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## Exploring the managerial intuition and knowledge of managers in Mexico's *maquiladora* industry

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EXPLORING THE MANAGERIAL INTUITION AND KNOWLEDGE OF  
MANAGERS IN MEXICO'S MAQUILADORA INDUSTRY

A Dissertation

by

JOSÉ CASTILLO

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University of Texas-Pan American  
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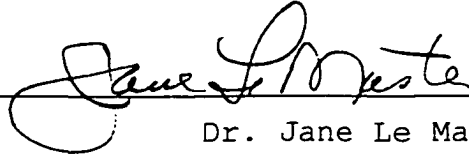
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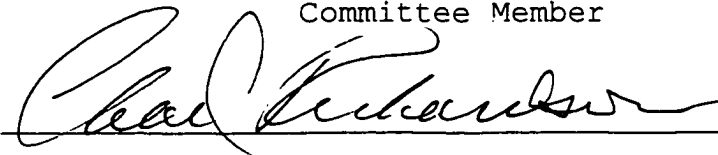
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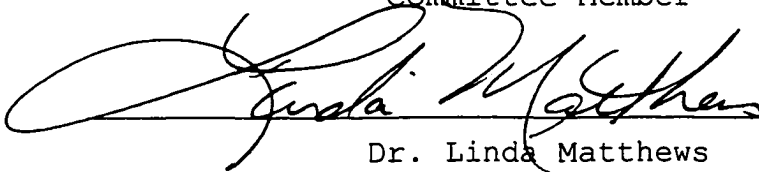
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## ABSTRACT

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Decision-making has been a subject of interest for management scholars since the scientific management era (Wren, 1994). Brockmann and Simmonds (1997) and Guinipero, Dawley and Anthony (1999) studied the link between managerial decision-making and tacit knowledge in the effort to identify important cognitive elements in the day-to-day decision-making processes of firm managers. Despite their bold and innovative aims, however, Brockmann et al. (1997) and Guinipero et al. (1999) were weakened by their fundamental assumption that tacit knowledge is synonymous to intuition, and by inconsistencies in their research goals and methods. This dissertation addresses these shortcomings.

The contributions of this research to the realm of management studies are as follows; first, it extends the studies by Brockmann et al. (1997) and Guinipero et al.

(1999) to an international setting by surveying managers in Mexico's *maquiladora* industry to explore the link between intuition and tacit managerial know-how. The second valuable contribution of this study is that it tests the link between managerial know-how and intuition and the number of promotions, gender and the geographical proximity of *maquiladora* managers to the border; these variables have been theoretically linked in the literature but have yet to be tested empirically.

Third, this study adds Mexico to the growing roll of test countries for two long-standing and oft-utilized surveys by Wagner and Sternberg (1991) and Parikh et al. (1994) used for assessing tacit knowledge and intuition. These survey instruments have been applied in fifteen countries in five continents, yet have never been tested in the largest Spanish speaking culture in the world. It stands to reason that by testing Mexican nationals, the universality of these surveys could be greatly enhanced.

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"Civilization advances by extending the number of important operations which we can perform without thinking about them"  
-Alfred North Whitehead

## CHAPTER I

### INTRODUCTION

Knowledge and the firm have been of focal interest in management studies perhaps due in part to our efforts to better understand today's "new economy" and the forces of "globalization" that shape it (e.g., California Management Review, Winter, 1998; Emergence, Spring, 2000; International Journal of Management Review, Winter, 2001; Organization Science, Spring, 2002; and Strategic Management Journal, Winter, 1996). One general conclusion to draw from the myriad of studies is that in the new economy, competitive advantage will accrue to those organizations better able to harness the know-how of firm employees (Donaldson, 2001). As a result, one burgeoning theme in this literature is ascertaining the important knowledge firm employees possess and how best to assess, store, disseminate and safeguard such knowledge (Athanassiou and Nigh, 1999; Carlsson, Dahlberg and Drew, 2000; Collins, 2001; Crowley, 1999; Fox, 1997; Goldman, 1990; Haldin-Herrgard, 2000; Herbig, Bussing and Ewert, 2001; Howells, 1996; Nestor-Baker and Hoy, 2001; Nyce and Timpka, 1993; Pearce, 1995; Smith, 2001; Zaira and Rosen, 2000). A second emergent theme is the understanding

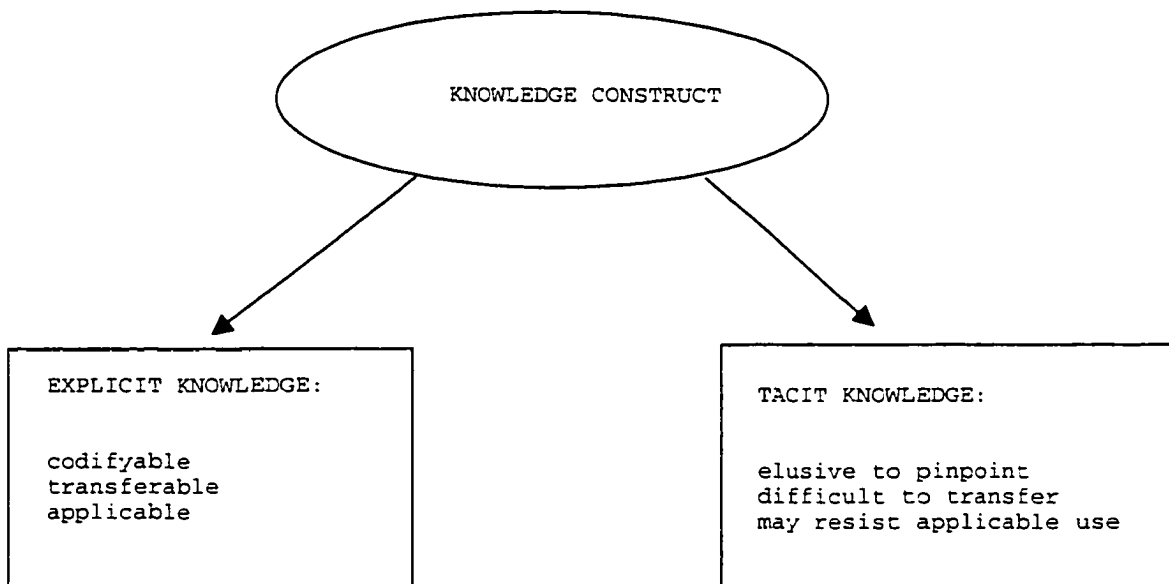
of the content, context and deployment of knowledge in its explicit and implicit forms (Augier, Shariq and Vendelo, 2001; Herschel, Nemati and Steiger, 2001; Linde, 2001; Smith, 2001). This study probes these two important research themes in context to managerial decision-making in Mexico's *maquiladora* industry.

### Two Basic Types of Knowledge in the Literature

On surveying the myriad of knowledge related writings it appears the foundation rests on Polanyi's (1966) seminal idea that "knowledge" is a dichotomous construct (figure 1); Knowledge, Polanyi (1966) argued, is made up of two basic components, "explicit knowledge" (EK) and its more amorphous counterpart, "tacit knowledge" (TK). Polanyi (1958) held that the knowledge we as humans are aware of possessing and which we consciously make use of (i.e., explicit knowledge) is under-girded by stocks of a more amorphous, rather innate knowledge called tacit knowledge. Ever since Polanyi's original arguments nearly half a century ago, these notions of knowledge have given rise to more refined gradations and classes of knowledge (Blackler, 1995; Cook and Brown, 1999; Grant, 1996; Fleck, 1997; Lam, 1997), as well as many attempts at truly understanding this form of knowledge (Ancori, Bureth and Patrick, 2000; Chervinskaya and Wasserman, 2000; Grimaldi and Torrisi, 2001; Herschel, Nemati and Steiger, 2001; Nestor-Baker and Hoy, 2001; Ray

and Little, 2001; Wong and Radcliffe, 2000). Other efforts at understanding tacit knowledge further have been along the lines of the ever important yet difficult task of assessing tacit knowledge (Ambrosini and Bowman, 2001; Brockmann and Simmonds, 1997; Gordon and Gow, 2001; Guinipero, Dawley and Anthony, 1999).

Figure 1. Dichotomy of Knowledge



### Characteristics and Importance of Tacit Knowledge

In contrast to explicit knowledge, (i.e., knowledge easily codified in the form of books, procedure manuals, diagrams, blueprints, databases, and so forth), tacit knowledge is an unconscious faculty that has been argued to be the basis of skillful, artistic (Barba, 2000; Polanyi, 1966) and athletic (Berman, Down and Hill 2002; Masters,

1992) performance given that tacit knowledge is at the center of human motor-skills. It follows that tacit knowledge must be something quite ineffable and far removed from a person's awareness, yet such a fundamental aspect of our functioning that we may continually rely upon it to carry out coordinated motor-actions (Myers and David, 1992) and even speech (Chomsky, 1980; Polanyi, 1970). Similar arguments have been made in terms of the ability to expertly operate machinery and use hand tools with great dexterity (Myers and David, 1992, 1993).

Given tacit knowledge is innate and ineffable, it follows that this form of knowledge would be hard, if not impossible, to codify or easily and knowingly apply. Therefore, the argument goes, these qualities are what makes tacit knowledge such a key element of production and innovation processes (Carlile, 2002; Galunic and Eisenhardt, 2001; Howells, 2002; Tsai, 2001), as well as the research and development function (Collins, 2001; Wong and Radcliffe, 2000). According to Moon (1999), over time, tacit knowledge becomes so ingrained in an organization that it soon becomes "essential to a firm's sustained competitive success" (p. 169). In other words, tacit knowledge is "sticky knowledge"--sticky in the sense that knowledge is "stuck" in people's heads and cannot be easily codified, which makes tacit knowledge something no other firms can easily appropriate

and exploit. Therefore it is this "sticky" quality of tacit knowledge that gives the original firm a competitive advantage (von Hippel, 1994; Szulanski, 1996). Moreover, while some have long seen tacit knowledge as a critical element at the organizational level (Granovetter, 1985; Nelson and Winter, 1982; Williamson, 1975), others have recently taken the importance of tacit knowledge to another level of aggregation by the argument that whole industries may move along certain continuums of knowledge transfer, exploitation, and obsolescence (Alic, 1997; Boisot, 1998; Teece, 2000).

#### Measures of Tacit Knowledge as Intuition

Research on tacit knowledge as a form of intuition has recently been of interest to psychologists and it appears pursuit of this stream of research holds promise for a workable metric of the construct. This view is crystallized in Shirley and Langan-Fox (1996) argument that:

The amount of implicit knowledge an individual has increases with exposure and experience. It is therefore of interest to compare individuals who differ in the amount of experience they have had, in their intuitive ability, and on other related variables (p. 572).

Pursuing this line of inquiry, Brockmann et al. (1997) and Guinipero et al. (1999) attempted to measure tacit

knowledge and intuitive thinking as it relates to a manager's experience gained at distinct levels of the organization. Brockmann et al. (1997) studied 110 CEO's from firms across a broad spectrum of industries and firm sizes, and reported mixed results in their measures of tacit knowledge and intuition. Guinipero et al. (1999) measured the use of tacit knowledge on the part of purchasing managers and reported some plausible connections between the two concepts, tacit knowledge and intuition.

On closer examination, however, one finds both studies lack certain clarifications that raise lingering doubt and uncertainty as to the argued relationship between the concepts of tacit knowledge and intuition. There are also certain shortcomings in the hypotheses investigated (Guinipero et al., 1999) and the methodology undertaken (Brockmann et al., 1997), that make the results of these studies uncertain and the conclusions somewhat doubtful.

While these studies represent pioneering work towards establishing tacit knowledge as a form of intuitive thinking, there remains work to be done before persuasively concluding that the two concepts, tacit knowledge and intuition are one and the same. Among the first tasks is to demonstrate, through more robust statistical methods, that tacit knowledge and intuition are correlated, and that the

two variables exhibit concomitant variation in relation to experience as well as other plausible variables.

### Study Purpose

This dissertation is guided by the following fundamental question borne out of the studies by Brockman et al. (1997), Guinipero et al. (1999):

What is the relationship between tacit knowledge and intuition and what is their relation to a *maquiladora* manager's experience on the job, the amount of face-to-face contact he or she has with American superiors, his/her success on the job, and his/her gender?

To study this question it is necessary to pursue issues that may be more germane to cognitive psychology yet of focal interest as they are closely linked to managerial decision-making. For instance, Mintzberg (1979) proposed that management is carried out using both hemispheres of our brains; the left hemisphere, that controls analytical-logical forms of thought, and the right hemisphere, that controls our more "holistic, relational" ways of thought (p. 5). Analogous arguments appear in the knowledge literature that propose managers are reliant on tacit knowing, something beyond the explicit-analytic skills learned in the business schools that produce most managers (Argyris, 1999;



Brutton et al., 1994; Coff, 1999; Gordon and Gow, 2000; Guinipero, 1997; Levitas et al., 1997; MacDuffie and Helper, 1997; Miller and Shamsie, 1996; Nestor-Baker and Hoy, 2001; Prahalad, 1998; Scott et al., 1996; Shenkar and Li, 1999; Spender, 1996; Szulanski, 1996; Tobin, 1998). Sternberg (1997) for example, argues that "managerial intelligence", or the ability to manage tasks, one-self and others, is a form of tacit knowing. According to Sternberg (1997), "managerial intelligence" best describes a certain kind of business acumen for decision-making that is above and beyond the general intelligence normally measured via standard psychometric tests (i.e., IQ tests).

These arguments contrast with studies of Mexican managers in the Latin American literature where research seemingly corroborates both, the idea that managers are right-brained (Alvarez, 1996; Cifuentez, 1994) and the contradictory idea that managers are left-brained in their decision-making (Alvarez, 1993; Gastélum and de la Peña, 1990). Falling on the left-brained side of the argument, Agor's (1988) study of Hispanic managers found that both, male and female managers were more analytical rather than intuitive in their decision-making, and were the least intuitive behind African-American managers and Caucasian managers, respectively. Conversely, Parikh et al. (1994) found both, men and women to be more intuitive, and women to

be even more intuitive than men in three (Japan, U.S. and UK) of the nine countries in his study.

### Importance of Study

The ambiguity in tacit knowledge and intuition studies represents not only an opportunity for exploring the connection between these two concepts, but it also represents an opportunity to add clarity to the literature on the decision-making style of Mexican managers.

### Exploring Tacit Knowledge and Intuition

This study represents the first test linking the constructs of tacit knowledge and intuition using two separate scales. Tacit knowledge is measured using Wagner and Sternberg's (1991) Tacit Knowledge Inventory for Managers (TKIM), and intuition is measured using Parikh et al.'s (1994) International Survey on Intuition. This is to test whether that tacit knowledge and intuition are related concepts, and both may be instances of the "managerial intelligence" to which Sternberg (1997) speaks. Previously, the relationship between these two constructs was only assumed to be true by Guinipero et al. (1999) thus calling into question their findings. On the other hand, Brockmann et al. (1997) did seek to demonstrate that tacit knowledge

and intuition were the same concept; however, the results of this study are unclear due to problems in their research instrument.

Extending Previous Measures of Tacit Knowledge and Intuition into Mexico

Another point of significance of this research is that it is the first time Wagner and Sternberg's (1991) TKIM instrument and Parikh et al.'s (1994) intuition surveys have been administered in the country of Mexico. Testing *maquiladora* managers in Mexico could help further the argument that tacit knowledge is a basic human faculty as first argued by Polanyi (1966), and which has slowly been demonstrated for populations in the United States (Wagner and Sternberg, 1985), Kenya (Sternberg et al., in press), Canada (Kerr, 1995), Brazil (Colonia-Willner, 1998), Australia (Gordon and Gow, 2000), and Russia (Grigorenko et al., working paper). The same is true for Parikh et al.'s (1994) extensive study of intuition that spanned nine countries and involved 1,312 managers. While intuition might have more acceptance and understanding in the psychology literature, Parikh et al.'s (1994) findings and their relevance to management will be strengthened by testing the second most populous country in Latin America, and the largest Spanish speaking country in the world.

## Determinants of Elevated Levels of Tacit Knowledge and Intuition

A third valuable contribution of this study is the test of the link between managerial know-how and intuition and the number of promotions, gender, and geographical proximity to U.S. parent firms. These variables have been theoretically linked in the literature yet have not been empirically tested to date.

## Potential as Practical Tools for Determining Management Talent

This research could help establish either or both, the Tacit Knowledge Inventory for Managers (Wagner and Sternberg, 1991) and International Survey on Intuition (Parikh et al., 1994), as the fundamental basis for a new and more effective way of assessing managerial talent in Mexico and other Spanish speaking countries. Sternberg (1997) suggested that the TKIM might represent yet another dimension for testing for management talent beyond the normal battery of accepted intelligence tests, something already being argued for Australian firms by Gordon and Gow (2000). Since selection of *maquiladora* managers is a subject on which the management literature is mostly silent, it could prove beneficial to demonstrate that testing for "managerial intelligence" might be a good predictor of

managerial success in Mexico as Sternberg (1997) suggests should be the general case.

### Development of Study

The study is developed as follows; Chapter II presents a review of the literature on tacit knowledge and intuition. Chapter III establishes the research hypotheses focused on *maquiladora* managers and presents the methodology and model for testing the proposed relationships. A discussion of the findings and interpretations along with concluding remarks and the managerial implications of this study are presented in Chapter IV. Survey instruments are provided in the accompanying appendices.

## CHAPTER II

### THEORETICAL BACKGROUND

The framework for this research is founded on the relevant literature regarding the concepts of tacit knowledge, intuition, and managerial decision-making, particularly, the decision-making styles of Mexican *maquiladora* managers. A brief overview of this literature is presented first. This is followed by similar discussions on intuition and decision-making from the perspectives of psychology and management. Last, studies by Guinipero et al. (1999) and Brockmann et al. (1997) that motivated this research are discussed in-depth.

#### Tacit Knowledge

The notion of tacit knowledge evolved from M. A. Polanyi's (1958) early ideas about the unfolding of the sciences in which he held that creativity and discovery had or were spurred on by an unspoken and mysterious type of knowledge. Polanyi (1966) later argued that artists and scientists alike, while endowed with incredible talent and creative genius actually act on something more to achieve

their discoveries and creations; an ineffable form of knowledge that these individuals could only "know more than tell" (p. 4). From another perspective the holder of tacit knowledge is unaware of possessing it, as the acquisition process unfolded unconsciously, it is a process in which individuals learn things implicitly without concentration or effort (Reber 1989). Reber (1989) states:

(a) implicit learning produces a tacit knowledge base that is abstract and representative of the structure of the environment (b) such knowledge is optimally acquired independently of conscious effort to learn; and (c) it can be used implicitly to solve problems and make accurate decisions about novel stimulus circumstances. (p. 219)

Reber's point speaks to an important characteristic of tacit knowledge argued by many in the business literature; that employees with high stocks of tacit knowledge must give firms a competitive advantage because of its subconscious nature (Barney, 1995b; Boisot, 1995, 1998; DeTienne and Jackson, 2001; Lubit, 2001; McAulay, Russell and Sims, 1997; Narasimha, 2000).

Another way of gleaning this form of competitive advantage is the characterization of tacit knowledge as a form of "collective knowledge" argued to pervade inside and

outside organizations (Brown and Duguid, 1998, Cook and Brown, 1999; Minkler, 1993; Spender 1994a,b). These ideas may best be described as a form of "group think", knowledge not attributable to anyone in particular, but rather part and parcel of systems or groupings of people that jointly learn and daily solve both structured and unstructured problems. These ideas are focal to Spender's (1992, 1994a) idea of collective tacit knowledge and Cook and Brown's (1999) idea of group tacit knowledge, two ideas prominent in the strategy and organization theory literature. As Spender argues (1994), such systems of collective knowledge are what provide the necessary impulse that moves organizations toward survival, success and growth. Given these ideas, it is not far-fetched to see that at the lower levels of hierarchical organizations, individuals may not only function with less than full detailed awareness of the outcomes of their toil, but may also function clueless as to the organization's mission, objectives, strategy, and planning<sup>1</sup>. Yet another way to view this form of tacit knowledge is that at any one moment the organization is pervaded by a multitude of "small decisions" (Barney, 1995a) dispersed throughout its boundaries. And these small decisions jointly determine a greater, more consequential

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<sup>1</sup> A good example would be *maquiladora* workers at an electric motors assembly plant, where workers are unaware of the full line of products their motors go into once the product comes back to this country.



course for the whole organization. Given the dispersed and aggregate form of decisions within organizations, it would be an exercise in futility for a competing firm to try to mimic such a process or environment. Thus, the tacit knowledge grounding the multitude of firm decisions gives such a firm a unique competitive advantage.

In seeking a competitive advantage, Arora (1996) proposes multinational organizations knowingly and unknowingly, contract for tacit knowledge through mergers, acquisitions and joint ventures with foreign partners. Following Barney (1995b), it stands to reason that tacit knowledge is more desirable over "explicit" knowledge assets, which are easily attainable in the open market. This is because process information, engineering design, and scientific facts and figures are found in texts and journals, if not, these can be easily elicited from knowing individuals and codified. It is much harder however, to acquire the ineffable knowledge locked away in people's heads', therefore tacit forms of knowledge are much sought after by multinational enterprises in foreign markets. An example of a form of knowledge that firms seek in entering foreign markets is Hennart's (1991, p.485) "local knowledge", which includes knowing how things are done locally, the workings of formal and informal authority structures, governmental regulations, and business and

infrastructure conditions. Inkpen and Beamish (1997) support this view with their argument that some firms enter into international joint ventures (IJVs) both as a way of penetrating a market in the most expedient way, and as a way of gaining a local partner's superior "local knowledge". A similar idea is Fleck's (1997) "contingent knowledge", which he defines as "...[superior] knowledge/information that is embedded in the working context" of joint production and control between partnering firms and which is much desired and sought by competing firms (p. 383).

The focus on what can best be called the process view of tacit knowledge is also found in Blackler's (1995) idea of "embedded knowledge", "knowledge which resides in [the] systemic routines" of successful firms (p. 1026). Blackler (1995) argues this form of knowledge is an example of knowledge usually "subsumed" under the notion of tacit knowledge, but regardless of how it comes to be defined, it seems to have a personal and collective character to it that makes it so vital to the functioning of a firm. Fleck (1997) sums up these ideas succinctly with his statement that tacit knowledge tends to be "extremely voluminous and rarely concentrated in one person" (p. 391).

From a behavioral context, Argyris (1999) sees tacit knowledge "...[as] the primary basis for effective management" (p. 123) that would include having a finger on the pulse of

the firm's routines and culture. This is echoed in Levitas et al. (1997) view that tacit knowledge is the "understanding of a firm's implicit norms underlying operating procedures" (p. 21) and Brown and Duguid's (1991) "communities-of-practice". That is, there are organizations where the common language may be laden with implicit meaning and specialized words (i.e., professional terminology) that are crucial aspects of its functioning and management (Bloor and Dawson, 1994).

From a pure skill perspective, there are a number of arguments that see tacit knowledge as something embedded in the unconscious, which seems to guide motor action and rote physical acts (Davis and Myers, 1990; Masters, 1992; Myers and Davis, 1992, 1993; Nelson and Winter, 1982; Polanyi, 1966). That is, carrying out skillful physical tasks involves unconscious control (tacit knowledge) over the very movements that lead to the successful completion of those tasks. Moreover, deliberate attempts to focus on those individual movements may actually lead to failure as argued by Polanyi (1966). Masters (1992) argues this is true for professional golfers and all other kinds of skilled masters and workers, and may be true for managers who often must make managerial decisions to highly unstructured problems with less than perfect knowledge.

### Intuition

Among the many managerial roles found by Mintzberg (1979) in his seminal studies, he noted that the manager as planner and the manager as the one who "manages," are two distinct roles emanating from different parts of the brains. The implications of this view are many, from how tasks are handled, to the process by which they are handled, to the people who come under the manager's control and how managers are trained. Mintzberg hypothesized that "the important policy processes of managing an organization rely to a considerable extent on the faculties identified with the brain's right hemisphere" (p. 9). As evidence for this, Mintzberg offered his observation that managers often "read" their workers in the process of exchanging information<sup>2</sup>. And the type of information managers consider and rely upon as being important often consists of no more than "impressions and feelings about other people, hearsay, gossip...[and, even]...hunches" (p. 10). What Mintzberg described has variously been called intuition, insight and tacit knowledge (Shirley and Langan-Fox, 1996).

Possibly the earliest proponent of such an idea was Barnard, who recognized certain intangible aspects of how managers "manage". He wrote of the executive's function:

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<sup>2</sup> Noteworthy here is the face-to-face contact that Howells (2002) argues is a crucial and necessary aspect of managing and an important variable in this study.

The means utilized are to a considerable extent concrete acts logically determined, but the essential aspect of the process is the sensing of the organization as a whole and the total situation relevant to it. It transcends the capacity of merely intellectual methods, and the techniques of discriminating the factors of the situation. The terms pertinent to it are "feeling," "judgment," "sense," "proportion," "balance," "appropriateness." It is a matter of art rather than science, and is aesthetic rather than logical. For this reason it is recognized rather than described and is known by its effects rather than by analysis (Barnard, 1938, p. 235 as cited in Vail, 1989).

Echoing Mintzberg and Barnard and concurrent to the development of much of the left-brained methods of management studies, are McGregor's (1967) views on the professional manager. McGregor argued, "[a manager's]... loyalty, enthusiasm, drive, commitment, acceptance of responsibility, and self-confidence are all emotional variables" (p. 23). In other words, emotions are inextricably bound to the approaches and processes of successful management, and are no less important than motivation and intellectual creativity. According to

McGregor all are processes rooted in strong emotional forces.

Echoing these ideas are Kouzes and Posner (1995) who argued, "intuition is the wellspring of vision" (p. 104), hence, it is an intangible quality to effective management. This view is carried further in Parikh et al.'s (1994) argument that management intuition is a way of visioning that is at once "inspiring" and "exhilarating" to the employees under a manager's span of control (p. 85). Therefore, managerial vision is analogous to Mintzberg's (1979) argument for reading the bigger "big picture", something that managers glean or discern that is over and above the empirical data they analyze with the left-side of their brains (Kouzes et al., 1995; Parikh, 1994).

Perhaps because of this rather ethereal character to intuition, researchers have tended to equate tacit knowledge and intuition. For example, according to Stevens (1996), tacit knowledge involves inarticulable skills that go beyond the ability to analyze "mere information" (p. 7). He proposes this ability is rooted in the "intuition, insight, creativity and judgment" (p. 7) that help one to select, use, manipulate and process information into explicit knowledge. An earlier validation of this idea is Glaser (1995), who applied Agor's (1989) survey on intuition, and demonstrated that intuition plays a critical role in the

successful innovations springing forth from a firm's R & D labs. This view echoes the idea that mathematics (Poincaré, 1952) and science (Kuhn, 1970) are spurred-on by flashes of insight and intuition that breakaway from or extend conventional thought.

Hatsopoulos et al. (1999) made a distinction between the "logical process" and the "intuitive process" in decision-making. To them, "the intuitive process consists of implicit or tacit knowledge from which instincts and feelings are generated" (p. 142). It is the "intuitive process" that helps us make snap decisions (yes/no), but both processes are required to make the more complex and more consequential decisions in our work and personal lives.

With regards to intuitive decision-making, Rowan (1986) claims the founders of some of the most successful American corporations were intuitive in their approach to management, and some even relied on paranormal phenomena to make the decisions that eventually made them multi-millionaires. Men like C. Vanderbilt, J. P. Morgan, H. L. Hunt, R. Kroc, and R. Perot are said to have relied on a "hunches" to guide the myriad of decisions that led them to successfully establishing corporations such as McDonald's, EDS, Bethlehem Steel, and so forth.

Pursuing this apparent successful approach to managing, Agor (1989) studied thousands of managers and assessed

differences in intuitiveness across gender, ethnic and occupational variables. Agor (1989) found varying degrees of intuitive and analytical thinking, for example women were found to be more intuitive than men, with Hispanic men being less intuitive among all ethnic groups. In a similar study Parikh et al. (1994) assessed the intuitiveness of managers in nine different countries but, unlike Agor's (1989) mixed results, Parikh et al. (1994) found most managers to be intuitive; only Swedish managers were found to be strongly analytical in their decision-making. From all appearances, findings from these studies as well as Wagner and Sternberg's (1991) TKIM survey motivated or played an important role in the studies by Brockmann et al. (1997) and Guinepero et al., (1999).

In summary, it appears from the literature that certain researchers have posited and tested tacit knowledge as a managerial skill (i.e., Sternberg 1997; Wagner 1987; Horgan and Simeon, 1990) and others have tested intuition as a managerial faculty (i.e., Agor, 1989; Parikh et al., 1994). And it appears that these two streams of research have been brought together to make the argument that tacit knowledge and intuition are the same (i.e., Shirley and Langan-Fox, 1997; Torff, 1999; Stevens, 1996). In an apparent pursuit to ascertain this view this connection was recently explored by Brockman et al. (1997) and Guinipero et



al. (1999) in two studies central to this research which are discussed in detail later.

Are Maquiladora Managers Intuitive or Analytical in  
Decision-Making?

The thinking style of Mexican managers has rarely been explored in the Latin American management literature, and those few studies that discuss the issue leave the question rather unclear. For example, little is found in terms of thinking style in Alvarez's (1993) study of the motivation and the decision-making process of Latin American managers, as both were found to be unrelated. Leading to the suggestion that managers are analytical in their decision-making. On the other hand, findings from Alvarez's (1996) other studies seem to support Sternberg's (1997) idea of "managerial intelligence", a form of intelligence that is undetectable by standard IQ tests is at the heart of managerial success. In a study of 120 banking managers, Alvarez (1996) found that neither verbal nor analytical skills seemed to be reliable predictors of managerial effectiveness. Rather, his study indicates that what he called institutional knowledge (a mix of technical and other organizational knowledge) was one of three significant factors determining managerial success.

A plausible explanation for this is as follows; one school of thought in organizational behavior holds that much

organizational knowledge, which includes cultural norms, beliefs, practices, and firm-specific language, are all forms of tacit knowledge (Mabey, 2002). Therefore, the organizational knowledge that Alvarez (1996) holds to be important as a managerial skill may be tacit knowledge in the form of corporate culture, something that Tushman and O'Reilley (1997) argue is a critical variable of organizational success.

Alvarez's (1996) argument of organizational knowledge is supported by Cifuentes' (1994) profile of the prototypical manager, a profile that suggests a reliance on some form of tacit knowing. Cifuentes (1994) states:

We have held for a number of years that business administration is not similar to a technique applicable from the outside in, that it cannot be imported nor transferred like it is done with industrial processes, machinery or computer programs; on the contrary business administration starts with the personnel's behavior, with their most fundamental characteristics, with the ethos or their most basic culture (p. 67).

This contrasts with Gastelun and de la Peña's (1990) fundamental conclusion that Mexican managers operate by a type of "theory Y" mentality (McGregor, 1967). Gastelun and de la Peña's (1990) analysis of Mexican management by what can best be characterized as an "old" theoretical model

speaks volumes not only about their findings but also about how lagged management thought might be among management scholars in Mexico.

### Measuring Tacit Knowledge and Intuition

It appears from recent management and intuition literature that tacit knowledge has slowly been categorized into the psychological realm where phenomena such as gut feeling, sixth sense, intuition and so forth are often categorized. And it could be that pursuing this line of inquiry may help establish intuitiveness as an important aspect of the process of managerial decision-making, argued by so many of management's most influential thinkers (i.e., Barnard, 1938; McCGregor, 1967; Mintzberg, 1979). To that end, studies by Brockmann et al. (1997) and Giunipero et al. (1999) have apparently sought to establish this as fact.

Brockmann et al. (1997) studied 110 CEOs across a broad range of industries and firm sizes. Brockmann et al. (1997) sought to establish that firm CEOs use tacit knowledge and intuition in decision making and, that these may be related to each other and to the experience one builds as a manager. The results are sketchy at best given the inconclusive evidence that tacit knowledge is positively related to experience in decision-making. And any evidence suggesting a connection between tacit knowledge and intuition is lacking in the report. Two more serious problems in Brockmann et

al.'s (1997) study arise from the choice of instruments; a) connections they did not intend or knew about, and b) measures that had unintended relationships.

To begin with, Agor's (1989) seminal intuition study sought to establish that managers operate intuitively and that this intuitiveness is the key to managerial success. One of the survey instruments Agor developed for this research was drawn from "twelve questions selected from the Myers-Briggs Type Indicator (MBTI) and these were used to test a manager's underlying intuitiveness" (p. 8). Yet, Brockmann and Simmonds (1997) used Agor's instrument to develop their instrument to test not intuition but rather, tacit knowledge. The authors made the unsubstantiated assumption that tacit knowledge and intuition are one and the same. Moreover, to test for managerial intuition Brockmann et al. (1997) used the same MBTI used by Agor to develop his instrument that Brockmann et al. (1997) in turn, used to test tacit knowledge. The data, therefore, are unreliable given this unintended co-linearity between the tacit knowledge and intuition variables. Perhaps the most serious flaw in Brockmann et al. (1997) was the attempt to measure tacit knowledge with an instrument designed to measure intuition, which raises serious validity issues of the purported measures.

There are similar issues of concern regarding the study Guinipero, Dawley and Anthony (1999) conducted to test the tacit knowledge of purchasing managers. First, the authors made the flawed assumption that tacit knowledge is the same as intuition in the effort to use a measure of intuition as a proxy for tacit knowledge. Guinipero et al. (1999) state, "intuition is another form of tacit knowledge...it is a subspecies of logical thinking, one in which the steps in the process are hidden in the subconscious portion of the brain" (p. 45). Beyond this there are several other problems evident from the hypothesis tested that raise serious doubts about the data gathered and the research findings.

First and foremost, the authors note, "experienced decision makers may be more efficient and skilled in sorting and processing information and thereby make better decisions" (p. 45). This implies that older managers are able to utilize their analytical (i.e., sorting and processing of information) abilities better than less experienced managers. Yet, the researchers did not control for the effects of the subjects innate analytical abilities in testing one of their hypotheses, whether older managers make greater use of tacit knowledge than less experienced ones. In other words, the conclusion that experienced managers are better at decision-making because of tacit knowledge is not necessarily correct given experienced

decision makers also are possessed of keen analytical skills.

Guinepero et al. (1999) hypothesized that, "purchasing managers use equal amounts of formal data and tacit knowledge" (p. 45). Yet, the authors provided no explanation on how the equality of one unit of tacitly held knowledge and one unit of "formal data" is determined. Given the nature of tacit knowledge, this kind of assessment should not be possible. Moreover, there are serious issues of correlation in the data given that the experience and age measures are treated separately in two different hypotheses. Specifically, hypothesis two states tacit knowledge is connected to experience and that it should lead to better decision-making, while hypothesis three posits tacit knowledge is connected to age and this too should lead to better decision making. Yet, it is widely known that any measure of experience is related to age. That is, the greater the age the greater the experience base of individuals.

### Summary

Tacit knowledge has appeared in a myriad of realms and in a myriad of ways over the years. One way that tacit knowledge has been characterized is as psychological phenomena not unlike intuition or intuitiveness (Shirley et al., 1997). And it may be that a measure of tacit knowledge

as some alternative proxy measure may yet prove to be the best way of assessing the concept. However, Shirley et al. (1997) only made a supposition and offered no empirical basis. Perhaps in the pursuit to provide some evidence, studies by Brockmann et al. (1997) and Guinipero et al. (1999) sought to empirically establish links between these two concepts and variables of management experience, gender, and age. But given the tenuous nature of the assumption that tacit knowledge is intuition and vice versa, as well as other inconsistencies and problems in the methodologies of both studies, the findings are feeble at best, if not erroneous altogether. In a re-assessment of Brockmann et al. (1997) and Guinipero et al. (1999) original aims, what follows is an experiment that addresses the undetermined connection between a manager's stock of tacit knowledge and intuitiveness and their relationship to a manager's age, gender, and proximity to the parent firm.

## CHAPTER III

### SURVEYING MANAGERS FOR TACIT KNOWLEDGE AND INTUITION

#### Operational Definitions

In this dissertation, "knowledge" is recognized as a high-level construct that encompasses a genre of human knowing normally categorized into unique typologies in varied literature across the disciplines (Ancori, Bureth and Patrick, 2000; Blackler, 1995; Fleck, 1997; Grimaldi and Torrisi, 2001; Lam, 1997, 2000; Nestor-Baker and Hoy, 2001; Sawyer, 1999; Spindler, 1999; Teece, 2000; Wong and Radcliffe, 2000). For purposes of the test that follows, references to "tacit knowledge" or "tacit knowing" are defined as "knowledge acquired without direct help from others, that allows individuals to achieve goals they personally value" (Sternberg, 1997) and which may have an impact on the firm(s), society, or human understanding in general.

Intuition is defined as a form of psychological phenomenon that involves the instantaneous awareness of what a subject perceives as facts and truths without any



deliberate act of reasoning or logic to arriving at such facts or truths (Parikh et al., 1994).

Since these research concepts are founded on previous research and literature carried out in the United States, one ongoing concern is the construct validity of these concepts across the border in Mexico. We address this emic/etic issue, by assuming a "pseudoetic" position as originally proposed by Ronen (1986). That is, we infer the universality of both, the tacit knowledge and intuition concepts from the successful measures carried out in the United States, Russia, Brazil, Canada and Kenya regarding tacit knowledge, and measures on intuition carried out by Parikh et al. (1994) for their panel of managers spanning nine different nationalities. Moreover, the "pseudoetic" position is strengthened by pilot tests that achieved Cronbach alpha measures of .87 and .62 for tacit knowledge and intuition, respectively. These results are discussed further in the section on research instrumentation found in this chapter.

### Research Variables

Tacit Knowledge. The work by Wagner (1985), Wagner and Sternberg (1985,1991) and Sternberg (1997) and their Tacit Knowledge Inventory for Managers (TKIM) is the tacit knowledge measure adopted in this study. The TKIM is a commercially available test used to assess the degree to

which test respondents rely on tacit knowledge to answer questions regarding six work-related scenarios. The results of sixty-one (61) questions are compared against the answers given by Wagner's (1985) panel of experts across a broad range of industries. The result is an assessment of agreement (measured by the squared deviation) of the test subject's responses to that of the panel of experts. Hence, low scores; scores between 0-137 points represent high tacit knowledge level. Alternatively, a medium tacit knowledge level is represented by scores between 138-240 points, and anything higher than 241 points represents low level of tacit knowledge.

The reliability tests reported in the *TKIM User Manual* are three independent tests performed on three different test populations with resulting Cronbach alphas of .74, .80 and .78 (Wagner and Sternberg, 1991 p. 23). These results are acceptable for the purposes of basic research according to Nunnally (1978) who suggests a minimum Cronbach alpha measure of .60.

Intuition. The measure of intuition is achieved by using Parikh et al.'s (1994) International Survey on Intuition. This instrument is a semantic differential scale comprised of a set of ten paired alternatives that indicate the tendency toward intuitive thinking on one end of the scale, to logic/reasoning at the other end of the scale. An

improvement on this method is to allow respondents more choices as to how strong a particular term appeals to them. Therefore, the scale used to test for intuition will be modified to a Likert-scale with five levels between pairs of terms to indicate a respondent's inclination toward intuitiveness. The Cronbach alpha measure of this scale was .62, which, according to Nunally (1978) is acceptable for basic research. The assessment of intuition is done by adding up the total score for the ten paired alternatives that result in a classification of low orientation toward intuitive thinking for a score of 0-14 points, 15-26 points is an average orientation toward intuitive thinking, and 27-40 points is a high orientation toward intuitive thinking. The scaling of classifications this way is simply an extension Parikh et al.'s (1994) instrument scaling of 0-3 points as low orientation, 4-6 as average orientation and 7-10 as high orientation toward intuitive thinking.

Experience. This variable refers to the number of years of experience in the role of manager or supervisor of a firm, division or group within a firm.

Proximity. The variable of proximity is a dummy variable that indicates whether the respondent works in a *maquiladora* within 150 kilometers across the United States border, or whether the plant is located more than 150 kilometers from the border. This distance was selected in

such a way that the city of Monterrey, N.L., Mexico, would be encompassed as a border city. This was done for purposes of achieving balance in the numbers of maquiladoras in both categories.

Promotions. This is the number of promotions that a manager has received over the total number of years in his/her capacity as manager of an entire firm, division or group.

Gender. This is a categorical variable indicating whether the respondent is male or female.

#### Experimental Hypotheses

A key argument in this paper is that tacit knowledge and intuition have not yet been shown to be synonymous since neither Brockmann et al. (1997), nor Guinipero et al. (1999) provided evidence of (positive) concomitant variation via independent empirical tests. Therefore, using translated versions of Wagner and Sternberg's (1991) Tacit Knowledge Inventory for Managers (TKIM) and Parikh et al.'s (1994) intuition inventory the following hypothesis will be tested:

H1: The measure of tacit knowledge is positively related to the measured intuitiveness of *maquiladora* managers.

Another aim of this paper is to test whether both intuition and tacit knowledge, vary with several key management demographic variables. That is, in addition to

the managerial experience tested in previous studies (i.e., Brockmann et al., 1997; Guinipero et al., 1999) a manager's proximity to the border, the number of promotions received, and the manager's gender have been theoretically connected to tacit knowledge and intuition in the literature.

Psychologists have argued that, "...the amount of implicit knowledge an individual has increases with exposure and experience" (Shirley et al. 1997, p. 572). And this has been found to be true in the medical profession among doctors (Goldman, 1990), therapists (Bloomgarden and Netzer, 1998), and nurses (Carlsson, Dahlberg and Drew, 2000; Fox, 1997; Herbig, Bussing and Ewert, 2001; Welsh and Lyons, 2001), just as it has been found among jewelers (Baber and Saini, 1995) and school superintendents (Nestor-Baker and Hoy, 2001). These arguments lead to the following hypothesis:

H2a: The measure of a manager's tacit knowledge and intuition are positively related to the manager's years of managerial experience.

Issacs (1993), Kim (1993), Schein (1993) and Teece (1998) propose that tacit knowledge is transferable through intense dialog facilitated by one-on-one contact either in formal or informal settings. Therefore, proximity to the border could prove to be an important variable in the acquisition of tacit knowledge and the buildup of intuition for *maquiladora* managers. That is, the greater the proximity to the border the greater the opportunity for face-to-face

contact between respective managers. Support for face-to-face contact as a necessary means to transferring knowledge is found in Audretsch and Stephan's (1996) study of U.S. biotechnology firms and the medical equipment industry in England and the U.S.A in Lawson and Lorenz's (1999) piece. Audretsch and Stephan note, "the tacit nature of knowledge in biotechnology...suggests that knowledge transfer between university based scientists and biotechnology firms is facilitated by face-to-face contact and thus geographic proximity" (p. 646). This argument follows exactly what Haldin-Herrgard (2000) proposes when he states that "...the need for face-to-face interaction is often perceived as a prerequisite for diffusion of tacit knowledge" (p. 363). This argument is echoed by Howells (2002) and by Subramanian and Venkatraman (2001) who argue that tacit knowledge is best "harnessed" if firms employ "...richer mechanisms, such as face-to-face contact" to transfer know-how to foreign, overseas partners (p. 363). These findings should also be true for Mexican managers; therefore, the following hypothesis will be tested:

H2b: *maquiladora* managers in proximity to the border will have higher measures of tacit knowledge and intuition than those more distant to the parent firm.

Researchers have argued that tacit knowledge is integral to the decision making process of managers

(Sternberg, 1997; Wagner and Sternberg, 1985; Argyris, 1999). Similarly, an ability to be in touch with or practice more right-brained thought has been argued to lead to greater managerial success (Mintzberg, 1975; Block and Martell, 1989). This suggests that *maquiladora* managers possessing greater tacit knowledge and intuition should have more promotions over their less knowledgeable or intuitive counterparts. Thus, the following hypothesis will be tested:

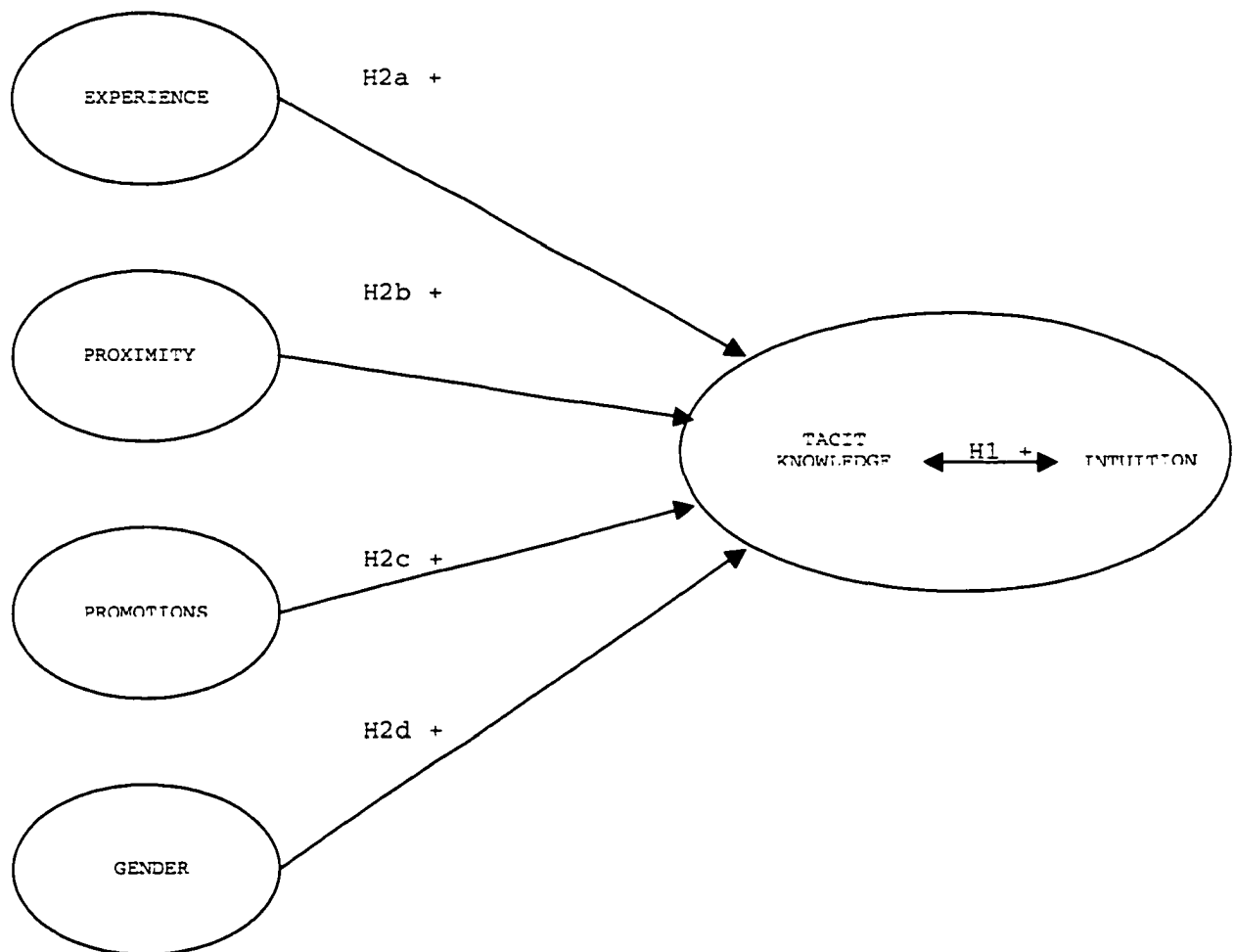
H2c: The number of promotions over the years of managerial experience will be positively related to a manager's measure of tacit knowledge and intuition.

Truman (1996) has argued that women are more intuitive than men. O'Conner (1992) found this to be true between male and female health care managers while Vinnicombe (1998) argues this to be evident at all levels of the firm. Agor (1988), however, found the opposite among Hispanic women. Agor's (1988) study found that, like their male counterparts, women managers were more left-brained, or more analytical and less intuitive in their decision-making. Horgan and Simeon (1990) sought to demonstrate that women managers possessed less measured tacit knowledge than male managers but found no difference in the two gender groups. Given such contradictory findings, it may prove useful to assess this for *maquiladora* women managers. Hence, the following hypothesis will be tested:

H2d: Women managers will measure higher in their tacit knowledge and intuition than their male counterparts.

The relationships proposed by these hypotheses are summarized in the conceptual model of interactions (see Figure 2) between the variables: tacit knowledge, intuition, experience, proximity, promotions and gender. Alternatively, the mathematical model of the hypothesized interactions is shown in Figure 3 below.

Figure 2. Conceptual model of Interactions





The dependent variate in the model is made up of Tacit knowledge (TK) and intuition (INT) on one side, while the independent variate consists of years of experience (EXP), proximity to the parent firm (PROX), the number of promotions (PROMOS) and the gender (GENDER) of test subjects.

Figure 3. Canonical Correlation Analysis Model

$$TK + INT = \beta_0 + EXP\beta_1 + PROX\beta_2 + PROMOS\beta_3 + GENDER\beta_4$$

Where:

TK = tacit knowledge measure  
 INT = intuition measure  
 EXP = number of years managerial experience  
 PROX = dummy variable indicating the proximity to sources of knowledge at parent firms, 1=proximal, 0=other  
 PROMOS = the number of promotions received over EXP years of experience  
 GENDER = categorical variable for the sex of test subject, 0=female, 1=male

### Research Methodology

#### Research Instrument

The research instrument (see appendix A) is a combination of Wagner and Sternberg's (1991) TKIM survey and Parikh et al.'s (1994) International Survey on Intuition.

Both instruments were translated into Spanish and back translated by three professional translators in addition to the author, who is a native speaker of Spanish, in order to eliminate errors in conceptual understanding by *maquiladora* managers. Moreover, to insure reliability of the measures, both instruments were pilot tested on two separate groups consisting of 10 businessmen and 95 students, all of which were native speakers of Spanish. The Cronbach alpha measures of reliability were .87 and .62 for the translated tacit knowledge and intuition surveys, respectively. These values are within the acceptable range (.60 and above) for basic research according to Nunnally (1978).

#### Sample Population

The target population for this study was managers at all levels of the approximate 3,750 *maquiladoras* that employ an estimated 1,264,390 individuals across Mexico ([www.maquiladirectory.com](http://www.maquiladirectory.com), April, 2001). The population of *maquiladoras* is categorized by industries in terms of the number of plants and the number of employees in Table 1.

#### Sample Selection

Poor results from an initial e-mail census of managers found in the entire 2000 edition of *The Complete Twin Plant Guide, Vol. 1-3* published by Solunet Info-Mex Inc., that netted only 12 replies required a different sampling design.

Consequently, selection became a combination random/- convenience/snowball sample of *maquiladora* managers for this study.

Table 1. Plants and Plant Employment by Industry\*

ACTIVITY	# OF PLANTS	# EMPLOYEES
Food Processing & Packing	82	9,178
Textiles & Apparel	1,129	286,334
Shoes & Leather Goods	61	7,839
Wooden, Metallic Furniture & Parts	402	63,771
Chemical Products	157	25,442
Tool & Equipment	57	14,926
Transportation Equipment	268	232,399
Machinery and Equipment Assembly	170	100,960
Electrical & Electronic Equipment	582	323,637
Sporting Goods & Toy Assembly	59	13,552
Other Manuf. Industries	541	144,315
Services	244	46,480
Nationwide <i>Maquiladora</i> Totals	3,750	1,264,390

\* Source: [www.maquiladirectory.com/statistics](http://www.maquiladirectory.com/statistics), April, 2001

This was conducted as follows; first, the author relied on confederates inside *maquiladoras* in Chihuahua, Tijuana, and Reynosa to survey personnel inside their employer firms. The same confederates were asked to pass surveys on to

relatives and friends who were in *maquiladora* administration.

In a similar way, acquaintance professors at Sul Ross State University and the University of Chihuahua were asked to survey *maquiladora* management professionals attending classes at their respective universities. Other acquaintances in El Paso, Texas were asked to survey their friends located in *maquiladoras* in Ciudad Juarez, Chihuahua, Mexico. Lastly, the author enlisted the help of the *maquiladora* association (AMMAC) in Mexicali, Baja California, Mexico to gather surveys from managers in their member firms. It was only after resorting to this approach that 99 surveys were gathered for inclusion in the study. The descriptive statistics for this sample are shown in Table 2.

#### Sample Size

Hair et al., (1998) suggest that in order to avoid "overfitting" the variate to the sample, the minimum number of observations for canonical correlational analysis conducted to test these hypotheses is at least ten (10) observations per independent variable. The total 99 managers that responded to the survey met this criterion. One note on the data above, is that while it would have been desirable to have a representative sample of all 32 states

in Mexico, the sampling did include the four states (see Table 3) with the highest concentration of maquiladoras; Baja California, Chihuahua, Nuevo Leon, and Tamaulipas, respectively.

Table 2. Descriptive Statistics

VARIABLE	MINIMUM	MAXIMUM	MEAN	SD. DEV.
Booknow	5.0	90.0	37.17	21.26
Exprince	30	98.0	67.9	18.27
Compay	0.0	28.0	4.636	5.088
Totpay	0.0	38.0	7.242	6.105
Promos	0.0	10.0	1.172	1.363
Compexp	0.0	25.0	5.07	4.776
Totexp	0.0	32.0	7.78	5.932
Tetatet	.0	4.0	2.172	1.286
Emailcon	.0	4.0	2.212	1.423
phonecon	.0	4.0	2.182	1.320
tacitk	.0	2.0	1.0	.5809
ntuition	.0	2.0	.9394	.37302

### Data Analysis

Descriptive statistics for the sample of managers (see Table 2) shows that total management experience (TOTEXP) averaged approximately 7.8 years, and management experience at the current job (COMPEXP) averaged approximately 5 years.

Over the total years of experience, managers averaged 1.17 promotions (PROMOS). Similarly, raises received over manager's careers (TOTPAY) averaged 7.24, while raises at the current job (COMPAY) averaged 4.64. Reliance on book knowledge for daily decision-making (BOOKNOW) was reported to be an average of 37.17%, while reliance on experience (EXPRINCE) for decision-making averaged 67.9%. Regarding contact with their U.S. counterparts, managers reported average timeframes of slightly less than a month for three forms of contact, face-to-face (TETATET), by e-mail (EMAILCON), and by phone (PHONECON).

Table 3. Representative Table of Cities/states

STATE	CITY	# Cases
Baja California	Mexicali	16
	Tijuana	6
Chihuahua	Chihuahua	47
	Cuidad Juarez	10
	Parral	2
Durango	Gomez Palacio	1
Nuevo Leon	Monterrey	3
	Santa Catarina	1
Queretaro	Correguidora	1
San Luis Potosi	San Luis Potosi	1
Tamaulipas	Matamoros	1
	Reynosa	10

In addition to the metric variables above, two categorical variables under study but not listed are the manager's gender (SEX), of which there were 22 female and 77 male in the study. Additionally, 34 of the respondents were deemed to work at maquiladoras within proximity (PROXIMY) to the U.S. border.

The variables INTRAW and TACITR represent the raw scores for the intuition and tacit knowledge variables, respectively. These values were recoded to represent a low intuition orientation or 0 for scores between 0-14 points, medium intuition orientation or 1 for scores between 15-26, and high intuition orientation or a 2 for scores between 27-40 points. Raw tacit knowledge scores between 0-137 points were recoded as high tacit knowledge level or 2, a medium tacit knowledge level or 1 for scores between 138-240 points, and anything higher than 241 points as a low level of tacit knowledge or 0. These scores were coded into new INTUITION and TACITK variables.

### Findings

Survey findings of the 99-maquiladora managers tested are interesting and may have broad implications for the future. First and foremost, of the five relationships hypothesized in Figure 2 (page 35) not one is supported. These results may speak to certain greater theoretical issues to be discussed later. Second, is that acceptance of

the null hypotheses can be made not only on the basis of the sign and size of the coefficients of the canonical functions but also by the insignificance of the t-values for these coefficients. These findings are described on below.

First, while it may be said that the data suffer the problem of multicollinearity with some correlations between gender (SEX) and experience (TOTEXP) (.207,  $p < .01$ ), and gender and the intuition (NTUITION) variable (.186,  $p < .01$ ), according to Hair et al. (1998) canonical correlation is the most robust multivariate technique against violations of the four general data assumptions (i.e., homoscedasticity, normality, linearity, and no correlated errors). Hence, the low level of correlation of the gender variable to other variables can be ignored. What cannot be ignored is the low level of correlation between the tacit knowledge and the intuition variables; as it stands to reason that constructs considered "alike" should show much higher and significant correlation. Moreover, if we are to consider these as interchangeable concepts as Shirley et al. (1997) argue, then it follows that both should be correlated canonically and between dependent variate items.

As is evident from Table 4 (p. 48), there is some level of correlation between intuition (NTUITION) and tacit knowledge (TACITK) but it is somewhat low at .186 at the  $p < .01$  level. Moreover, canonical correlations of .151 and



.095 for functions 1 and 2 respectively, are insignificant as is evident from the canonical correlation presented in table 5 below. This implies that even with significance, the resultant canonical  $r^2$  is indicative of little explicative power of the independent variables on the dependent variate. In other words, well over 84% of the variation in the measured tacit knowledge and intuition is attributable to chance.

Table 4. Correlation Matrix

	PROMOS	TOTEXP	PROXIMY	SEX	NTUITION	TACITK
PROMOS	1.000					
TOTEXP	-.108 (.0288) <sup>†</sup>	1.000				
PROXIMY	.034 (.074) <sup>†</sup>	.072 (.048) <sup>†</sup>	1.000			
SEX	.104 (.0308) <sup>†</sup>	.207 (.004) <sup>†**</sup>	-.074 (.0468) <sup>†</sup>	1.000		
NTUITION	-.10 (.0326) <sup>†</sup>	.095 (.0348) <sup>†</sup>	.061 (.055) <sup>†</sup>	.044 (.0668) <sup>†</sup>	1.000	
TACITK	-.038 (.0708) <sup>†</sup>	-.014 (.0894) <sup>†</sup>	.000 (.01) <sup>†</sup>	.083 (.0414) <sup>†</sup>	.186 (.006) <sup>†**</sup>	1.000

\*\*  $p < .01$ , <sup>†</sup>  $\alpha$  adjusted by Bonferroni method

Another mark of equivalency between tacit knowledge and intuition should be the coefficients of each of the promotions, sex, proximity, and experience variables. These should be comparable in terms of their size and sign of the

coefficient when regressed against NTUITION and TACITK separately.

As is evident from Table 7, neither the sex, proximity, or experience show any close values (<.1 difference between values) between the two functions. Only the promotions (PROMOS) variable showed any similarity in direction and strength of relationship to each of the respective variables.

Table 5. Canonical Correlation Table

Canonical Correlations

1 .151  
2 .095

	Wilk's	Chi-SQ	DF	Sig.
1	.968	3.025	8.000	.933
2	.991	.853	3.000	.837

\*  $p < .05$ , \*\*  $p < .10$

However, not much can be concluded from this or, for that matter, any other value in table 6 as all tests of significance were well above the  $p < .01$  level. Another point of note is the change in the dependent variate by each of the independent variables.

Similarly, only management experience (-.503) and gender (.713) are correlated to function 2. Given that the canonical correlations are insignificant the only real conclusion that can be drawn is that hypotheses H2a, H2b, H2c, and H2d must be rejected. For a one-unit change in any

of the independent variables the change in either NTUITION or TACITK is below 10% (the only exception being the SEX variable), and near insignificant at less than (+/-) .005 for the experience (TOTEXP) variable. This indicates that at least for this group of managers, intuition and tacit knowledge are essentially unchanged by variations in the four variables of interest. Considering none of these aspects of equivalency proved to be true, it must be concluded that H1 is not supported.

Table 6. Multiple Regression Analysis

	NTUITION	TACITK
PROMOS	-.0270 (-.952)	-.0229 (-.509)
TOTEXP	.00448 (.674)	-.00401 (-.380)
PROXIMY	.0486 (.605)	.01471 (.115)
SEX	.03902 (.680)	.1380 (.919)

\*\*  $p < .01$

Because the remaining hypotheses seek a positive correlation of the four item independent variate to tacit knowledge and intuition, then it is only a matter of assessing the strength and significance of the coefficients of the independent variate to determine if  $H_0$  is accepted or rejected for hypotheses H2a to H2d.

Canonical cross loadings for functions 1 and 2 are found in table 7. As Hair et al. (1998) suggest, interpretation of loading and cross-loading values is only possible for values greater than .4, therefore, one can likely say that only the number of promotions (.674) and the experience (-.588) of managers are correlated to intuition and tacit knowledge in function 1.

Table 7. Canonical Loadings and Cross Loadings

	CANONICAL LOADINGS		CANONICAL CROSS LOADINGS	
	FUNCTION 1	FUNCTION 2	FUNCTION 1	FUNCTION 2
PROMOS	.674	-.028	.102	-.003
TOTEXP	-.588	-.503	-.089	-.048
PROXIMY	-.384	-.229	-.058	-.022
SEX	-.371	.713	-.056	.068
canonical $r^2$ function 1:	.0177			
canonical $r^2$ function 2:	.0078			

## CHAPTER IV

### DISCUSSION AND CONCLUSION

#### Research Summary

This study extends recent literature (i.e., Brockmann et al., 1997; Guinipero et al., 1999) into an international setting and tests whether Mexican managers, like their American counterparts (Wagner, 1985), operate or enable their decision-making through a combination of left-brained analytical techniques balanced with non-traditional cognitive abilities often described as right-brained forms of thought. Right-brained thinking, or "tacit knowledge" and "intuition", are studied in context to 99 maquiladora manager's gender, experience, proximity to the parent firm and their previous success in a management capacity. It is hypothesized that these demographic variables actually do impact the amount of measured tacit knowledge and intuition.

#### Discussion

Test results presented in the prior findings section do not support a relationship between tacit knowledge and

intuition and the four demographic and geographic variables. There may be several explanations for this.

First, it simply may be that in this sample of managers there may exist other unobserved variables that may be more closely linked to the measured variation in the level of tacit knowledge and intuition than the four variables observed. Thus, chance has played a great role in determining the relationships between variables. On the other hand, it could be that Mexican managers are no different than managers the world over in their reliance on tacit knowledge and intuition with regard to their decision-making. And the failure to capture this may lie in the combined systematic error resulting from a faulty research instrument, score interpretations, coding, data analysis and so forth. An alternative and more intriguing explanation may speak to a greater methodological problem in the fundamental concepts under study.

It is well known that the concept of tacit knowledge has been discussed in the literature for nearly sixty (60) years (see Hayek, 1945; Polanyi, 1958), and that the concept of intuition dates back even further since the famous works of Jung in the 1920's and 30's (see *Abstracts of The collected works of C. G. Jung: a guide to The collected works, volumes I-XVII, Bollinger series XX, Princeton University Press, 1976*). Since its inception the concept of

tacit knowledge has alluded to a strange form of knowing that implied knowing without awareness of knowing as crystallized by Polanyi's (1966) "...we can know more than tell" assertion (p. 4). Recent works notwithstanding, it may be that this dissertation reaffirms the original ideation, namely, that tacit knowledge is an illusive concept and any quantitative measure only gets at knowledge that was always explicit (Pfeffer et al. 1999). Moreover, any effort by the holder of such knowledge to focus on the tacit aspects of skill or practice simply will lead to failure (Polanyi, 1967; Masters, 1992). These findings are consistent with recent theoretical literature.

From a practical perspective, knowledge research by Collins (1974) seems to demonstrate the elusiveness of this knowledge. Collins (1974) studied the R&D activity of seven labs that were competing to develop the first low-input/high-gain Argon gas laser in the 1970's. He found that years after the first successful prototype was built, not even the original successful lab was able to replicate its success. This is despite the fact competing labs were allowed complete access to the technology. Collins (1974) concluded that within this specialized field the high occurrences of tacit knowledge must have been a critical variable in the non-diffusion of this technology. It took multiple visits by scientists and many failures to recognize

that in the process of building the original prototype minute tolerances and specifications had been built into the various components, all of which jointly determined its success, and which the scientists were unaware of establishing.

From a theoretical perspective, Pfeffer et al. (1999) have argued that despite querying, testing and surveying even the most helpful and divulging employees, any effort to harness an employee's stock of tacitly held knowledge is pointless as this knowledge cannot be differentiated from the explicit knowledge he or she holds. The argument is that since explicit knowledge is the one form of knowledge a person is most able to articulate, it should also be the predominant form of knowledge most at hand in their consciousness for recall. In a similar vein, evidence from the health care industry argues that intuitiveness is founded on a base of unconscious knowledge (Welsh and Lyons, 2001; Effken, 2001), and this seems to suggest two things in terms of testing for these constructs. First, if we assume that intuition is a latent construct, then it follows that tacit knowledge is buried, subsumed even further in the subconscious, hence, even harder to observe and measure. Second, by Welsh et al.'s (2001) argument, tacit knowledge is a prerequisite to intuitiveness, yet operating with a high degree of tacit knowledge does not imply the person is



intuitive. It therefore becomes a problem in trying to observe the two constructs simultaneously.

Perhaps another indictment against the attempt to assess tacit knowledge is found in the data gathered for this dissertation. That is, the independent variables of gender, years of experience, promotions, and proximity to the border are actually unambiguous in their measure. They are quite precise. Could it be that the miniscule size of the effect of these variables on the measure of tacit knowledge and the insignificance of these measures are really indicators of the ambiguity of the observed measure of tacit knowledge? That a true measure of tacit knowledge is fleeting? Can this also be true of the intuition measure? What's more, it could be that a more fruitful effort may lie in treating tacit knowledge and intuition as unobserved latent variables. Thus, one emergent benefit of this dissertation may be that it has served to point out the fleeting nature of these concepts. These points can only be amplified on by further, and, very much directed research. Various approaches to addressing these questions are presented in the future research section below, however, the limitations to this study must first be discussed.

#### Research Limitations

One key limitation of this study is its sample size. A small sample size of 99 observations means that three

crucial statistical measures must be carefully balanced: power, alpha levels and effect size. Hair et al. (1998) point out that as effect size is held constant at .35 and as the sample size is decreased, power levels vary greatly depending on the significance level selected. That is, low sample sizes actually cause the researcher to sacrifice power over low alpha levels and vice versa. Extrapolating from the *SOLO Power Analysis Graph* found in Hair et al. (1998) p.13, it appears that for this study a significance level of .01 to .05, results in a power level between .50 and .625. According to Cohen (1977) (as cited in Hair et al., 1998) a much more desirable balance would be alpha levels of .05 and lower and power levels of .8 and above. As a result of the low power levels, it is conceivable that the relationships being tested could actually exist, however the differences may be too small to detect. Thus, if only the sample size were to be more randomized and closer to the estimated 10,000 to 12,000 Mexican managers in *maquiladoras* across Mexico, it could be that power, significance levels, and effect size could point to somewhat different relationships and meaning. A more encompassing survey may be needed to eliminate the possible skewness of the data and the resulting blurred picture.

Concerns about power and effects size are alleviated, in part, by the method of analysis. Using canonical

correlation with a sample size of 99 observations leads to a very stable model as it exceeds the 10 observations per variable suggested by Hair et al. (1998). This does not mean however, that canonical correlation is the only available technique for analyzing complex dependent and independent variates. It may be that the rather elusive quality of the concepts of knowledge, tacit knowledge and intuition may be best modeled as latent (or unobserved) variables in a structural equation model, an idea that is discussed further in the future research section. This does not mean however, that canonical correlation is the only available technique. It may be that the rather elusive quality of the concepts of knowledge, tacit knowledge and intuition may be best modeled as latent (or unobserved) variables in a structural equation model that is further discussed in the future research section.

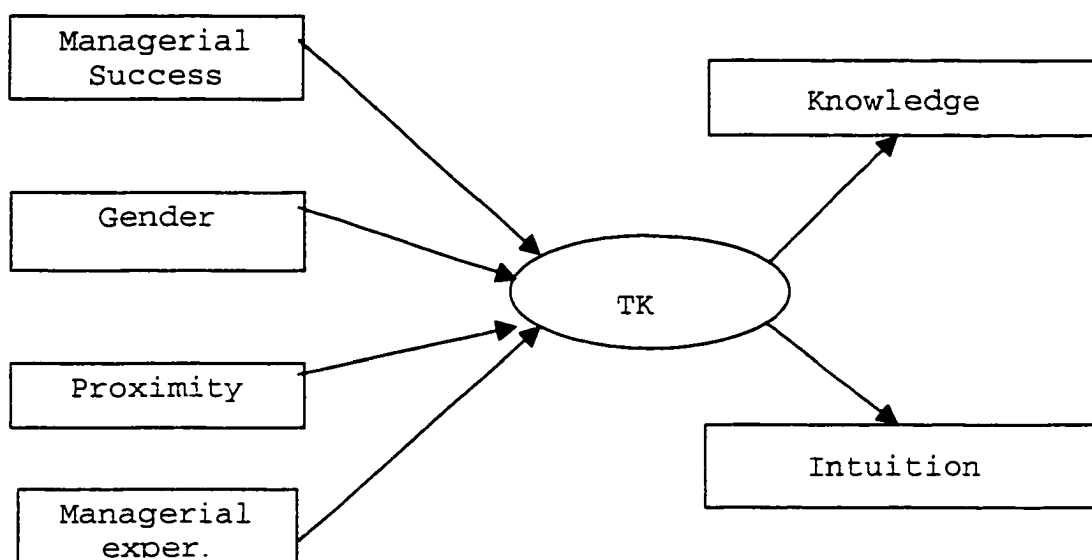
Another limitation in this study is the amount and variance of the variables under study for populations across nations. It could be that a study between, American, Mexican, and Canadian managers could better demonstrate the universality of the concepts in question and thus, dispel concerns about the emmic/etic problem. Moreover, such a cross-cultural study may be viewed as more acceptable, applicable, and interesting to the greater population of managers.

### Future Research

If we begin with the premise that tacit knowledge and intuition are latent variables then a reassessment of the data gathered for this study could be reframed in such a way that new relationships become evident and, possibly, necessary through the use of structural equation modeling. For instance, it may be possible to model the intuition and knowledge observed as explicit forms of knowledge both determined by tacit knowledge, and tacit knowledge being determined by four factors, management success, gender, proximity to the border, and managerial experience. Then by using path analysis the variables could be tested by the model depicted in Figure 4 below. Or, it may be that intuition and tacit knowledge are truly just factors of a more deeply set form of knowing, possibly something like wisdom or sagacity as depicted in Figure 5. Given the difficulty in surveying *maquiladora* managers versus other studies (in other settings) with reported participation rates of 30% or higher (see Tomaskovic-Devey, Leiter and Thompson, 1994; James and Bolstein, 1992; Turely, 1999), further research into this phenomenon may be warranted. Indeed, studies conducted in Mexico have traditionally seen low sample return rates (Vincent et al., 1992), and one would expect this to be particularly true for a study of

Mexican top level managers who, undoubtedly, are more pressed for time as managers elsewhere.

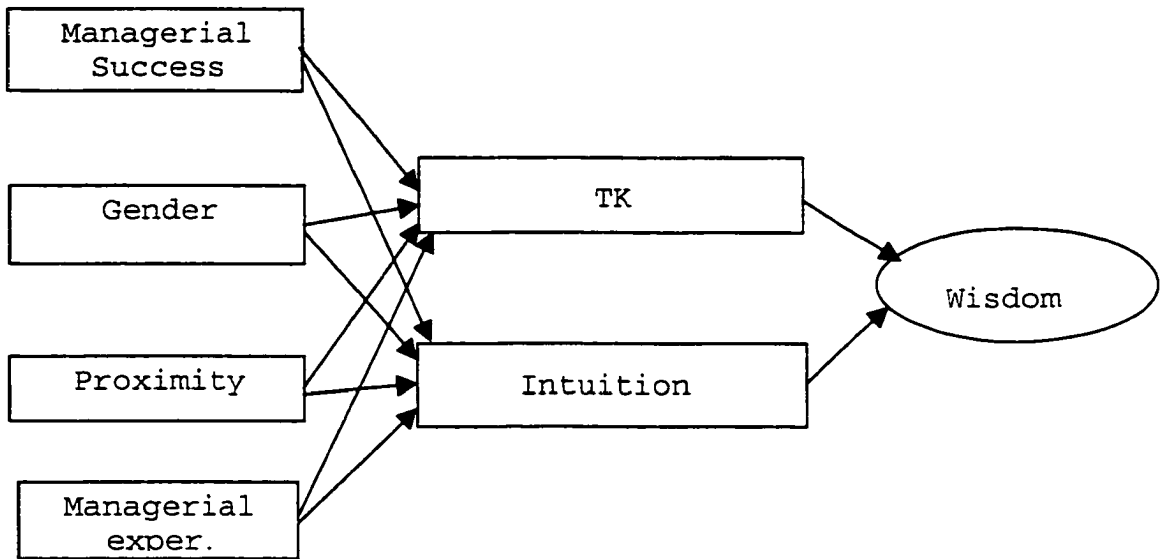
Figure 4. Hypothesized Path Model of Relationships



Yet, managers elsewhere obviously take part in studies such as this at much higher levels, so the question begs; why such low interest from Mexican managers? What is needed is more extensive research for determining the cause or causes for such a poor showing on the part of Mexican managers; is it possible that an optimum incentive level in either U.S. dollars or Mexican pesos has not been established?

It could be that incentives in some other form other than monetary might motivate managers to respond, thus research into this issue is greatly needed.

Figure 5. Alternative SEM Model



Another opportunity for extending this research is in seeking other variables that can be used as proxy for tacit knowledge. One possible avenue for research might be measures like the "social intelligence" of O'Sullivan, Guilford and de Mille (in *Measures of human Behavior*, 1973) or the Myers-Briggs Type Indicator. Should either of these measures demonstrate positive concomitant behavior in Mexican subjects then it could be that either measure might be good proxy variables for tacit knowing. Another avenue for future research exists in investigating the linkage between tacit knowledge and Bandura's social cognitive theory (1986). According to Bandura (1986), one crucial factor that imparts information to self-efficacy judgment in people is vicarious learning (or mimicking others). Thus, it could be that the study of the way employees mimic the

behavior of others could lead to some measure of tacit knowledge.

### Managerial Implications

There are four important implications of this study for management practice. First, while other forms of intelligence (Gardner, 1994; 1999) and unobservable management skill (Sternberg, 1997) are gaining prominence in the literature as ways of assessing management potential, findings from this dissertation seem to suggest that at least in the case of Mexico, human resource managers need not abandon their traditional management skills assessments founded on measures of IQ and other standard psychometric measures.

Second, the results suggest that proximity, beyond the consideration of transportation costs of material and personnel between twin plants, need not be a critical issue when it comes to transferring vital knowledge from one unit to another. This is in contrast to arguments by Audretsch et al. (1996), Haldin-Herrgard, (2000), Howells (2002) and Subramanian et al. (2001) all of whom propose that the transfer of knowledge is imperfect without face-to-face contact. Other forms of contact may remain as rich in the transmission of meaning, context and information that leads to knowledge. Hence, the argument could be made that how and

how much maquiladora managers learn is independent of where parent firms decide to locate new operations in Mexico.

Third, the general case can be made that the modern firm, highly reliant on networks and information technology to carry out coordination and control functions around the world (Laudon and Laudon, 2002), may be the one best positioned to carry out knowledge transfer between key personnel. This is because global firms that have built extensive networks to control the design and production processes of their products and services are already "wired" to use these networks to facilitate greater amounts of contact between managers at foreign locations and managers at headquarter offices, rather than expensing for costly travel between sites.

Lastly, as the search for firm competitive advantage has gone inward in the firm as propounded by the seminal works of Nelson and Winter (1982), Hammel and Prahalad (1994), and Barney (1995b) among others, consensus is building that knowledge is the key resource to firm competitiveness and knowledge management the key activity for these firms. To that end, there are today many firms seeking to establish strategies for managing their knowledge (see for example, [www.knowledgebusiness.com](http://www.knowledgebusiness.com)). Normally, this calls for establishing a highly paid knowledge management champion, sort of speak, among senior managers called the



chief knowledge officer (CKO)<sup>3</sup> who is charged with, among other things, with acquiring expensive knowledge management technologies.

Yet the findings from this study suggest that companies will be better served by continued reliance on the tried and true measures of their past successes and not on adopting what may be a passing "fad" (Rigby, 2001). That is, firm investments to "manage" knowledge will always be thwarted by the "tacit" nature of knowledge. Indeed, as the argument goes, tacit knowledge may be a very important aspect of innovation and productivity (Haldin-Herrgard, 2000; Herbig, Bussing and Ewert, 2001; Howells, 1996; Nestor-Baker and Hoy, 2001) yet as long as this form of knowledge remains ineffable and unobservable, efforts to "manage" knowledge in any form will only prove to be a fleeting and expensive exercise.

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<sup>3</sup> O'Leary (1998) reports that of the *Fortune* 1000 firms, over 400 of these now count on a CKO to create the necessary "infrastructure and cultural environment for knowledge sharing" (p. 54).

APPENDIX

QUESTIONNAIRE

**PARTE 1. INFORMACIÓN GENERAL**

1. Indique su puesto:
  - Director de Planta
  - Director de Compras
  - Director de Personal
  - Director de Materiales
  - Director de Producción
  - Contralor
  - Supervisor
  - Otro
  
2. ¿Es el español su lengua nativa?     sí     no
  
3. ¿Por cuantos años en total ha sido usted director, gerente o supervisor?
  
4. ¿Por cuantos años ha sido usted director, gerente o supervisor en esta compañía?
  
5. ¿Cuántos ascensos de puesto ha recibido usted en sus años como director, gerente o supervisor?
  
6. ¿ Cuántos ascensos de puesto ha recibido usted en esta compañía?
  
7. ¿ Cuántos aumentos de sueldo ha recibido usted en sus años como director, gerente o supervisor?
  
8. ¿ Cuántos aumentos de sueldo ha recibido usted en esta compañía?
  
9. Indique (solo una) la opción que determine mejor los contactos que tiene usted frente a frente con directores de la planta o plantas americanas:
  - nunca
  - varios por año
  - varios por mes
  - varios por semana
  - varios por día
  
10. Indique (solo una) la opción que determine mejor los contactos por correo electrónico que tiene usted con directores de la planta o plantas americanas:
  - nunca
  - varios por año
  - varios por mes
  - varios por semana
  - varios por día
  
11. Indique (solo una) la opción que determine mejor los contactos por teléfono que tiene usted con directores de la planta o plantas americanas:
  - nunca
  - varios por año
  - varios por mes
  - varios por semana
  - varios por día
  
12. Sexo:     masculino     femenino

## PARTE 2. MANERA DE ACTUAR EN SU TRABAJO

Esta tarea presenta situaciones relacionadas con el trabajo, cada una seguida de una serie de artículos pertinentes al manejo de la situación. Para cada situación, por favor examine brevemente todos los artículos y luego evalúe la calidad de cada artículo sobre la escala de 1 a 7 puntos. Trate de usar la escala por entera cuando responda, aunque no es necesario que lo haga para cada situación. Por ejemplo, quizás decida que ninguno de los artículos de la lista en respuesta a una pregunta en particular sea buena, o quizás decida que todas la son. Por supuesto, no hay respuestas que sean las "correctas".

Vea aquí un ejemplo:

Su supervisora inmediata le ha pedido su opinión sobre una nueva campaña promocional que ella desarrolló. Usted piensa que la campaña promocional es espantosa, y que usarla sería un gran error. Usted se ha dado cuenta anteriormente que su supervisora no recibe bien la crítica, y sospecha que ella más bien busca una reafirmación de sus ideas, a una opinión sincera.

**Dada la situación actual, evalúe la calidad de cada una de las siguientes reacciones sobre la escala de 1 a 7 puntos.**

1	2	3	4	5	6	7
sumamente mala			ni buena ni mala			sumamente buena

- a. Decirle que usted cree que la campaña es magnífica.
- b. Decirle que a usted le gusta el trabajo que ella hizo, pero tiene algunas reservas en cuanto a que si ésta es la campaña adecuada para este cliente.

Si el que responde evalúa el primer artículo a 1, esto indicaría que el individuo piensa que esta respuesta es sumamente mala. Una evaluación de 5 para el segundo artículo indicaría que la respuesta es buena, aunque no sumamente.

Por favor responda a cada artículo y cuando haya acabado, revíselo para asegurarse que no omitió inadvertidamente una respuesta.



**1** Evalúe, sobre la escala de 1 a 7 puntos, la calidad de las siguientes estrategias que un gerente empresarial usaría al ocuparse de su trabajo diario.

1	2	3	4	5	6	7
sumamente mala					sumamente buena	
<p>1. _____ (Use esta raya para responder la pregunta) Pensar en términos de las tareas logradas en vez de las horas que se pasó trabajando.</p> <p>2. _____ Usar una lista diariamente de metas, ordenadas de acuerdo a sus prioridades.</p> <p>3. _____ Recompensarse al terminar las tareas importantes del día.</p> <p>4. _____ Estar a cargo de todas las fases de cada tarea o proyecto en que usted esté involucrado.</p> <p>5. _____ Tomar descansos frecuentes pero cortos a lo largo del día (i.e. una caminata rápida al departamento de correspondencia).</p> <p>6. _____ Sólo delegar tareas de poca importancia ya que usted no puede garantizar que las tareas se llevarán a cabo apropiadamente y a tiempo, a menos que usted mismo las haga.</p>					<p>7. _____ Hacer sólo lo que usted está de humor para hacer para que la calidad de su trabajo sea al máximo.</p> <p>8. _____ Tomar cada oportunidad para conseguir reacciones sobre las primeras redactas de su trabajo.</p> <p>9. _____ Fijar sus propios plazos además de los que se le impongan exteriormente.</p> <p>10. _____ No pasarse mucho tiempo planeando la mejor manera de hacer algo porque la mejor manera de hacer algo quizás no sea aparente hasta después de haberlo empezado.</p>	

**2** Se le ha pedido a usted dar una charla a los gerentes de la compañía sobre consejos de cómo escribir de una forma adecuada para los negocios.

**Evalúe, sobre la escala de 1 a 7 puntos, la calidad de cada uno de los siguientes consejos que usted está considerando incluir en su charla sobre la forma de escribir que se utiliza para los negocios**

1	2	3	4	5	6	7
sumamente mala	ni buena ni mala			sumamente buena		
11. _____	12. _____	13. _____	14. _____	15. _____	16. _____	17. _____
Escribir informes de manera que los puntos principales sean comprendidos por el lector que sólo tiene tiempo para examinar superficialmente el informe.	Explicar, en los primeros cuantos párrafos, cómo el informe está organizado.	Usar lenguaje corriente y evitar toda clase de jerga que se usa en los negocios.	Trabajar duro con el fin de transmitir su mensaje en la menor cantidad de palabras.	Considerar cuidadosamente para quien se está escribiendo.	Redactar esmeradamente la primera vez, para evitar tener que volver a escribirlo.	Ser formal en vez de informal en su estilo.
					18. _____	19. _____
					Evitar los materiales visuales, como las cifras, las gráficas, y los diagramas, ya que a menudo, éstos simplifican demás el mensaje.	Usar la voz pasiva, en vez de la activa (p.ej., decir: "se entrevistaron 30 gerentes", en vez de, "entrevistamos 30 gerentes").
					20. _____	
					Evitar usar la primera persona (p.ej., decir: "se recomienda", en vez de, "Yo recomiendo").	

**3** A usted se le ha asignado la revisión del manual de póliza de su departamento. Tiene seis semanas para completar este trabajo. El antiguo manual era muy vago, lo que resultó en que varios individuos se ocupasen de asuntos en que sólo se necesitaba a uno, y que otros asuntos importantes recibieran la atención de ninguno. La responsabilidad de este nuevo manual es completamente suya. La tarea tiene fama de ser casi una "papa caliente" por el efecto que tiene la póliza de el departamento sobre la importancia de ciertos puestos administrativos en el mismo departamento. Usted cree que la manera en que acabe esta tarea pueda tener consecuencias positivas o negativas de importancia en su carrera.

**Evalúe, sobre la escala de 1 a 7 puntos, la calidad de las medidas, que usted pudiera tomar, de acuerdo a cómo estas pudieran conducir a consecuencias positivas para su carrera.**

1	2	3	4	5	6	7
<b>sumamente mala</b>			<b>ni buena ni mala</b>			<b>sumamente buena</b>
21. _____ Decidir en el acto si usted puede salir con un producto razonable que seria de satisfacción a la mayoría -- y si no, tratar de desligarse de la tarea.						26. _____ Formar un comité, con representación de cada departamento, que compartirá responsabilidad de la tarea.
22. _____ Aprender lo más posible sobre los puntos de vista de sus superiores en cuanto a la política que el manual abarca.						27. _____ Averiguar, si se puede, ¿por qué usted, específicamente, fue elegido para esta tarea?
23. _____ Apegarse a las revisiones que sus superiores favorecen o de las que posiblemente pudieran ser convencidos.						28. _____ Con tal que pueda evitar ser obvio, usar esta oportunidad para reducir el poder de aquellos en el departamento quienes no lo apoyan.
24. _____ Obtener la opinión de sus superiores sobre los bosquejos de la nueva política que está bajo consideración.						29. _____ Evitar mencionar de nombre a individuos cuyos malos desempeños laborales son la causa de una revisión en particular de póliza.
25. _____ Obtener opiniones, de aquellos a quienes les afecta el manual, sobre los bosquejos de la nueva política bajo consideración.						30. _____ No preocuparse si se le vence el plazo para acabar con el nuevo manual de política, con tal de estar avanzando.

**4** Usted es el responsable de otorgar un contrato para un sistema nuevo de calefacción para la fábrica. Como es verdad en la mayoría de los casos, la información que usted tiene no es ni perfectamente confiable ni completa.

**Evalúe, sobre la escala de 1 a 7 puntos, la importancia de la siguiente información en lo que se refiere a tomar su decisión de otorgar el contrato a la Compañía de Calefacción Jackson.**

**1                      2                      3                      4                      5                      6                      7**

**sumamente  
mala**

**ni buena  
ni mala**

**sumamente  
buena**

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>31. ____ El Departamento de Ética de Comercio (<i>Better Business Bureau</i>) no da parte de quejas mayores en contra de la compañía.</p> <p>32. ____ El presupuesto de la compañía es 3,000.00 dólares menos que cualquier otro presupuesto (el costo aproximado del sistema es de 65,000.00 dólares).</p> <p>33. ____ La compañía anuncia que su sistema de calefacción es el sistema de más confianza que se pueda comprar al precio.</p> <p>34. ____ Antiguos clientes, con quienes usted se ha comunicado personalmente, tienen una impresión favorable de la compañía y su producto.</p> <p>35. ____ La estimación del costo de funcionamiento del sistema de calefacción, según la compañía, es más bajo que la estimación de las compañías de competencia.</p> | <p>36. ____ La compañía es nueva.</p> <p>37. ____ La compañía promete una instalación muy pronta.</p> <p>38. ____ La compañía ha proporcionado cartas de antiguos clientes que atestiguan sobre la calidad de sus sistemas de calefacción.</p> <p>39. ____ En el pasado, la compañía ha hecho un buen trabajo para su compañía.</p> <p>40. ____ La compañía de competencia a la cuya recientemente compró el mismo sistema de calefacción de la misma compañía a la que usted está considerando en otorgar el contrato.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



**5** Usted está buscando emprender un proyecto nuevo para el año que entra. Ha considerado un número de posibles proyectos y desea escoger el proyecto que le sería el mejor.

**Evalúe, sobre la escala de 1 a 7 puntos, la importancia de las siguientes consideraciones en seleccionar proyectos nuevos.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>sumamente mala</b>			<b>ni buena ni mala</b>			<b>sumamente buena</b>

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>41. ____ El proyecto es el que mi supervisor inmediato desea más que se termine.</p> <p>42. ____ Asumir el proyecto exigiría desarrollar destrezas que darían mayor valor al éxito de mi carrera en un futuro.</p> <p>43. ____ Se espera que el proyecto atraiga la atención de los medios de interés local.</p> <p>44. ____ Asumir el proyecto quizás resultase ser divertido.</p> <p>45. ____ El riesgo en cometer un error es factiblemente inexistente.</p> | <p>46. ____ El proyecto exigiría que me relacione con ejecutivos con antigüedad a quienes me gustaría llegar a conocer mejor.</p> <p>47. ____ El proyecto es valorado por mi superior aunque no lo es por mí.</p> <p>48. ____ El proyecto me permitirá demostrarle a otros mis talentos, de los que quizás no estén concientes.</p> <p>49. ____ El proyecto cae dentro de un área en el que tengo mucha experiencia.</p> <p>50. ____ El proyecto es el que más quiero hacer.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**6** Usted y un compañero de trabajo juntos tienen la responsabilidad de completar un informe para fines de la semana sobre un proyecto nuevo. Usted está inquieto acerca de esta tarea porque él tiene la fama de no cumplir con los plazos. El problema no parece ser falta de esfuerzo. Más bien, él parece carecer de ciertas destrezas de organización necesarias para cumplir con un plazo y también es totalmente un perfeccionista. Por consecuencia, desperdicia demasiado tiempo en salir con la idea, el producto, o el informe "perfecto".

**Su meta es producir el mejor informe posible dentro del plazo a fines de la semana. Evalúe, sobre la escala de 1 a 7 puntos, la calidad de las siguientes estrategias de acuerdo a cómo éstas pudieran ayudarle a alcanzar su meta.**

**1                                  2                                  3                                  4                                  5                                  6                                  7**

**sumamente  
mala**

**ni buena  
ni mala**

**sumamente  
buena**

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>51. _____ Dividir el trabajo a la mitad y decirle que si no acaba su parte, usted, obviamente, deberá decirle a su supervisor que no fue culpa suya (de usted).</p> <p>52. _____ Cortésmente decirle que sea menos perfeccionista.</p> <p>53. _____ Fijar plazos para terminar cada parte del informe, y aceptar lo que hayan logrado al vencimiento de cada plazo como la versión final de esa parte del informe.</p> <p>54. _____ Pedirle a su superior que revise diariamente como marcha el trabajo del informe (después de explicarle por qué).</p> <p>55. _____ Elogiar a su compañero por completar partes de la tarea.</p> | <p>56. _____ Enojarse con él a la primera señal de haberse atrasado según el plan de horario.</p> <p>57. _____ Apenas él se comience a atrasar, tomar la responsabilidad de hacer el informe usted mismo, si así fuese necesario para cumplir con el plazo.</p> <p>58. _____ Indicar con firmeza, pero con cortesía, cómo él está deteniendo el informe.</p> <p>59. _____ Evitar presionarlo, ya que esto sólo le hará atrasarse aún más.</p> <p>60. _____ Ofrecer pagarte una cena al final de la semana si ambos cumplen con el plazo.</p> <p>61. _____ Ignorar su problema de organización para no darle atención al comportamiento inadaptado.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### PARTE 3. MANERA DE PENSAR EN SU TRABAJO

Aquí están diez pares de palabras que indican como llevar a cabo decisiones o resolver problemas en su papel como director o gerente. Por favor indique su preferencia en el cuadro mas apropiado dependiendo de cuál palabra le atrae más:

- |                  |                          |                          |                          |                          |                          |            |
|------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------|
| 1. Construir     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Inventar   |
| 2. Sentido común | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Visión     |
| 3. Concreto      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Abstracto  |
| 4. Convencional  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Innovativo |
| 5. Creativo      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Analítico  |
| 6. Ideas         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Hechos     |
| 7. Imaginativo   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Realístico |
| 8. Práctico      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Ingenioso  |
| 9. Sensato       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Fascinante |
| 10. Sistemático  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Espontáneo |

11. Acerca de decisiones que usted toma diariamente en su papel como director o gerente, ¿qué porcentaje diría usted son tomadas (mayormente) con aprendizaje obtenido en su carrera estudiantil (durante sus estudios de universidad, seminarios y clases conectadas con su trabajo)?

12. Acerca de decisiones que usted toma diariamente en su papel como director o gerente, ¿qué porcentaje diría usted son tomadas (mayormente) con aprendizaje directamente obtenido en su papel como gerente o supervisor?

**PARTE 4. MANERA DE PENSAR EN SU VIDA SOCIAL**

1. Nunca dejo de ayudar a alguien con problemas.  
\_\_si \_\_no
2. Nunca he odiado a alguien intensamente.  
\_\_si \_\_no
3. Cuando no sé algo no me molesta admitir que no lo sé.  
\_\_si \_\_no
4. Siempre me comporto con cortesía, inclusive con personas que pienso son desagradables.  
\_\_si \_\_no
5. Nunca dejaría que alguien fuera castigado por mis malas acciones.  
\_\_si \_\_no
6. A veces me resiento cuando las cosas no salen a mi manera.  
\_\_si \_\_no
7. A veces me he querido rebelar contra gente con mayor autoridad aunque sepa que tienen razón.  
\_\_si \_\_no
8. Me he hecho el enfermo para evitar responsabilidades.  
\_\_si \_\_no
9. En ciertas ocasiones me he sentido muy celoso de la buena fortuna de otros.  
\_\_si \_\_no
10. A veces me he sentido irritado con gente que me ha pedido favores.  
\_\_si \_\_no

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