are many employees with robust knowledge and skills.

Appendix II (continued)

Questions and Factors in the *Inventory of Organizational Innovativeness*, Original and Adapted Versions

Original Version (Tang, 1999)	Adapted Version
Knowledge and Skills (ctd.)	***Knowledge and Skills (ctd.)***
I have colleagues who impress me with their innovative ideas, energy, and resourcefulness.	I have colleagues who impress me with their innovative ideas, energy, and resourcefulness.
I have colleagues who help others to turn ideas into action and reality.	I have colleagues who help others to turn ideas into action and reality.
Information and Communication	***Information and Communication***
In my organization the dissemination of information relevant to work is excellent.	In my organization the dissemination of information relevant to work is excellent.
Documentation, information and databases are well managed in my organization.	Documentation, information and databases are well managed in my organization.
My organization's information system is a great aid to finding ideas and opportunities.	My organization's information system is a great aid to finding ideas and opportunities.
My organization captures information diligently from external sources, e.g. customers.	My organization captures information diligently from external sources, e.g. customers or other parties.
Summary Assessment Items	***Summary Assessment Items***
My organization is effective in innovating.	My organization is effective in innovating.
Overall, my organization is an effective organization.	Overall, my organization is an effective organization.

Appendix III

Internal Moderators Questionnaire

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1. When did you last adopt and implement the innovative human resource development practice described in Section I above (please choose one)?

☐ Within the last year ☐ 1 to 2 years ago ☐ 3 to 4 years ago ☐ More than 4 years ago

2. In addition to the practice described in Section I, at that time, how many other innovative human resource development practices were adopted and implemented?

☐ Only the one described in Section I above. ☐ 4 to 6
☐ 2 to 3 ☐ More than 6

3. What are the other innovative HRD practices that you have adopted and implemented? Please refer to question number 2 in answering this question.

1. _____ 6. _____
_____ _____
2. _____ 7. _____
_____ _____
3. _____ 8. _____
_____ _____
4. _____ 9. _____
_____ _____
5. _____ 10. _____
_____ _____

4. The innovative HRD practice adopted and implemented in my organization:

☐ Was internal, generated in my unit ☐ Was from outside the organization
☐ Was suggested in my unit ☐ Do not know
☐ Was from outside my unit

5. For what unit in your organization was this innovative HRD practice adopted and implemented? (If adopted in more than one, please choose the geographically closest to you).

☐ My own unit or department ☐ A unit or department outside the state but in the United States
☐ A unit or department in this state, other than my own unit ☐ A unit or department outside the United States

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Appendix III (continued)

Internal Moderator Questionnaire

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6. What was your role in the adoption and implementation of the innovative HRD practice?

☐ I participated in identifying the innovative HRD practice to be adopted and implemented

☐ I participated in the development of the innovative HRD practice to be adopted and implemented

☐ I participated in the implementation of the innovative HRD practice

☐ Other (specify) _____
_____

7. What would you say was the most compelling reason to adopt and implement this innovative HRD practice? Please choose one.

☐ To adjust to the business market trend
☐ To enhance the team work in that unit
☐ To respond to a restructuring need
☐ To comply with a planned program or activity
☐ A request or directive from senior management
☐ A request or directive of the unit where the innovation was applied
☐ Other (please indicate):
_____
_____

8. How large is the organization or unit where the innovative HRD practice was adopted and implemented? Please give an approximate number of personnel.

_____

9. How large is your Human Resource group? Consider your unit or department in the state only.

_____

10. Which of the following age categories describes you?

☐ 25-30 years old
☐ 31-35
☐ 36-40
☐ 41-45
☐ 46-50
☐ 51-60
☐ 61 or older

11. What is your gender?

☐ Male
☐ Female

Appendix III (continued)

Internal Moderator Questionnaire

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12. What is the highest education level you have achieved?

☐ Incomplete college
☐ Complete college
☐ Master's degree
☐ Doctoral degree

13. How long have you worked for this organization?

☐ Less than one year
☐ One to two years
☐ Three to five years
☐ Six to ten years
☐ More than ten years

14. Prior to this organization, you have worked in:

☐ Private organizations only, different than this one
☐ Nonprofit or governmental organizations only
☐ Both private and public organizations
☐ I have worked for this organization only

15. Have you worked before for an organization that was about the same size of this organization?

☐ Yes
☐ No

Appendix IV

Consent Form

CONSENT FORM

A Study of Innovative Human Resource Development Practices in Minnesota Companies

You are invited to be in a research study of the relationship between innovation and Human Resource Development practices. You were selected as a possible participant because of your position as Human Resource manager for a Minnesota company. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Oscar A. Aliaga, a Ph.D. candidate in the specialization of Human Resource Development at the Department of Work, Community and Family Education, College of Education and Human Development, at the University of Minnesota.

Background Information

The purpose of this study is to understand the relationship between innovation and Human Resource Development, specifically innovative Human Resource Development practices, and how the adoption and implementation of innovative Human Resource Development practices in organizations relate to the organization's characteristics. Currently there is a lack of research in this area.

Procedures:

If you agree to participate in this study, we would ask you to answer a questionnaire you will get in the mail. It takes approximately 15 minutes to answer the questionnaire. After you have answered it within the set date, you will be asked to mail it back to us in the self-addressed, pre-stamped envelope that will be included along with the questionnaire.

Risks and Benefits of being in the Study

There will be no physical or psychological risks for participating in this study.

As a benefit for participating in this study you will receive a summary report of the findings if you so request it.

Compensation:

There will be no compensation for participating in this study.

Confidentiality:

The records of this study will be kept private, and data will be available to the Principal Investigator only. Questionnaires will be code-numbered to allow for follow-up only. Codes will be destroyed after the study is completed to ensure anonymity. No other person will have access to data collected. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject or company included in the study. Research records will be stored securely and only researchers will have access to the records.

Voluntary Nature of the Study:

Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to not answer any question or withdraw at any time with out affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Oscar A. Aliaga. You may ask any questions you have now. If you have questions later, you may contact me at: Oscar A. Aliaga, 1954 Buford Ave-Room 460J, Saint Paul, MN 55108, telephone: 612-624-3603, e-mail: alia0002@umn.edu. You may also contact my advisor: Dr. Richard A. Swanson, telephone: 612-624-9727, e-mail: raswanson@qwest.net.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 624-1650.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

If you completed the questionnaire you have implied consent to participate in this study.

Signature of Investigator:_____ Date: _____

Appendix V

Innovative Human Resource Development Practices as Reported in the Literature

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Training and Development

General
In-agency retraining and updating
Orientation of new employees
Cross-Functional
Cross-training
Evaluation
Training evaluation
Methods
E-training
On-line instruction
Needs Analysis
Training needs analysis
Strategy
Manager-as-instructor
Middle management involvement in teaching process
Technology
Advanced training technology usage
Topic-Specific
Cross cultural training
Training in technical expertise, cultural fit, administrative skills and process skills

Organization Development

Coaching
Coaching
Culture Transformation
Adopting responsibility for socially relevant issues
Women's network
Executive/Leadership Development
Leadership development program
Management development
Participative management training
Potential development
Supervisory training: structured interviewing techniques
Talent-swapping
Targeting women and minorities for managerial positions
Job Description
Job definition

Appendix V (continued)

Innovative Human Resource Development Practices as Reported in the Literature

Organization Development (Ctd.)

Job Enrichment
Job enrichment/job enlargement
Volunteering for work assignments
Knowledge Management
Knowledge sharing
Pay for knowledge
Reflective innovation
Strategies for transfer of successful HR innovations
Technology translation
Learning
Informal learning
Learning organization
Life and Career Planning
Continuing professional education
Education-work linkages
Employee education
Mentoring
Mentor systems
Methods
Action learning process
Appreciative inquiry
Organizational Climate
Organizational climate
People-Policy
Justice and due process systems
Process Improvement
"Push back" in decision-making
Communication
Employee involvement in performance management systems
Employee problem solving groups
Employee/employer committees/councils
Human resource development element in appraisal
Open communication with workers
Organization development services
Organizational system
Suggestion systems
Trust, communication, and coordination

Appendix V (continued)

Innovative Human Resource Development Practices as Reported in the Literature

Organization Development (Ctd.)
Quality and Productivity System
Total Quality Management
Quality Circles
Quality circles
Quality of Work Life
Quality of work life
Reenginnering
Alternative organizational forms
Innovation team
Statistical Process Control
Comprehensive HR indicators
Strategic Planning
Futuring/visioning
Strategic HR planning
Structural Change
Restructuring for efficiency
Team Building
Team building
Teams
Career Development
Career management
Career planning and development
Dual career paths for specialists
Networking for career development

Appendix VI

Innovative Human Resource Development Practices Reported in the Current Study

Training and Development
General
Orientation training program for new hires
Comprehensive training program
Compliance
Computer interactive training on basis safety before employees begin their job
Computer interactive training on technical competencies in multiple languages
Topic-Specific
Performance management training for all management personnel
Other Development
All employee creativity training
Organization Development
Coaching
Coaching
Focused coaching
Customer Satisfaction
Customer satisfaction
Executive/Leadership Development
Coaching for managers
Leadership oriented discussion groups
Supervisory training through the use of cohorts
Leadership identification and awareness training
Executive leadership training
Leadership development program based on an objectivist philosophy
Customized leader development program with specific messages
Core values leadership behavioral model
Electronic based leader assessment and training
Leadership development philosophy
Leadership learning forums
Leadership development learning seminars
Comprehensive, 2-year internal development program for high potential mid-managers
Quarterly managers meeting
Accelerated development process for officer potential employees
Yearly training of leadership team on new leadership dimensions
Management review
Job rotation for executive training

Appendix VI (continued)

Innovative Human Resource Development Practices Reported in the Current Study

Organization Development (Ctd.)

Knowledge Management
Knowledge sharing through the internet
Knowledge sharing
Learning
Use of games to enable learning
E-learning
Work-, team-based learning
Learning centers
Mentoring
Mentoring program for high potential employees
Process Improvement
Project management
Business process review teams
Rapid cost reduction teams
Quality Circles
Employee councils for input and problem solving
Quality and Productivity Systems
Competency-based Human Resource Development process
Performance to objectives as driver of payment increase system.
Quality of Work Life
Employee team for the creation of rewards and recognition programs
Quality of work life stress management training
Art project resulting from creativity training
Use of scooters
Affinity groups
Structural Change
Planned corporate restructure
Downsizing / layoff
Survey Feedback
Employee survey feedback communication
Employee opinion survey
Gallup-type culture survey
Self-directed online survey tools and action planning
Employee forum on intranet
Employee preferences study
Employee opinion survey

Appendix VI (continued)

Innovative Human Resource Development Practices Reported in the Current Study

Organization Development (Ctd.)
Team Building
Corporate citizenship and teambuilding
Self-directed work teams
All-employee communication meeting sessions via videoconference
Monthly newsletter-HR
Annual all employee meetings for vision alignment and strategic imperatives
Monthly all employee meeting
Monthly employee and company Win's
Creating company intranet
Values Clarification
Principles learning
Clarification of organizational goals, beliefs and values
Annual review process to reflect our Performance Driven values
Work Redesign
Restructure of inside sales group
Redefinition of engineering jobs, levels, career profession
Career Development
Career Path Planning
Career pathing for R&D personnel
Innovative process to select CEO and presidents
Career development for OD

Appendix VII

Innovative Human Resource Development-Related Practices Reported in the Current Study

HR Planning
New workforce planning system
Centralized HR with a strong business unit connection
Outsourcing of some HR processes
HR structure to support business units
Building an employee brand
Integrated succession and manpower management
Sigma talent acquisition process
Alignment of management strategy with organization's business goals
Talent assessment & succession planning process
Succession management system
Connecting diversity to business strategy
Partnership with management to help mentor and develop associates
Succession Planning
Strategic HR planning
Strategic alliance with outside firm
Goal setting with specific technique
Succession planning for OD
Consulting services for OD for high profile areas of the company
Creation of the "Talent Pipeline" development platform to leverage all talent and to develop ledership talent
Identifying and placing employees in development jobs
Succession planning process
Creation of a Telent Development Program for high potential team members
Competency evaluation and training to fill void
Human resource development planning
Performance Management
Quality program audits
No-rating performance reviews
Performance feedback process improvement
Performance appraisal system that focus more on coaching to improve performance
Performance management process
On-line performance appraisal
On-line 360 degree performance feedback process
Improved performance management
Performance management system
Abolishment performance reviews
Goal aligned performance management

Appendix VII (continued)

Innovative Human Resource Development-Related Practices Reported in the Current Study

Selection and Staffing
Recruiting processes
Behavioral interviewing
International employment contracts
Flex work force
Part time transition program
In-house recruitment "agency"
Staffing strategy
New employment process
Process for hiring in-store hourly
Implementation of pre-employment screening
Pre-employment personality testing for entry level employees
Development of a centralized staffing organization, leveraging technology and increasing talent hiring
Expansion of campus recruitment
Recruitment programs designed for specific business strategies