A COMPARISON OF E-MAIL ADOPTION IN THE BANKING INDUSTRY

IN CANADA AND TAIWAN: A CULTURAL PERSPECTIVE

by

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Abstract

This study is conducted to understand the differences of the potential e-mail adoption in financial institutions – banks in Canada and Taiwan. The study draws on innovation theory and managerial issues to understand the factors that motivate individuals to use new technology in general, and e-mail adoption in particular from a cultural perception.

Survey was used for data collection. The sample consisted thirty domestic Canadian banks and thirty-four local Taiwanese banks. The results indicated that national culture had an effect on the PCI factor. The findings suggested that e-mail communication is a favored communication tool in the future.

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1.1   Management Question

According to Gates (1995), the information age "refers to modern times, in which getting and giving the right information is the driving force of society." He also states that "the rapid growth in the technology we use to access information has moved our world away from that of mechanization and industrialization and towards a truly global economy based on the flow of information." The information age is made possible by an open information network (Verest, 1984; Gates, 1995) which is "a metaphor for the collection of digital information networks spanning the world." (Gates, 1995).

The innovation of information technology brings us into a faster and more competitive environment where we are forced to adopt new technology to obtain comparative advantage (Porter and Millar, 1985; Sproull and Kiesler, 1991) in order to succeed in the future. Electronic communication and related information technology have wide ranging implications for society. The Information Highway or Internet with e-mail and the World Wide Web, provides an easy and relatively low-cost means of transmitting information around the world. Electronic communication changes the means of communication and so provides new opportunities and challenges in the modern business environment. E-mail and other Internet applications have become an issue of survival instead of a choice for business.

The technology of e-mail is no longer new, but using e-mail as part of the business routine is an ongoing challenge. How does e-mail fit in business to assist

information exchange and improve communication? The management issues underlying

this study are: *Why do managers adopt e-mail communication in business organizations?*

and what factors concern managers in adopting e-mail communication?

Porter and Millar (1985) point out that information technology creates more value

added and changes the traditional processes within organizations and relationships

between companies. Today's computer-based communication systems, such as e-mail.

computer conferencing, word processing systems. etc., provide competitive advantages to

their users.

Further, the global environment is increasingly moving towards greater

international exchange of knowledge and individuals (Igbaria et al.,1995). As a result.

people are finding that their workplace or careers involve more than a single culture.

However, information systems (IS) "have built-in value biases reflecting the value

priorities of the culture in which they are developed" (sic. Kumar and Bjorn-Andersen.

1990). Culture is learned and is not inherited. and derives from one's social environment

(Hofstede. 1990). Culture is the context of one's daily behavior and it influences the way

of people's thinking and learning. Thus, culture can be expected to have strong impact on

the individual adoption of e-mail.

The study compares e-mail use by managers in Canada and Taiwan. Cultural

difference has strong impact on Canada and Taiwan in adoption e-mail. The levels of

economic development are different in the two countries -- Canada is a developed country

and Taiwan is a developing country. However as new information technology such as the

Internet is used in more than 100 countries (Dryden, 1996), different economic levels

should not have much impact on the use of e-mail. This study sample concentrates on the information-intensive banking industry in both countries in order to provide more control within the sample. This thesis addresses the research questions from a cultural perspective to obtain a better understanding of usage on adoption of e-mail in Canada and Taiwan. The next section will discussed the literature review.

Chapter 2.   Literature Review

This chapter reviews the research relevant to e-mail adoption. The study examines the factors that motivate individuals to use e-mail. There has been remarkable research on user attitudes toward and expectations of this new information technology (e.g. Fishbein and Azjen, 1975; Davis et al., 1989; Robey, 1979; Goodhue, 1988; etc.). The study draws on innovation theory and managerial issues to understand the main factors in the adoption of new technology in general, and e-mail in particular.

Four topics of e-mail research are addressed in the scope of this study (Figure 1): innovation theory (Roger, 1962) including the instrument of PCI factors and rate of adoption innovation, e-mail characteristics, national culture dimensions defined by Geert Hofstede (1980) applied to Canada and Taiwan, e-mail managerial issues such as communication cost, communication speed, security, privacy, and perceived medium richness (Crawford, 1982; Wilson, 1983; Blum and Litwack, 1994; etc.).
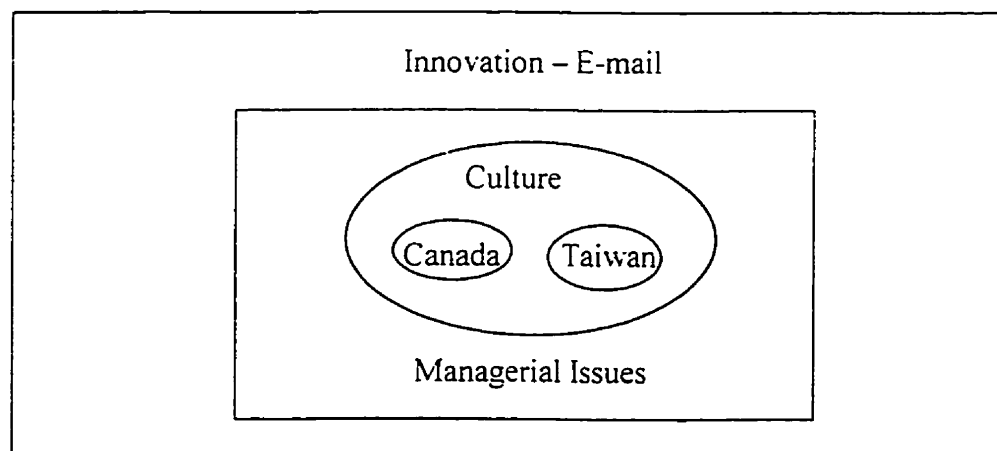
Figure 1. The Scope of the Study – E-mail

2.1   Innovation

Recently, researchers in IS have begun using the theories of diffusion of innovation to study the relationship between new technology implementation and end-user adoptions (Alexander, 1989; Brancheau and Wetherbe, 1990; Moore, 1987; Johnson and Rice, 1987; Rogers, 1994). A major focus of these studies is how potential users' perception of the information technology innovation can influence its adoption. It should also be noted that some researchers (e.g., Leonard-Barton, 1988; Leonard-Barton and Deschamps, 1988; Rogers, 1994) are investigating organizational-level innovation and responses by individuals. However, this is beyond the scope of this study which will focus on the business workplace to measure individual managers' perceptions.

One of the most well-known researchers in the field of diffusion of innovation is Rogers (1962; 1983; 1994) and his findings serve as a model for later studies dealing with a variety of products such as new consumer goods, videotext technology, Personal Work Stations (PWS), and Smart Card. (Ostlund, 1969; Bolton, 1981; Moore and Benbasat, 1991; Gagliardi, 1994). This study applies Rogers' theoretical framework to e-mail diffusion and adoption.

Rogers (1962; 1983; 1994) defined the diffusion of technological innovation as "the process by which an innovation is communicated through certain channels over time among the members of a social system." Two important concepts in Rogers' work that relate to this e-mail study are the instrument of the Perceived Characteristics of Innovation (PCI) and the rate of adoption of innovations. These are explained in the following sections.

2.1.1   The Instrument of Perceived Characteristics of Innovation

Moore and Benbasat (1991) modified and expanded Rogers' concepts to eight items of Perceived Characteristics of Innovation (PCI) -- Relative Advantages. Compatibility, Image, Ease of Use, Result Demonstrability, Visibility, Trialability, and Voluntariness. This study uses the instrument of Moore and Benbasat's study – the eight factors of PCI -- to examine e-mail diffusion and adoption. The PCI factors are explained blow.

1.   **Relative Advantage**: The degree to which using an innovation is perceived as being better than using its precursor. The focus is on whether "an individual believes that using an innovation would enhance his or her job performance" (Moore and Benbasat, 1991), for example, whether using e-mail will save time or will bring benefits compared to current methods.

2.   **Compatibility**: The degree to which using an innovation is perceived as being consistent with the existing values, needs and past experiences of potential adopters. The focus is on whether "an innovation matches or supports to the current method as a result there is a least investing requirement" (Moore and Benbasat, 1991), for example, whether e-mail adoption is compatible with current work and system practices.

3.   **Image**: The degree to which using an innovation is perceived to enhance one's image or status in one's social system. The issue is whether the motivation of "any individual to adopt an innovation is the desire to gain social status" (Moore

and Benbasat 1991), for example, whether e-mail adopters receive higher reputation or social status at their workplace.

4.   **Ease of Use:** The degree to which an innovation is perceived as being easy to use. The issue is whether "an individual believes that using an innovation would be free of physical and mental effort" (Moore and Benbasat 1991). For example, whether the potential adopters consider e-mail an easy system to operate.

5.   **Result Demonstrability:** The degree to which the results of using the innovation are observable and communicable to others. The focus is on whether the potential adopters can easily observe the results of using e-mail.

6.   **Visibility:** The degree to which the innovation is visible to others. The focus is on whether the potential adopters saw other people operate e-mail before they adopted it.

7.   **Trialability:** The degree to which an innovation may be experimented with before adoption. The focus is on whether the potential adopters would have opportunities to try e-mail before they adopt it.

8.   **Voluntariness:** The degree to which implementing innovation is perceived as being voluntary. The focus is on the significance of compulsory versus voluntary adoption. (i.e. whether individuals are free to implement personal adoption or rejection of e-mail.)

2.1.2   The Rate of Adoption of Innovations

The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption. Innovativeness is the degree to which an

individual or groups adopt new ideas relatively earlier than other members of a social system. Rogers (1962; 1983; 1994) specified five adopter categories that classify members of a social system on the basis of their innovativeness: (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards.

Diffusion research attempts to classify different attributes of people that relate to innovation. According to Rogers, "the rate of adoption is the measurement of the number of individuals who adopt a new idea in a specified period and is the relative speed with which an innovation is adopted by members of a social system." The rate of adoption forms the adoption curve for an innovation, which can be explained by Perceived Characteristics of Innovation (PCI) (Rogers, 1962; 1983; 1994). This study will concentrate on the application of the instrument of PCI.

2.2   An Overview of E-mail

This section will discuss the general characteristics of e-mail including a definition of e-mail and a comparison of e-mail with traditional forms of communication in order to provide a clear idea about how e-mail works and what the major differences are compared to traditional mail, telephone, and fax.

2.2.1   The Definition of E-mail

Electronic mail (e-mail) refers to information technology that allows network users to communicate with other individuals or groups by sending textual messages or documents from one electronic workstation to another or to multi-receivers (Blum and Litwack, 1994). In addition to sending and receiving messages, documents can be stored,

forwarded. printed. or incorporated into other texts. Computers and networks handle the delivery of the mail. so that users do not have to concern themselves with details of delivery. and senders and receivers do not have to be present at the same time or place (Wilson, 1983; Blum and Litwack, 1994; Richards, 1995).

Crawford (1982) summarized the features of e-mail in one organization. An adaptation of e-mail functions. adjusted to reflect changes in technology since then. is shown in Figure 2. To understand the significance of these features they are compared to the alternative technologies: traditional mail, telephone, and fax.

```
•   Non-simultaneous communications
•   Electronic "Mailbox"
•   Addressed by Name
•   Electronic "Filing Cabinet"
        --- Write (Edit, Delete, or Save)
        --- Read
        --- Forward
        --- File
        --- Retrieve
        --- Print
        --- Distribution Lists
•   Tickler Files
•   Calendar Keeping
•   Off-net Access
```

Figure 2. The Functions of E-mail

2.2.2   E-mail vs. Traditional Mail

The primary difference between traditional mail and e-mail is the medium of communication (Trudell, 1984). Instead of delivering a piece of paper with information written on it, an electronic mail system delivers just the information. Thus, envelopes, stamps and postal codes are not required for e-mail. Delivery only takes seconds by using

e-mail, but collection, sorting and delivery of the mail by the postal system needs at least

one day for regular local mail, and international mail may take several days to more than

a week (Trudell, 1984). Therefore, the speed of e-mail provides a significant advantage

over traditional mail. For most e-mail users, the only task is ensuring the correct e-mail

address (Rose, 1993).

2.2.3 E-mail vs. Telephone

Anderson et al., (1995) Tennant (1994), and Crawford (1982) emphasize that e-

mail significantly reduces telephone tag and, unlike telephone calls, e-mail from other

people will not interrupt the receiver's work. Users can read and send their e-mail when

they choose, and from the location they choose, including remote locations, as long as an

e-mail system is available. In addition, sending an e-mail can quickly establish a personal

contact, even between strangers. Further, e-mail can be archived to keep track of

conversations over long periods of time (Quarterman and Carl-Mitchell, 1994). Also,

cellular telephones provide wireless communications services to allow mobile

communication and voice mail allows to leave voice messages to communication

partners. These developments in telephone are similar to the functions of e-mail.

2.2.4 E-mail vs. Fax

Quarterman and Carl-Mitchell (1994) compared e-mail and fax in three major

categories. First, the speed of fax is slower than that of e-mail. Second, fax is difficult to

reuse or to edit because it is delivered on paper or in a binary image format. Finally, fax

is usually expensive to send over long distances or to many recipients. However, fax

might be more suitable to transmit commercial or less private documents in organizations.

Summary

To date, one of the most important uses of the Internet for both business and personal users is e-mail (Richards, 1995). E-mail has become the second most common and popular electronic office application, just behind word processing (Parker & Case, 1993). E-mail is a critical business application on many private and public networks. Thus, e-mail can be considered as a popular communication tool for most business people.

2.3 Culture and E-mail

One of the most quoted and well-known authors in research in the field of national culture theory is Geert Hofstede (1980). His most famous cross-national study included a large amount of data collected from IBM subsidiaries in 40 countries. Hofstede classified national cultures in four cultural dimensions: Power Distance (large vs. small), Uncertainty Avoidance (strong vs. weak), Individualism vs. Collectivism, and Masculinity vs. Femininity.

Hofstede et al. (1990: pp. 288) maintain that "The four dimensional model of national culture differences certainly does not represent the ultimate truth about the subject, but it has so far served as a useful framework for practitioners and for theoreticians for guiding research design in the previously fuzzy field of national cultures" (e.g. Triandis, 1984; Triandis et al., 1986; Kreacic and Marsh, 1986; and Gudykunst et al., 1988). The four national culture dimensions identified by Hofstede have

been applied world-wide for years and stand as a reasonable framework for this study,

since there is no other well-established theory available to examine national culture.

Thus, Hofstede's research can be considered as an appropriate instrument for this study

without additional evaluation.

Tables 1 to 4 give the detail about each of the four cultural dimensions (Hofstede,

1980). The definition of each dimension and the relationship between each dimension and

e-mail will be explained.

Table 1. The Power Distance Dimension
(Reproduced from Hofstede, 1980)

Small Power Distance	Large Power Distance
Inequality in society should be minimized.	There should be an order of inequality in this world in which everybody has a rightful place: high and low are protected by this order.
All people should be interdependent.	A few people should be independent: most should be dependent.
Hierarchy means an inequality of roles, established for convenience.	Hierarchy means existential inequality.
Superiors consider subordinates to be "people like me."	Superiors consider subordinates to be a different kind of people.
Subordinates consider superiors to be "people like me."	Subordinates consider superiors to be a different kind of people.
Superiors are accessible.	Superiors are inaccessible.
The use of power should be legitimate and is subject to the judgment as to whether it is good or evil.	Power is a basic fact of society that ante-dates good or evil. Its legitimacy is irrelevant.
All should have equal rights.	Power-holders are entitled to privileges.
Those in power should try to look less powerful than they are.	Those in power should try to look as powerful as possible.
The system is to blame.	The underdog is to blame.
The way to change a social system is to redistribute power.	The way to change a social system is to dethrone those in power.
People at various power levels feel less threatened and more prepared to trust people.	Other people are a potential threat to one's power and can rarely be trusted.
Latent harmony exists between the powerful and the powerless.	Latent conflict exists between the powerful and the powerless.
Cooperation among the powerless can be based on solidarity.	Cooperation among the powerless is difficult to attain because of their low-faith-in-people norm.

Power Distance: This is the extent to which a society accepts the fact that power in institutions and organizations is distributed unequally. Hofstede (1980) defined two categories of Power Distance: Small Power Distance and Large Power Distance.

Small Power Distance (SPD) societies believe that the inequality in society should be minimized, superiors should be accessible, and people should have equal rights, and so on (Table 1). Those essential characteristics of SPD societies tend to encourage the distribution of information in the society. The adoption of e-mail encourages open information distribution and communication to the rest of society (Vervest, 1983; Gates, 1995) and reduces the inequality in society. Thus, people in SPD societies might be more accepting of the use of e-mail at their workplace.

In contrast. Large Power Distance (LPD) societies believe that the inequality should exist, superiors should be inaccessible, power-holders are entitled to privileges. and so on (Table 1). Those essential characteristics of LPD societies conflict with the open distribution of information in the society. The adoption of e-mail destroys the hierarchy structure of the LPD societies. Thus. people in LPD societies might be less accepting the use of e-mail at their workplace.

Table 2. The Uncertainty Avoidance Dimension
(Reproduced from Hofstede, 1980)

Weak Uncertainty Avoidance	Strong Uncertainty Avoidance
The Uncertainty inherent in life is more easily accepted and each day is taken as it comes.	The uncertainty inherent in life is felt as a continuous threat that must be fought.
Ease and lower stress are experienced.	Higher anxiety and stress are experienced.
Time is free.	Time is money.
Hard work, as such, is not a virtue.	There is an inner urge to work hard.
Aggressive behavior is frowned upon.	Aggressive behavior of self and others is accepted.
Less showing of emotions is preferred.	More showing of emotions is preferred.
Conflict and competition can be contained on the level of fair play and used constructively.	Conflict and competition can unleash aggression and should therefore be avoided.
More acceptance of dissent is entailed.	A strong need for consensus is involved.
Deviation is not considered threatening: greater tolerance is shown.	Deviant persons and ideas are dangerous: intolerance holds sway.
The ambiance is one of less nationalism.	Nationalism is pervasive.
More positive feelings toward younger people are seen.	Younger people are suspect.
There is more willingness to take risks in life.	There is great concern with security in life.
The accent is on relativism, empiricism.	The search is for ultimate, absolute truths and values.
There should be as few rules as possible.	There is a need for written rules and regulations.
If rules cannot be kept, we should change them.	If rules cannot be kept, we are sinners and should repent.
Belief is placed in generalists and common sense.	Belief is placed in experts and their knowledge.
The authorities are there to serve the citizens.	Ordinary citizens are incompetent compared with the authorities.

Uncertainty Avoidance: This is the extent to which a society feels threatened by uncertain and ambiguous situations and tries to avoid these situations by providing greater career stability, establishing more formal rules, not tolerating deviant ideas and behaviors, and believing in absolute truths and the attainment of expertise. Hofstede

(1980) classifies two categories of Uncertainty Avoidance: Weak Uncertainty Avoidance and Strong Uncertainty Avoidance.

Weak Uncertainty Avoidance (WUA) societies believe that there should be as few rules as possible, belief is placed in generalists and common sense, and the authorities are there to serve the citizens (Table 2). There is a more personal focus in WUA societies. The adoption of e-mail lifts restrictions on individual communication. Thus, people in WUA societies might be more willing to use e-mail at their workplace.

In contrast, Strong Uncertainty Avoidance (SUA) societies believe that there is a need for written rules and regulations, belief is placed in experts and their knowledge, and ordinary citizens are considered incompetent compared with the authorities (Table 2). There is more emphasis on the group rather than the individual in SUA societies. The adoption of e-mail reduces regulation of communication which breaks down the structure of authority. Thus, people in SUA societies might be less willing to use e-mail at their workplace.

Table 3. The Individualism Dimension
(Reproduced from Hofstede 1980)

Collectivist	Individualist
In society, people are born into extended families or clans who protect them in exchange for loyalty.	In Society, everybody is supposed to take care of himself/herself and his/her immediate family.
"We" consciousness holds sway.	"I" consciousness holds sway.
Identity is based in the social system.	Identity is based in the individual.
There is emotional dependence of individual on organizations and institutions.	There is emotional independence of individual from organizations or institutions.
	The involvement with organizations is calculative.
The involvement with organizations is moral.	The emphasis is on individual initiative and achievement: leadership is the ideal.
The emphasis is on belonging to organizations: membership is the ideal.	Everybody has a right to a private life and opinion.
Private life is invaded by organizations and clans to which one belongs: opinions are predetermined.	
Expertise, order. duty. and security are provided by organization or clan.	Autonomy, variety. pleasure. and individual financial security are sought in the system.
Friendships are predetermined by stable social relationships. but there is need for prestige within these relationships.	The need is for specific friendships. • .
Belief is placed in group decisions.	Belief is placed in individual decisions.
Value standards differ for in-groups and out-groups (particularism).	Value standards should apply to all (universalism).

Individualism and Collectivism: Individualism implies a loosely-knit social framework in which most people are supposed to take care of themselves and of their immediate families only. while Collectivism is characterized by a tight social framework in which people identify with a large in-group (relatives, clan, organizations) that looks after them, and requires loyalty from its members in exchange.

Individualist societies believe that the identity is based on the individual, "I" consciousness holds sway, belief is placed in individual decisions, and everybody has a

right to a private life and opinion (Table 3). Characteristics of Individualism are preference for private life and individual opinion. The adoption of e-mail provides flexibility of individual communications. Thus, people in Individualist societies might be more willing to use e-mail at their workplace.

Collectivist societies believe that identity is based in the social system. "We" consciousness holds sway, belief is placed in group decisions, and private life is invaded by organizations and clans; opinions are predetermined (Table 3). The characteristics of Collectivist societies discourage people to have private and individual opinions. The adoption of e-mail provides autonomy and variety of individual communications. The characteristics of e-mail reduce regulation of communication and are less supportive of group decisions. Thus, people in the Collectivist societies might be less willing to use e-mail at their workplace.

Table 4. The Masculinity Dimension
(Reproduced from Hofstede, 1980)

Feminine	Masculine
Men needn't be assertive, but can also assume nurturing roles.	Men should be assertive. Women should be nurturing.
Sex roles in society are more fluid.	Sex roles in society are clearly differentiated.
There should be equality between the sexes.	Men should dominate in society.
	Performance is what counts.
Quality of life is important.	You live in order to work.
You work in order to live.	Money and things are important.
People and environment are important.	Independence is the ideal.
Interdependence is the ideal.	Ambition provides the drive.
Service provides the motivation.	One admires the successful achiever.
One sympathizes with the unfortunate.	Big and fast are beautiful.
Small and slow are beautiful.	Ostentatious manliness ("machismo") is
Unisex and androgyny are idea.	appreciated.

Masculinity and Femininity: Masculine values are assertiveness, the acquisition of money and things, and not caring for others, the quality of life, or people. These values were labeled "masculine" because, within nearly all societies, men were found to perceive these values more positively than did women.

Masculine societies believe that men should be assertive and women should be nurturing, sex roles in society are clearly differentiated, and men should dominate in society (Table 4). The Masculine societies consider that inequality between men and women should exist. The adoption of e-mail leads to an open information society. It reduces inequality and conflicts with the idea of inequality in masculine societies. Thus, people in Masculine societies might be less willing to use e-mail.

Feminine societies believe that men need not be assertive, but can also assume nurturing roles, sex roles in society are more fluid, and that equality between the sexes should exist (Table 4). The adoption of e-mail allows everyone to have equal ability to access information. It supports the idea of equality in the Feminine societies. Thus, people in Feminine societies might be more willing to use e-mail.

Summary of Culture and E-mail

The classification of Canada and Taiwan in terms of the four national culture dimensions is shown in the following table (Table 6). Table 6 is taken from Hofstede's (1980) conclusions of four national culture dimensions in Canada and Taiwan.

Table 5. The Four Cultural Dimensions of Canada and Taiwan
(Summary from Hofstede, 1980)

	Canada	Taiwan
Power Distance	Small	Large
Uncertainty Avoidance	Weak	Strong
Individualism vs. Collectivism	Individualistic	Collectivistic
Masculinity vs. Femininity	Similar	Similar

2.4 Managerial Issues

The early research on e-mail focused on the technical issues, such as the issues of standardization. e-mail architectures, policy issues, regulations, message handling, etc. (Trudell, 1984; Caswell, 1988). An earlier study (Connel and Galbraith, 1980) concluded the issues for e-mail acceptance are store-and-forward capability, unattended reception. simultaneous message preparation/transmission, wide compatibility, security, and privacy. Crawford (1982) focused on the issues of timely and cost-effective interpersonal communications with e-mail. Vervest (1986) found that efficiency of internal communication, compatibility with installed systems, cost reduction, etc. are the criteria for adopting e-mail technology. Markus (1991; 1992), Zack (1993) and Lee (1994) discuss the issue of a medium for rich communication for e-mail. More recent studies

have also focused on issues such as security, privacy, system integration, etc. (Blum and Litwack, 1994; Anderson et al., 1995).

Popular discussion of such issues as security and privacy are quite ambiguous. The advantages of the cost-effectiveness and the time saved by using e-mail have been widely recognized (Crawford, 1982; Caswell, 1988; Anderson et al., 1995), but cost and time are also not easily defined. However, because the issues surrounding e-mail adoption are diverse, there is a lack of theoretical justification in previous literature, applicable to this study. This study explores the following five managerial issues: communication cost, communication speed, security, privacy, and the debate over e-mail as a medium for rich communication.

2.4.1   Communication Cost

E-mail has become very popular in society due to two cost-related reasons. First, the cost of traditional postal service and other paper-based message systems continues to increase. Second, improvements in microelectronics and telecommunications is reducing the cost of the terminals and transmission circuits that constitute the bulk of the infrastructure for e-mail. Thus, e-mail is gaining comparative advantage. The communication cost of an e-mail system can vary depending on the initial capital cost and the operating cost (Laquey, 1993).

1.   Initial Cost

The equipment required for e-mail are computers, modems connected to local telephones, terminal servers or network stations, and connections to Internet providers

(Blum and Litwack, 1994; Wilson, 1983; Estrada, 1993; Jackson and Taylor, 1996; and Krol, 1992; etc.) The initial cost of e-mail is the total investment in this basic equipment.

2. Operating Cost

The operating cost depends on the services that diverse Internet providers provide. The operating cost of an Internet connection is inexpensive for the automated office which already has an established computer-based communication system. Some commercial providers charge a flat-rate monthly fee for certain levels of usage while other providers charge certain flat-fees for unlimited e-mail (Laquey, 1993; Tennant et al., 1994).

There are three types of benefits that e-mail provides with respect to the communication cost of traditional mail, phone, and fax.

1. Centralized Message Control

Centralized message control refers to the benefits of facilities sharing and information sharing. Message senders and recipients can use the same computer mainframe and centralized storage of messages permits more efficient message delivery and electronic filing (Sprague, 1995).

2. Distance-Independent Costs

Using a central computer as a message system host means that the location of the recipient does not affect the cost of message transmission. Long distance communication by e-mail does not increase the cost. Moreover, e-mail communication can reduce other communications costs, such as lower telephone bills for voice and fax calls, and postage.

It can also reduce the need for face-to-face meetings and associated travel expenses between branches and countries (Vervest, 1986).

3. Digital Storage Capabilities

It is simply cheaper to produce and store digitized information than hard copies (Eager, 1996). According to the American Paper Institute, U.S. business consumes more than 22 million tons of paper each year. The cost of paper, however, is insignificant in comparison to the effort involved in dealing with it. Business spends as much as $100 billion annually to manage paper, and middle managers spend nearly 45 percent of their time processing it. By contrast, digital storage is very inexpensive (Gates, 1995). The research reports that hard-disk drives in personal computers will soon cost about $0.15 for a megabyte of information. 1 megabyte holds about 700 pages of text. so the cost is about $0.00021 per page. The lower cost of storage is another significant advantage to using e-mail.

2.4.2   Communication Speed

In any business environment, communication is both internal (i.e. between people and between departments or divisions) and external (i.e. with other organizations. customers, suppliers, etc.). E-mail communication offers significant benefits for both internal communication and external communication (Bobrowski and Bretschneider. 1994).

1. Internal Communication

E-mail makes rapid communication possible between departments in different locations across time zones (Blum and Litwack, 1994). It allows employees to keep in touch with the central office by using e-mail regardless of distance or location. This capability is particularly important for staff members or salespeople who travel frequently and who may be difficult to reach by either phone or regular mail (Wilson, 1983).

2. External Communication

The use of e-mail to contact other organizations, such as major suppliers or customers, can enhance relationships with these key external stakeholders. E-mail communication can alter the traditional competitive position because power shifts to the one who owns more information (Porter and Millar, 1985; Ahituv, 1994). For example, relationships with suppliers and customers could become stronger by using e-mail, to facilitate delivery of orders and create a direct connection for the quick resolution of problems.

Saving time is one of the most obvious advantage of e-mail communication. Crawford (1982) found that secretaries reported that e-mail saved them an average of eight to ten hours per week (e.g. reduction of typing and filing, and internal memos, etc.), and managers estimated their saving to be about seven hours per week. As a result, the personal productivity was improved by a range of five to fifteen percent from the use of e-mail.

2.4.3 Security

Companies offering e-mail access to employees take the security issue seriously (Anderson, 1995; Blum and Litwack, 1994; Estrada, 1993; Quarterman and Carl-Mitchell, 1994; Sawicki, 1992; Connel and Galbraith, 1982; and Wilson, 1983; etc.). Implementing e-mail services requires careful examination of the protection offered in relation to any network system that permits access to and from the outside environment. Organizations with sensitive data or applications should consider whether e-mail satisfies the requirements for security or not. Estrada (1993) defines e-mail security as ensuring "messages should be delivered to the correct mailbox system without being accidentally or deliberately altered."

E-mail security threats are real once a connection to the network is established. Wilson (1983). Blum and Litwack (1994), and Anderson (1995) indicates that since communication is an on-going process it is vital that the mail-box is always available. and that no messages are lost in the system. Consequently high reliability network systems and back-up facilities are necessary.

There are a number of different steps that can be taken to achieve reliable security. One of the most popular and easy ways is the use of passwords. Access to e-mail is usually controlled by the use of a password (Jackson and Taylor, 1996; Anderson, 1995; Blum and Litwack, 1994; Estrada, 1993; Quarterman and Carl-Mitchell, 1994; Sawicki, 1992; Wilson, 1983). However, too many passwords can be difficult to remember and if passwords are written, security is at risk. Other security solutions are "firewalls" (Liu,

1994), encryption, security levels for messages, system security levels, and security software or anti-viruses (Sawicki, 1992).

2.4.4 Privacy

Privacy in the workplace relates to issues of who controls information resources content and access. This is a highly controversial issue (Jackson and Taylor, 1996; Blum and Litwack, 1994; Schwartz, 1993; and Rose, 1993; etc.). Estrada (1993) states that e-mail privacy means that "only authorized persons can see a message." E-mail makes it easier in the office for people to stay in touch, but who has the right to access the e-mail and data without losing privacy is an issue for managers in many countries.

McDonough III and Kahn (1996) report that e-mail is considered a more confidential tool for transmitting information than a fax. Because e-mail is transmitted from computer to computer and use of the computer usually requires a password, some confidentiality exists. Fax machines are typically accessible to a greater number of individuals and are frequently situated in an open office.

However, the confidentiality of electronic messages has not been clearly defined either legally or in daily applications. Creating an open system to a free flow of information and ideas is both an infrastructural and technical challenge. One of the most advanced privacy solutions for e-mail is a technology called Privacy-Enhanced-Mail (PEM) (Liu et al., 1994; Rose, 1993). Rose (1993) said of PEM "e-mail messages may be exchanged so that third-parties are unable to observe, alter, or forge messages." PEM does require licensing for some commercial purposes (Liu et al., 1994).

2.4.5 Medium Richness

Information richness is defined as "the ability of information to change understanding within a time interval. Communication transactions that can overcome different frames of reference or clarify ambiguous issues to change understanding in a timely manner are considered rich. Communications that require a long time to enable understanding or that cannot overcome different perspectives are lower in richness." (Daft and Lengel. 1986).

The issue of whether or not e-mail is a medium for rich communication (Zack, 1993: Lee. 1994) will directly influence the extent of use e-mail as an communication tool in the workplace. E-mail communication involves electronic messaging (EM) and computer-mediated communication technology (CMC). Studies (Kerr and Hiltz. 1982: Rice and Bair. 1984: Steinfield. 1986) suggest that CMC can increase the range. capacity. and speed of managerial communication. However. CMC significantly reduces the traditional styles of communication such as meeting face-to-face as well as telephone and written memo. Therefore. the question of "is e-mail a medium for rich communication?" has been raised and the information richness issue has been addressed in research (Daft. 1986: Fulk et al.. Markus. 1991: Markus. 1992: Rice, 1992: etc.).

The information richness theory. a well-established and traditional perspective view. by Daft and Lengel (1986) argue that CMC such as e-mail "filters out important cues such as body language and tone of voice, and unlike a face-to-face meeting, is not conducive to immediate feedback."

According to the definition by Daft and Lengel (1986), e-mail is not an information rich medium. However, recent studies (Fulk et al., 1990; Markus, 1991; 1992; Rice, 1992; etc.) criticize the seriousness and point out the weakness of the richness theory. They report that "e-mail readily supports the level of richness that information richness theory reserves for what it considers to be rich media." (Zack, 1993).

However, research (Luthan and Larsen, 1986; Kurke and Aldrich, 1983; McCaskey, 1982) shows that managers appear to prefer face-to-face communication. Body language such as tone of voice and facial expressions, provide important cues for managerial decision-making. Therefore, e-mail can not be considered a perfect medium for rich communication but it certainly provides significant advantages such as the range and the speed of communication nation-wide.

Summary of Literature Review

The research literature has identified national culture in Canada and Taiwan, the eight factors of PCI instrument, and five managerial issues that affect e-mail adoption. This provides the context for the research study to propose research questions, a research model and hypotheses on what and how factors impact on e-mail as used in business.

Chapter 3.   Research Study

3.1   Research Questions

Two research questions can be asked using the proposed research model. They are as follows:

RQ 1: Do Canadian managers differ in perceptions of e-mails from Taiwanese managers?

According to Hofstede (1980; 1991; 1994), national culture strongly affects values and attitudes. Thus, this study assumes that Canadian managers should have different perceptions of e-mail from those of Taiwanese managers. Therefore, this study examines the behavioral perspective of e-mail adoption in those two countries. The instrument of PCI developed by Moore and Benbasat (1991) is used to explain innovation theory.

RQ 2: What are the managerial issues according to Canadian and Taiwanese managers?

The literature review in section 2.1.4 explores the critical issues that motivate people when adopting e-mail. However, it is interesting to determine the different priorities between Canadian and Taiwanese managers regarding communication cost, communication speed, security, privacy, and medium richness.

3.2 Research Model
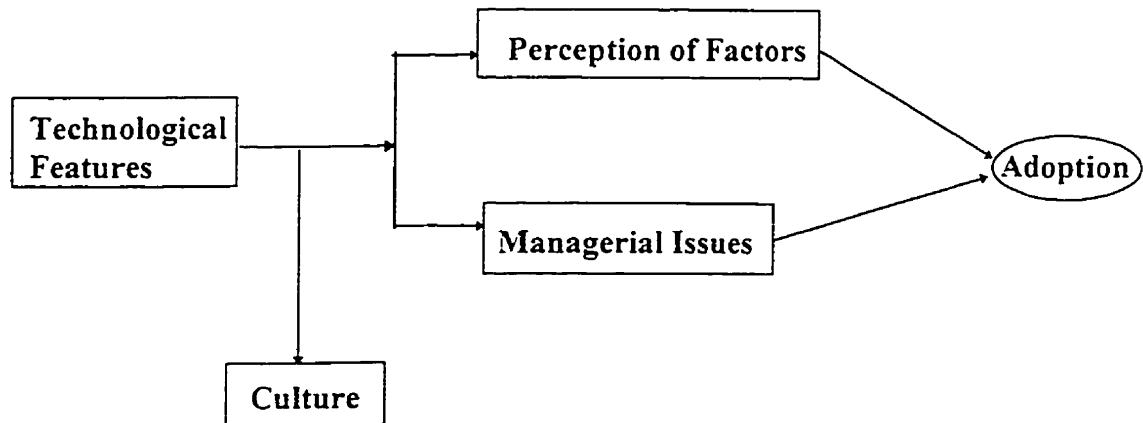
Figure 3 General Research Model

A general research model (Figure 3) presents a basic and comprehensive model in the field of IT. and would ordinarily be appropriate for researching a technological artifact like e-mail. However, Canada and Taiwan have comparable telecommunication. infrastructure at the business level. In addition, the Internet infrastructure in both countries is similar (Table 6). As a result, the study proposes to concentrate on the cultural perspective research model (Figure 4) discussed in the next section.

3.2.1 E-mail and Telecommunication Infrastructure

The development and usage of telecommunication infrastructure influence the adoption of e-mail. The percentage of household facilities and equipment as these relate to e-mail in Canada and Taiwan is shown in the Table 6. Basically, the penetration rate of telecommunications technology (e.g. phone, cellular phone, and Internet) in both countries was similar. Thus the e-mail infrastructure can be considered as comparable.

Table 6. Percentage of Households Facilities and Equipment Relating to E-mail
Canada and Taiwan (1996)

	Canada	Taiwan
Telephones	98.7 %	95.2%
Cellular Phones	14.1 %	14.6%
Internet	7.4 %	9.4%

3.3   Proposed Research Model

The proposed research model (Figure 4), based on research questions, is to demonstrate and to outline the relationships among culture and PCI, managerial issues. and final e-mail adoption. The purpose of this study is to identify how culture affects perceptions of PCI factors and critical issues. in terms of leading to e-mail adoption in Canada and Taiwan. This study applied innovation theory (Literature 2.1.3) to explain the individual's reactions to the introduction of e-mail technology. Thus, two situations, (1) (does culture impact on PCI factors?) and (2) (does culture impact on managerial issues?), will be examined to answer the two research questions. The relationships between hypotheses and details of the proposed models will be discussed in the next section.

Relative Advantages
Compatibility
Image
Ease of Use
Result Demonstrability
Visibility
Trialability
Voluntariness


```
(1)        P. C. I.
Culture                        E-mail
                               Adoption
(2)     Managerial Issues
```

Communication Cost
Communication Speed
Security
Privacy
Medium Richness
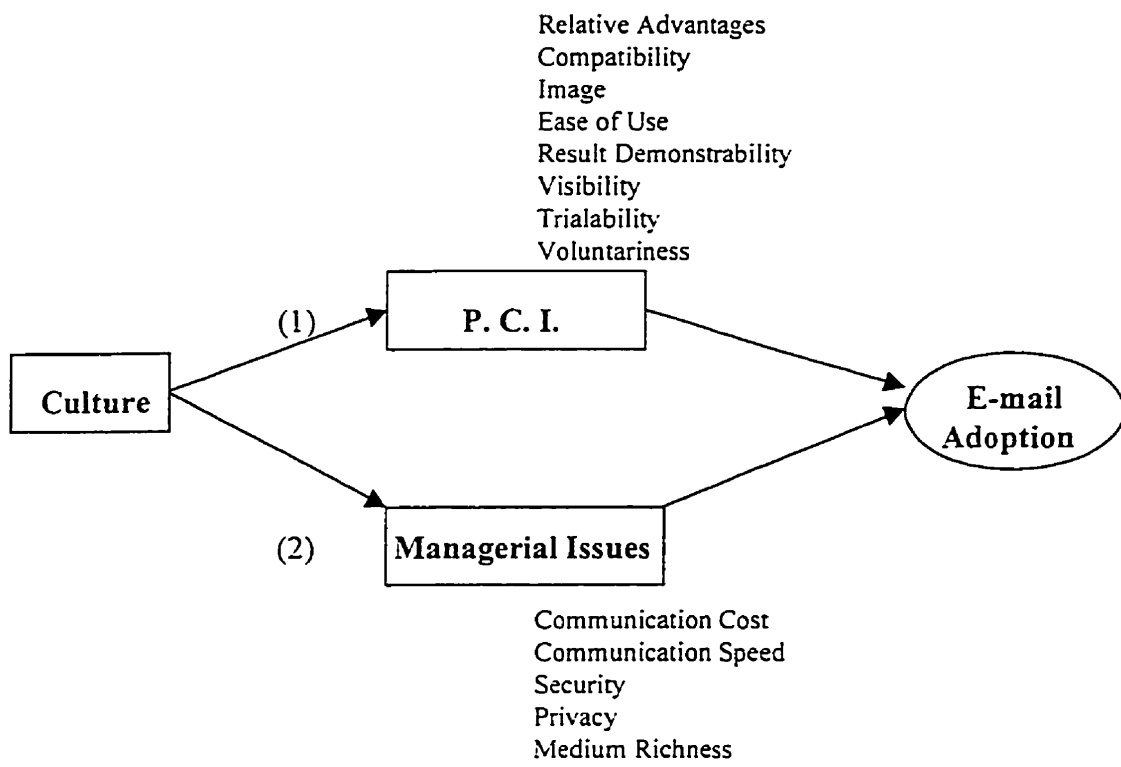
Figure 4. Proposed Research Model

3.4   Hypotheses and Detailed Proposal Models

Group 1: Culture and PCI

Dependent Variable

Independent Variable

Relative Advantage	H 1
Compatibility	H 2
Image	H 3
Ease of Use	H 4
Result Demonstrability	H 5
Visibility	H 6
Trialability	H 7
Voluntariness	H 8
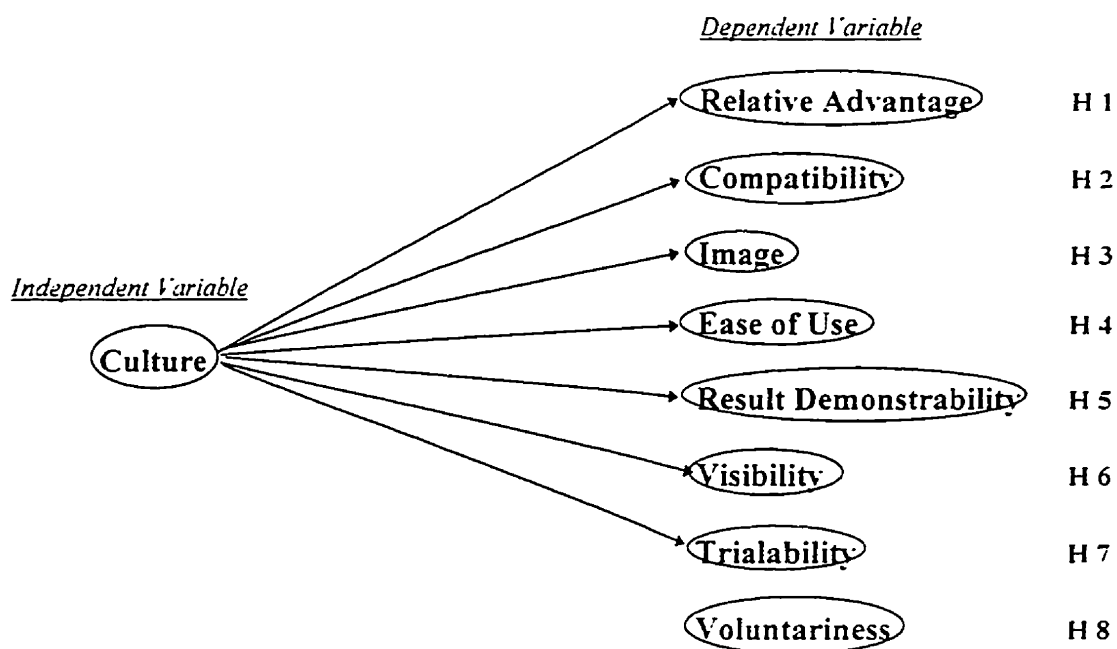
Culture

Figure 5. The Relationships between Culture and the PCI Factors

The adoption of e-mail breaks down the structure of gatekeepers in the traditional organizational design and makes supervisors easier to approach. People in SPD societies believe that superiors ought to accessible, whereas people in LPD societies believe that superiors ought to inaccessible (Table 1, pp. 12). The function of e-mail supports the culture of the SPD societies, but does not accord well with LPD societies. Therefore. people in SPD societies are expected to perceive more relative advantages than will LPD societies in adopting e-mail.

The adoption of e-mail creates more competition and brings uncertainty to the workplace. People in WUA societies believe that risk and competition are inherent to life,

whereas people in SUA societies are more concerned with security in life (Table 2, pp. 14). The characteristics of e-mail fit the culture of WUA societies. Therefore, people in WUA societies are expected to perceive more relative advantages to use e-mail than will SUA societies in adopting e-mail.

The adoption of e-mail increases mobile communication and decreases face-to-face communication. The characteristics of e-mail provide more benefits to people in Individualist societies, because they believe that trust ought to be placed in individual decisions (Table 3, pp.16). In contrast, the characteristics of e-mail do not support the culture of Collectivist societies, because they believe that trust ought to be placed in group decisions (Table 3). Therefore, people in Individualist societies are expected to perceive more relative advantages than will Collectivist societies in adopting e-mail.

The adoption of e-mail provides equal opportunities for individuals to access information. People in Feminine societies believe that sexes should be equal, whereas people in Masculine societies believe that men should dominate more than women (Table 4, pp.17). The functions of e-mail supports Feminine societies. Therefore, Feminine societies are expected to perceive more relative advantages than will Masculine societies in adopting e-mail.

According to Table 5 (pp.19), the hypothesis concerning the relationship between **relative advantage** and e-mail adoption in Canada and Taiwan is:

H 1: Canadians perceive more _**Relative Advantage**_ than do Taiwanese in adopting e-mail.

The adoption of e-mail brings both a new innovation in the society. and more uncertainty and competition to organizations. For example, e-mail may reduce some of functions of telephone. mail. and fax (see pp.4-5). People in WUA societies believe that uncertainty is natural and are more willing to experience risks in life, whereas people in SUA societies believe that uncertainty in life is a threat and there is a great concern with security in life (Table 2). These characteristics of e-mail agree with the culture of the WUA societies. Therefore, people in WUA societies are expected to perceive more compatibility than will those in SUA societies in adopting e-mail.

According to Table 5. the hypothesis concerning the relationship between **compatibility** and e-mail adoption in Canada and Taiwan is:

H 2: Canadians perceive more *Compatibility* than do Taiwanese in adopting e-mail.

Modern society places great emphasis on the ability to connect to information. (Literature 2.1), and the Internet and e-mail. etc. have become very popular in the society. The adoption of e-mail enhances the image of the individual. People in Individualist societies believe that the identity is based in the individual and everybody has right to have a private life and individual opinions (Table 3). In contrast, people in Collectivist societies believe that the identity is based in the social system, and individual opinions and a private life are interwoven with organizations (Table 3). This characteristics of e-mail support the culture of Individualist societies. Therefore, people in Individualist

societies are expected to perceive more enhancement of image than will those in collectivist societies in adopting e-mail.

According to Table 5, the hypothesis concerning the relationship between **image** and e-mail adoption in Canada and Taiwan is:

H 3:   Canadians perceive more *Image* than do Taiwanese in adopting e-mail.

The adoption of e-mail brings a flexibility of communication to societies. People in WUA societies believe that there should be as few rules as possible, whereas people in SUA societies believe that there is a need for written rules and regulations (Table 2). People in WUA societies are more comfortable experiencing different things and using new communication tools. The characteristic of e-mail agrees with the culture of WUA societies. Thus. people in WUA societies perceive more Ease of Use in adopting e-mail. Therefore, WUA societies are expected to perceive more ease of use than will SUA societies.

According to Table 5, the hypothesis concerning the relationship between **ease of use** and e-mail adoption in Canada and Taiwan is:

H 4:   Canadians perceive more *Ease of Use* than do Taiwanese in adopting
e-mail.

The potential adopters in SPD societies would be more likely to be able to observe the results of using e-mail, because they believe that everyone should have equal rights

(Table 1). People's performance can be observed by others. In contrast, the potential adopters in LPD societies are less likely to be able to observe the results of using e-mail. because they believe that power-holders should have more authority (Table 1). People's performance is less observable by others in a hierarchical structure. Therefore, people in SPD societies are expected to perceive more result demonstrability than will those in LPD societies in adopting e-mail.

According to Table 5, the hypothesis concerning the relationship between **result demonstrability** and e-mail adoption in Canada and Taiwan is:

H 5:   Canadians perceive more *Result Demonstrability* than do Taiwanese in adopting e-mail.

The potential adopters in SPD societies would be more likely to see other people operate e-mail before adopting it, because they believe that everyone should have equal rights (Table 1). In contrast, the potential adopters in LPD societies are less likely to see other people use e-mail, because they believe that power-holders should have more authority (Table 1). Therefore, people in SPD societies are expected to perceive more visibility than will those in LPD societies in adopting e-mail..

According to Table 5, the hypothesis concerning the relationship between visibility and e-mail adoption in Canada and Taiwan is:

H 6:   Canadians perceive more *Visibility* than do Taiwanese in adopting e-mail.

The potential adopters in WUA societies are expected to have more opportunities to try e-mail before adopting it, because they are encouraged to have diverse experience (Table 2). In contrast. potential adopters would have less opportunities to try e-mail before adopting it in the SUA because, people in SUA societies are not encouraged to on experience different things (Table 2). Thus, people in SUA societies perceive less trialability in adopting e-mail. Then people in WUA societies.

According to Table 5, the hypothesis concerning the relationship between **trialability** and e-mail adoption in Canada and Taiwan is:

H 7:   Canadian perceive more *Trialability* than do Taiwanese in adopting e-mail.

The adoption of e-mail brings open information networks in to the society which lead to free communications within organization. (Vervest. 1984: Gates. 1995). Individualists believe that the autonomy and freedom among people should exist (Table 3). In contrast, the adoption of e-mail breaks the order of the hierarchical structure in the Collectivist societies (Table 3). In other words, it allows same-level and even cross-level communication which does not agree with the hierarchy of Collectivist societies. Thus. the characteristics of e-mail are less supporting of the culture of the Collectivist societies. Therefore, Individualist societies are expected to perceive more free will in adopting e-mail than will Collectivist societies.

According to Table 5, the hypothesis concerning the relationship between **voluntariness** and e-mail adoption in Canada and Taiwan is:

H 8: Canadian perceive more *Voluntariness* than do Taiwanese in adopting e-mail.

Summary

The eight hypotheses (Figure 5), in group 1, are formed from culture (Hofstede. 1980) and the eight items of PCI instrument (Moore and Benbasat, 1991). A summary of the relationships of four cultural dimensions with each item of the PCI is shown in Table 7.

Table 7. The Summary of Cultural Dimensions and the PCI

	Power Distance	Uncertainty Avoidance	Individualism vs. Collectivism	Masculinity vs. Femininity
Relative Advantages	✔	✔	✔	✔
Compatibility	✔	✔		
Image			✔	
Ease of Use		✔		
Result Demonstrability	✔			
Visibility	✔			
Trialability		✔		
Voluntariness			✔	

<u>*Group 2: Culture and Managerial Issues*</u>
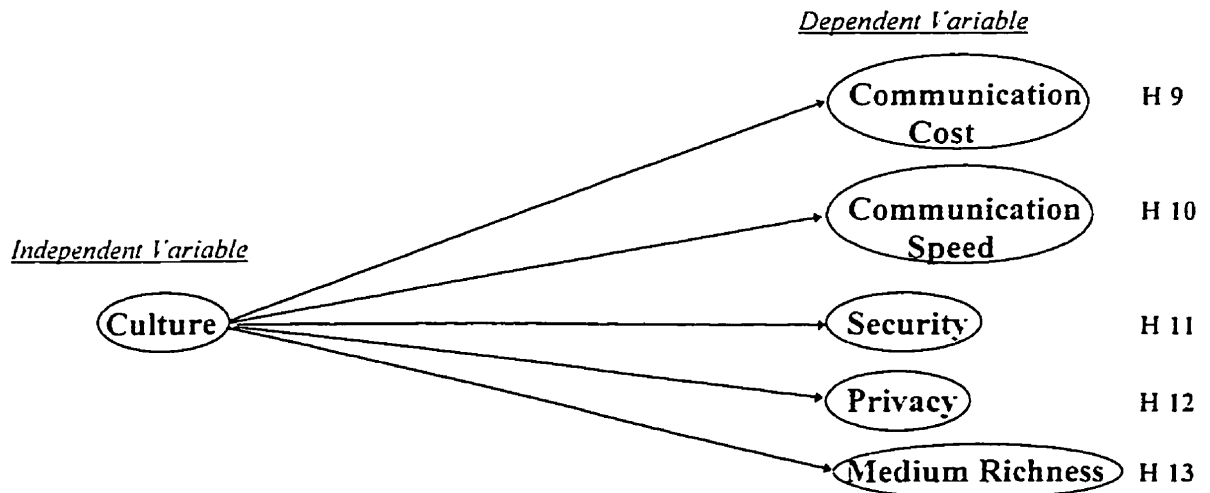
Figure 6. The Relationships between Culture and the Managerial Issues

Table 2 shows that WUA societies feel that "time is free", while SUA societies believe "time is money". Thus. WUA societies are less concerned with the value of time, whereas SUA societies place greater value on time. However, there is no clear evidence to predict the different perceptions of communication cost in adopting e-mail between WUA and SUA societies. As a result, the study assumes that there might be some differences but there is no significant difference in the perceptions of communication cost in e-mail adoption in WUA and SUA societies.

Table 5 shows that Canada is a WUA society and Taiwan is a SUA society. Thus, the hypothesis concerning the relationship between **communication cost** and e-mail adoption in Canada and Taiwan is:

H 9: There is *no significant difference* in the perceptions of the importance of *Communication Cost* in adopting e-mail between Canada and Taiwan.

As earlier discussed in H1, there is no clear evidence to show the different perceptions of communication speed in adopting e-mail between WUA and SUA society. Therefore, the study assumes that there might be some differences but there is no significant difference in the perceptions of communication speed in e-mail adoption in WUA and SUA societies.

The hypothesis concerning the relationship between **communication speed** and e-mail adoption in Canada and Taiwan is:

H 10: There is *no significant difference* in the perceptions of the importance of *Communication Speed* in adopting e-mail between Canada and Taiwan.

Table 2 shows that WUA societies encourage members to take risks in life; while SUA societies show greater concern with security in life. However, individualist societies emphasize individual financial security, whereas collectivist societies attach more importance to organizational security (Table 3). From cultural dimensions, there is no indications which point out the relationship between security and e-mail adoption between WUA and SUA societies. Therefore, this study assumes the hypothesis that there might be some difference but there is no significant difference in the perceptions of security in e-mail adoption between WUA and SUA societies, as well as Individualist and Collectivist societies.

The hypothesis concerning the relationship between **security** and e-mail adoption in Canada and Taiwan is:

H 11: There is *no significant difference* in the perceptions of the importance of *Security* in adopting e-mail between Canada and Taiwan.

Table 3 shows that Individualist societies stress that the individual should have his or her own private life and opinion, whereas in Collectivist societies private life and individual opinion are interwoven with those of the groups to which the individual belongs. This evidence shows that the concept of privacy is based in the social system in Collectivist societies, whereas Individualist societies concentrate on personal privacy. As a result the cultural dimension can only explain the aspect of quality than that of quantity in privacy. Therefore, this study assumes the hypothesis that there might be some differences but there is no significant difference in the perceptions of privacy in e-mail adoption between Individualist and Collectivist societies.

Table 5 shown that Canada is an individual society and Taiwan is a collectivist society. Thus, the hypothesis concerning the relationship between **privacy** and e-mail adoption in Canada and Taiwan is:

H 12: There is *no significant difference* in the perceptions of the importance of *Privacy* in adopting e-mail between Canada and Taiwan.

The adoption of e-mail breaks the hierarchical structure and render supervisors more accessible to their subordinates. The characteristics of e-mail agree with the culture of SPD societies, because people believe that superiors ought to be accessible (Table 1). In contrast, it does not support the culture of LPD societies, because people believe that

maintaining a hierarchy is important (Table 1). Therefore, SPD societies are expected to perceive more Medium Richness in adopting e-mail than will LPD societies.

The adoption of e-mail brings more uncertainty to societies. For example, the functions of e-mail find more support with the culture of WUA societies, because people believe that uncertainty is intrinsic in life (Table 2). However, it introduces hazard to WUS societies. Therefore, WUA societies are expected to perceive more medium richness in adopting e-mail than will SUA societies.

The adoption of e-mail reduces the amount of communication undertaken in a traditional manner and disrupts the regulations of the hierarchical structure in Collectivist societies. The characteristics of e-mail agree with the communication style of Individualist societies, because people believe that autonomy and variety are import to life (Table 3). However, it does not support the face-to-face style of group meeting. Thus, people in individualist societies obtain more Medium Richness in adopting e-mail. Therefore, Individualist societies are expected to perceive more Medium Richness that that will SUA societies.

The hypothesis concerning the relationship between **medium richness** and e-mail adoption in Canada and Taiwan is:

H 13: Canadian perceive more *Medium Richness* than do Taiwanese in adopting e-mail.

Chapter 4.   Research Methodology

4.1   Sample Overview

This study assumed that certain e-mail characteristics like speed of delivery motivate potential users to adopt e-mail. Information intensive firms (Porter and Millar. 1985) are potentially the majority adopters of e-mail due to their reliance on information exchange. The sample selection concentrated on the banking industry. Two main reasons are proposed.

First, the banking systems in Canada and Taiwan were analogous. The principal services offered by the banks in the two countries are similar. including deposits and withdrawals, financial bonds, loans. commercial drafts. letters of credit. foreign currencies exchange, cash cards. credit cards. and so on. Furthermore. there are several options with each service. For instance. various account deposits included checking account deposits, savings account deposits, term deposits. and so forth.

However. it should be noted that there were differences due to culture. market demand, and regulation (i.e. the respective banking laws of Canada and the Republic of China). that result in different services offered by the banks in both countries. For example. Canadian banks provided mutual fund services that allowed people to buy and sell mutual funds in banks without consulting with professional investment firms, while mutual fund services were not offered by Taiwanese banks, but belonged exclusively to professional investment firms. Also. Retirement Savings Plans (RSPs) were available in Canada, but not in Taiwan.

The second reason in selecting the banking industry was that most banks are not currently using e-mail to communicate with their customers. However, Armstrong and Hagel III (1996), and Spar and Bussgang (1996) pointed out that electronic commerce is the future in financial industries. For example business on-line, on-line exchange, and electronic cash (E-cash or E-money) are forecast to be a growth area for financial institutions. Therefore, the use of e-mail communication in the banking industry is expected to soon become popular.

Finally, the author was familiar with both countries and was able to collect data and access information. The sample involved banks in the city of Ottawa in Canada and Taipei in Taiwan. Each of these two cities is the capital of its respective country. In addition, Ottawa's economy possesses a large high-tech sector and Taipei is a economic center in Taiwan. Therefore, both cities can be recognized as information intensive areas.

4.2   Measures

A survey (Appendices A and B) was used in this study, version one in English and a second in Chinese. The questionnaire included one cover page with the e-mail introduction and instruction, and six sections of questions. Sections A and C are designed to measure the attitudes toward e-mail which correspond to e-mail critical issues; section B represents the rate of e-mail adoption and other channels of communication; section D evaluates medium richness, section E measures the PCI for e-mail, and section F asks demographic information of participants such as gender, age, level of education, and so on. Each section measured different constructs which will be explained separately.

4.2.1 The PCI Factors

In Section E, the items pertaining to the PCI, were taken from a survey developed by Moore and Benbasat (1991). It includes 32 questions and uses 7 scales in this study. The original survey intended to measure the characteristics of the adoption of Personal Work Stations (PWS) by individuals. is well established and has been widely used and tested in the IS field. For example, it was applied by Gagliardi (1995) to test perceptions adopt Smart Card. Thus, this study applies the PCI instrument to identify the initial adoption and eventual diffusion of e-mail innovation in the organization.

The items intended to measure the same construct with several similar questions for the PCI factors (i.e. relative advantage. compatibility. image. ease of use. result demonstrability. visibility. trialability. and voluntariness). Table 8 shows the constructs and items of PCI factors as quote in the surveys.

Table 8. The Construct and Items of PCI Factors

Construct	Items	Number
Relative Advantage	PCI 4. 10.13. 21. 30	5
Compatibility	PCI 16. 23. 27	3
Image	PCI 19. 24. 32	3
Ease of Use	PCI 2, 9. 17, 25	4
Result Demonstrability	PCI 5, 11, 14, 28	4
Visibility	PCI 3, 7, 12, 18, 22, 26, 31	7
Trialability	PCI 6, 15 20, 29	4
Voluntariness	PCI 1, 8	2
Total		32

4.2.2   Managerial Issues

4.2.2.1   Medium Richness

The items relating to perceived medium richness in Section D, were developed by

Webster (1995) and includes 8 questions and uses 7 scale measurement. Table 9 shows

the constructs and items of medium richness (i.e. feedback, medium richness, and

personal communication).

Table 9. The Construct and Items of Medium Richness

Construct	Items	Number
Feedback	Rich 1, 5	2
Medium Richness	Rich 2, 4, 6, 7	4
Personal Communication	Rich 3, 8	2
Total		8

4.2.2.2   Critical Issues

Sections A and C are designed by the author to collect data relating to

communication cost, communication speed, security, and privacy which correspond to e-

mail critical factors. Section A contained more general level question, whereas Section C

concentrated on the differences between colleagues and customers in using e-mail. Seven-

point Likert scales with "strongly disagree" to "strongly agree" endpoints were applied for

these two sections.

4.2.2.3 Other

Section B represents the rate of e-mail adoption and other channels of communication, such as phone, fax, and the World Wide Web. In addition, the questions required to indicate that whether the organization plans to use those communication tools currently, in the future, never, or has no opinion.

4.2.3 Demographics

Section F asked about demographic information of participants such as gender, age, company's name, level of education, the number of employees in the respondent's department and branch. Two questions asked the electronic communication tools for current and for future use in order to double check the questions in Section B. The last two questions related to the frequency of using e-mail. This section dealt more with nominal data and multiple choice questions.

In Canada, an English version of questionnaire was administered and in Taiwan a Chinese (Mandarin) version was administered, reflecting the majority official language of each country. The English version was developed first, and then translated into Chinese. A back-translation of the Chinese version was applied to ensure that meanings and ideas remained similar in the two versions. This is an important aspect of cross-cultural research, even when the equivalent concepts are missing in the other language (Brislin, 1970; Sinaiko and Brislin, 1973; Hofstede 1980).

During the back-translation of Chinese version process, several problems appeared in the questions, such as ambiguous vocabularies, and wording problems. For example, question 2 of section D was clear in English but unclear in the Chinese

language, especially the key words "explicit messages", for which it was very difficult to

find the precise vocabulary to replace the original English words without slightly

changing the original meanings. Also, questions 1. 4. and 5 are relatively short in

sentences which might be easy to understand in English but they were not easy to

translate into Chinese by only few words. Further, questions 1. 8. 26. and 31. in Section

E, are sentences in a negative voice which are found less in Chinese. Thus, the

differences between both translations had been double checked and modified to enhance

the accuracy of the translation (Brislin, 1970). The questionnaire in English and Chinese

versions are attached as in Appendices A and B respectively.

4.3   Procedures

The sample concentrated on the individual branches of banks. At least 30

branches of domestic banks in each city were selected at random from the list in the

telephone directory of each city. In the process of random sampling. selection was

ensured the samples were representative of the whole city. The units of analysis were

individuals – one or two respondents -- in each company. The target respondents were

account managers or branch managers whose primary job function is to deal with

customers, who thus should have more chances to use e-mail in their work than other

employees.

The e-mail survey concentrated on individual managers' perceptions. Based on

the cultural difference and geographic location of Canada and Taiwan. diverse data

collecting methods were chosen to increase response rate (Dillman, 1978). In Ottawa.

telephone calls were made first to collect the branch manager's name and fax number in

order to send out survey. The fax was chiefly applied to collect data, personal delivery was employed to support data collecting. On the other hand, questionnaires were sent by personal delivery to collect data in Taipei. The major reason is that the face-to-face communication is more direct and has influence on the Taiwanese managers.

The respondents who returned incomplete surveys reported that they do not use e-mail and so rejected answering the survey. Managers who did not respond were contacted by telephone; however, they were still unwilling to answer the questionnaire. Three reasons for not participating in this e-mail study in Ottawa can be posited. First, managers who were not using e-mail tended to feel uncomfortable answering the questionnaire. Second, some managers who were using e-mail only for internal communication were unwilling to reply to the survey. Finally, some managers were unavailable or stated that they were too busy to participate in the research. Therefore, the e-mail survey had a low response rate in Canada.

Chapter 5.   *Respondents and Findings*

5.1   Respondents Rate

A total of 120 questionnaires were sent out, and a total of 41 responses were received; 11 of which were returned uncompleted. After following-up on missed sections and questions, a total of 30 completed surveys were returned for a 25% rate of response in the e-mail adoption survey of banks in Canada.

In Taipei, 70 questionnaires were sent and a total of 44 surveys were returned, 4 of which could not be included in this study, as they were from foreign banks, insurance companies, or trading companies. Another 6 had incomplete data. Therefore, a total of 34 effective samples were obtained, for a 48% rate of response in the e-mail adoption survey of banks in Taiwan. Thus, a total sample survey of 64 will be examined in this study.

5.2   Data Overview

The different banking policy in the two countries led to disparate distribution of data in both countries. First, the data of Canadian side were derived from six major domestic banks in Ottawa (i.e. The Royal Bank, Canadian International Bank of Commerce, the Bank of Nova Scotia, the Bank of Montreal, the Toronto Dominion Bank, and National Bank of Canada) and Canada Trust, and tended to repetition. On the other hand, the data of Taiwanese data were from twenty-one domestic banks and were less repetitive. More detailed differences between two samples will be examined in the demographic section of findings.

5.3   Data Analysis

The SPSS program (Stevens, 1992), a reliable and common statistics software program, was employed to examine the relative importance of variables in the e-mail adoption study. The data analysis was applied as follows.

First, demographic data from this study were analyzed in frequency and descriptive tables to provide further information relating to banking industry. Further, the Chi-square test was applied to determine the significance of nominal data. Second, Cronbach's alpha coefficient was used in assessing the reliability of measurements. Third, the research objective was to test hypotheses by examining the significant of the PCI factors and managerial issues between two countries. Two-tailed t-test method was employed to analyze the hypotheses. Finally, the correlation among the dependent variables was used to determine if there is any possible relationship between the PCI factors and critical issues in adopting e-mail in two countries.

5.4   Demographics

This section presents the demographic data to provide the background information on the banking industry in both countries. First, the demographic characteristics tested included gender, age, branch size, and education level (Table 10). The frequency tables will be demonstrated to underline the differences according to country. Next, the trends in use of communication tools (Table 11) including phone, fax, e-mail, and the World Wide Web (WWW) presently and in the future will be discussed. Then, the relationships between the types of messages versus the choice of communication tools in the bank, (Table 12), will be analyzed. Further, a frequency table of e-mail use between the two

countries (Table 13) will be presented. Finally. Tables 14 and 15 present the participating

organization and e-mail usage in the Canadian banks.

5.4.1 Demographics

The demographic data (Table 10) show that the number of male bank managers

was slightly higher than that of female bank managers in both countries. The percentage

of male mangers was 58.8% in Taiwan and 53.3% in Canada. However, there was no

statistical significance (.658) between two countries in the gender factor; as a result,

gender is not a variable of interest in comparing Canada and Taiwan.

Basically, the level of education of Taiwanese managers was higher than that of

Canadian. Half of Taiwanese managers who worked in bank had a bachelor's degree but

only 26.6% of Canadian managers had the same. In addition, there was a statistically

significant difference (.009) between two countries in education level which shows that

the education level might be an important factor in adopting e-mail. However. 23.4% of

Canadian managers reported that they had attended some other training course from their

bank. This information suggests that Canadian banks might pay more attention

managerial training.

There was no significant difference in age distribution between Canadian and

Taiwanese managers. The average age of Taiwanese participants was 36.3 and the

Canadian managers had an average age of 37.5. Further, the majority of managers' ages

ranged from 30 to 49 in both countries. No statistical significance (.577) was shown

between the two countries in the age factor. Thus, age was not considered as controlled

variable.

Table 10 Demographic Frequency Table of Bank between Canada and Taiwan

	Canada		Taiwan	
	Frequency	Percent	Frequency	Percent
Gender: Male	16	53.3%	20	58.8%
Female	14	46.7%	14	41.2%

Chi-square: .195	DF: 1	P-value = .658 > .05 → not significance

	Canada		Taiwan	
Education				
Secondary School	10	33.4%	1	2.9%
Community or Technical College	9	30.0%	10	29.4%
Bachelor's Degree	8	26.6%	17	50.0%
Master Degree	3	10.0%	6	17.6%

Chi-square: 3.806	DF: 3	**P-value < .009 < .05** **→ significance**

	Canada		Taiwan	
Age: < 30	5	16.7%	5	14.7%
30 to 39	13	43.3%	18	42.9%
40 to 49	7	23.3%	9	26.5%
> 50	5	16.7%	2	5.9%

Mean: 37.5 Std. Dev.: 9.0	Mean: 36.3 Std. Dev.: 7.7
T-value : .56 P-value: .577	> .05 → not significance

	Canada	Taiwan
Branch Size	Mean: 22.5 Std.Dev.:15.9	Mean: 129.9 Std.Dev.:508.3
	T-value: 1.16 P-value .252	> .05 → not significance

However, there is a clear difference in the size of bank branch between the two countries. The branch size varies from branch to branch in both countries. However. Canadian banks employed from 6 people to 80 people. whereas Taiwanese banks employed from 14 people to up to 3000 people. In addition. the average workforce of Canadian bank branches was 22.5 but the Taiwanese banks were relatively huge in size with an average workforce of 129.9 employees. One explanation could be that some of the Taiwanese samples were in urban areas, were main branches. or even bank headquarters, employing more than a thousand people. This evidence indicates that Canadian banks often perform at a relatively small scale of size. On the other hand. Taiwanese banks are more likely bureaucratic in organization on a grand scale. Canadian banks could be more innovative than Taiwanese because the former is more technology-intensive, while the latter is more human resource-intensive. Notwithstanding. there is no statistically significant difference (.252) in branch size (Table 10) between two countries.

5.4.2   Trends of Communication Tools

The traditional communication tools such as the telephone and fax machine are still the most popular communication tools in the banking industry. As shown in Table 11, the sample data clearly support this fact. Both Canadian and Taiwanese managers strongly agreed (100%) to use the phone and fax currently and in the future.

The electronic communication tools such as e-mail and the WWW, especially in Taiwan, were relatively low. Currently, only 14.7% of Taiwanese managers are using e-mail as well as the WWW, while the percentage of Canadian managers who are familiar with e-mail (73.3%) is relatively high and 50% of managers have access to the WWW.

The data suggests that there is a relatively high potential (82.4%) for adoption of e-mail in Taiwan in the future. Moreover, managers from both countries are interested in adopting e-mail and the WWW in their organizations in the future.

As illustrated in Table 12, all the communication tools have a relatively higher usage in communicating general information than personal account information. It is an understandable phenomenon considering the characteristics of financial industry in which banks deal with extremely confidential and sensitive information on a daily basis. To ensure the personal identity of customers, managers may still prefer using face-to-face communication to handle more private information, such as personal account information. Thus, questions of security and privacy in adoption of innovation are the critical issues for those managers who consider using e-mail in financial industry.

As shown in Table 13, Canadian managers had more experience in using e-mail than Taiwanese managers. In Canada, a great number of managers had been using e-mail for more than 24 months (43.3%) and a majority use it now on a daily basis (56.7%). As a result, based on Rogers' five adopters categories (see pp. 7and 8), they can be categorized as majority adopters. In contrast, 11.8% of Taiwanese managers who were using e-mail can be classified as laggards in adopting e-mail. According to Rogers' the theory of diffusion of innovation, the domestic Canadian banks are more innovative advance in adopting e-mail than the domestic Taiwanese banks in this study.

Table 11 Communication Tools in Bank between Canada and Taiwan

	Canada		Taiwan	
	Current	Future	Current	Future
Phone	100%	100%	100%	100%
Fax	100%	100%	100%	100%
E-mail	73.3%	90%	14.7%	82.4%
World Wide Web	50%	80%	14.7%	76.5%

Table 12 Message vs. Communication Tools in Bank between Canada and Taiwan

	Canada		Taiwan	
	General Information	Personal Account Information	General Information	Personal Account Information
Phone	100%	90%	97.1%	97.1%
Fax	93.3%	83.3%	97.1%	88.2%
E-mail	73.3%	67.6%	61.7%	61.7%
World Wide Web	93.3%	77.6%	61.6%	51.7%

Table 13 Frequency of E-mail Using in Bank between Canada and Taiwan

	Canada		Taiwan	
	Frequency	Percent	Frequency	Percent
How long have e-mail been using in company?				
> 24 Months	13	43.3%		
> 12 & < 24 Months	5	16.7%	1	2.9%
6 & < 12 Months	1	3.3%	2	5.9%
< 6 Months			1	2.9%
Never Used	11	36.7%	30	88.2%
How often have you been using e-mail in company?				
Daily	17	56.7%	1	2.9%
Weekly	2	6.7%	2	5.9%
Monthly			1	2.9%
Never	11	36.7%	30	88.2%

Table 14 Participating Organizations --Canada

	Frequency	Percent
Royal Bank	3	10.0%
CIBC	10	33.3%
TD Bank	4	13.3%
Canada Trust	4	13.3%
Nova Scotia	5	16.7%
Montreal	2	6.7%
National Bank of Canada	2	6.7%
	30	100.0%

Table 15 Distribution of E-mail Using in Participate Canadian Bank

	LONG				OFTEN		
	> 24 M	> 12 M < 24 M	6 M < 12 M	Never Used	Daily	Weekly	Never Used
Royal Bank	1	1		1	2		1
CIBC	6	3	1		9	1	
TD Bank	3			1	3		1
Canada Trust	3	1			3	1	
Nova Scotia				5			5
Montreal				2			2
National Bank of Canada				2			2
Total	13	5	1	11	17	2	11

As discussed earlier. the Taiwanese data have a less homogenous distribution. as they came from twenty-one banks. and as a result. it is hard to summarize the characteristics of the sample. The Canadian data have a more homogenous distribution. as shown in Table 14. the thirty samples concentrated on six major domestic banks and one trust company. Consequently. several important phenomena can be generalized. Four out of seven institutes were applying e-mail communication in their work and nineteen out of the thirty managers (Table 15) who responded to the e-mail survey worked at those banks. This evidence might explain why the response rate was relatively low in Canada. Because many branches do not yet have e-mail some managers did not feel comfortable answering the questionnaire. However, those managers who already use e-mail are

frequent users; with seventeen out of nineteen adopters using e-mail daily. Thus. e-mail can be considered a useful communication tool in their organization.

Summary

The demographic variables such as gender. age, and branch size were controlled. However. education level of both samples showed a significant difference. Thus. a detailed discussion of education level will follow in discussion section. In addition. phone and fax are still the most popular communication tools in the banking industry. Canadian banks had a higher adoption rate for e-mail than Taiwanese banks. Currently. e-mail adoption is relatively low in Taiwan. but it has a high potential of being used in the future.

5.5   Tests of Reliabilities

As mentioned earlier. several questions held a similar idea to measure the same construct in Table 8 (PCI factors) and Table 9 (Medium Richness). The reliability test was performed to ensure that the internal constructs were consistently valid instruments in this study. Cronbach's coefficient alphas were calculated across two samples to analyze the reliability of instruments in this study. Basically. a higher Cronbach's coefficient alpha. indicating a high reliability, is desirable. However, studies have not established a standard cut-off value as a criterion in determining the reliability of measurement. According to Moore and Benbasat (1991), Gay et al. (1992). the Cronbach's alpha exceeding 0.70 can be considered satisfactory. Other studies (Nunnally

1991) pointed out that the alpha value between 0.50 and 0.60 is reasonably acceptable for less established research.

Table 16 Reliability Coefficients Alpha of PCI Factors

	Canada	Taiwan
Relative Advantage	.938	.763
Compatibility	.668	.757
Image	.697	**.528**
Ease of Use	.749	.735
Result Demonstrability	.859	**.570**
Visibility	.809	.603
Trialability	.953	.629
Voluntariness	.866	**.456**

The measures of eight PCI factors can be considered acceptably satisfactory according to the results of reliability test. As shown in Table 16, nine of the sixteen items were above α = .70 level, four of the sixteen were between alpha = .60 and .70, and only three were below the .60 level. Thus, the items taken from the Moore and Benbasat survey can be recognized as reliable instruments for measuring e-mail adoption in this study. However, three constructs were below α = .60 in the Taiwanese data: Image (.528), Result Demonstrability (.570), and Voluntariness (.456).

Two possible explanations can be posited for the lower reliabilities of Image. Result Demonstrability, and Voluntariness in the Taiwanese data. The overall alpha in Canada (.668 to .938) was relatively higher than that of Taiwan (.456 to .763), indicating that perhaps this PCI questionnaire is more suited to Canadian culture. Therefore, the PCI instrument in Taiwan can be considered as less established research in terms of applying Cronbach's coefficient alpha, so that an alpha equal or better than .50 would be an acceptable adjustment for this study.

However, the low score of Voluntariness (.456) still falls below the standard of reliability, possibly due to problems of measurement. Table 8 shows that only two items (1 and 8) were taken to measure the characteristics of Voluntariness compared to three to seven items for the others constructs. Thus, the low reliability of the construct of Voluntariness may be a result of a flawed questionnaire design. Also, the idea of Voluntariness in adopting e-mail in organization might be less familiar in Taiwanese culture or it could be different constructs in Taiwan and in Canada. The low alpha score of Voluntariness in Taiwan can be considered as a fair phenomenon in this e-mail study. The study by Moore and Benbasat (1991) also confirmed that initial reliability score of Voluntariness was lower than desired. However, Voluntariness is not going to be discussed in this study due to the lower reliability score.

Table 17 Reliability Coefficients Alpha of Medium Richness

	Canada	Taiwan
Feedback	.523	.416
Medium Richness	.651	.762
Personal Communication	.494	.588

As Table 17 indicates. four out of six items were below α=.60 level and Medium Richness was the only construct meeting the alpha standard required by this study to be considered (α > = .60). As discussed earlier. Thus. the instrument of medium richness was less reliable than that of PCI.

Two possible explanations related to instrument problems can be put forth for the lower reliabilities of Feedback (.416 and .523) and Personal Communication (.494 and .588). Table 8 shows that four items (1. 4. 6. and 7) measure the construct of Medium Richness. whereas only two items measure Feedback (1 and 5) and Personal Communication (3 and 8). contributing to a lower degree of reliability. The two constructs could fail to describe similar ideas. and did not capture homogeneous meanings or reflect the same underlying constructs.

During the back-translation of Chinese version process, several serious problems were discovered in the questions of Medium Richness section. such as ambiguous meanings and wording problems. For example. the meaning of "to tailor messages" (question 3: Appendix A, Section D. pp. 5). was clear in English but unclear in the Chinese language, for which it was very difficult to find the precise vocabulary to replace

the original English question without losing some meanings or creating extra meanings. Thus, the instrument of Medium Richness has less internal consistency in its question design for the Chinese version. Therefore, this study will concentrate on the construct of Medium Richness, which is within acceptable reliability for this e-mail study.

5.6 Tests of Hypotheses

According to the research model and hypotheses in Chapter three, there were two sets of dependent variables to form two groups of hypotheses in this study. Two tests were conducted to test each group of hypotheses. Firstly, hypotheses tests were administrated to examine the relationships between the independent variable and dependent variables. Secondly, mean comparison was applied to determine the relationships between the two samples. The two-tailed t-test method was used to test the research hypotheses in this study. The statistical significance of the p-value ($< =.05$) indicated whether or not a hypothesis was supported.

According to multiple statistical tests, however, the t-test might be have the probability of spurious results (Stevens, 1992). For example, a study set $\alpha =.05$ in conducting a single statistical test; therefore, the probability of rejecting falsely is under control. However, this research intended to measure eight PCI factors, each at the .05 level, comparing each pair of groups. The probability of a false rejection is no longer under control for the eight sets of t-tests. Thus, the Bonferroni Inequality adjustment should be applied to give reasonable experiment-wise for alpha value in this study.

The eight PCI hypotheses are each tested at the same alpha level (.05) and the tests are independent. As a result, the probability of no type I errors for the overall alpha can be calculated as:

$$\text{Overall } \alpha = 1-(1-\alpha^{\cdot})(1-\alpha^{\cdot})\dots(1-\alpha^{\cdot})^{N} = 1-(1-\alpha) = 0.33$$

Therefore, with 8 hypotheses t-tests of the critical value for α should be less than .05; as a result test-wise $\alpha = .01$ will be applied in this study.

5.6.1   PCI Factors

As seen in Table 18, four hypotheses had statistical significant differences ($\alpha < .01$) and the results of analysis mainly supported the theoretical model in this study. Also, Table 18 indicated each group mean and standard deviations (Std. Dev.) for the PCI factors in the corresponding scales. However, H1, H 3, and H 7 were not supported as they did not have a statistically significant alpha. In addition, H 8 was dropped in study because it did not pass reliability test. The results will be discussed in more detail in the next section.

Table 18. Summary of Result for Research Model Hypotheses – PCI

Hypotheses	Canada		Taiwan		T-value	P-value
	Mean	Std. Dev.	Mean	Std. Dev.		
H 1 Relative Advantages: No Significant Difference	5.298	1 534	4.619	1.040	2.04	.046
H 2 Compatibility: **Significant Difference**	5.216	1.252	4.141	1.207	3.37	**.001**
H 3 Image: No Significant Difference	3.327	1.680	3.949	1.255	-1.65	.104
H 4 Ease of Use: **Significant Difference**	5.294	.938	4.315	.989	3.94	**.000**
H 5 Result Demonstrability: **Significant Difference**	5.342	1.257	4.101	.894	4.49	**.000**
H 6 Visibility: **Significant Difference**	4.838	1.596	3.493	1.014	4.01	**.000**
H 7 Trialability: No Significant Difference	3.864	1.586	3.957	1.100	-0.27	.789

Result

The research question "Do Canadian managers differ in perceptions of e-mail from Taiwanese managers?" was affirmed by the data. As shown in Figure 7. four out of seven hypotheses were supported in this research. Thus. the relationship between the original independent variable and dependent variables could be expressed as: National culture had an affect on the PCI factors in adopting e-mail in Canada and Taiwan. The explanations for each hypothesis will next be discussed.
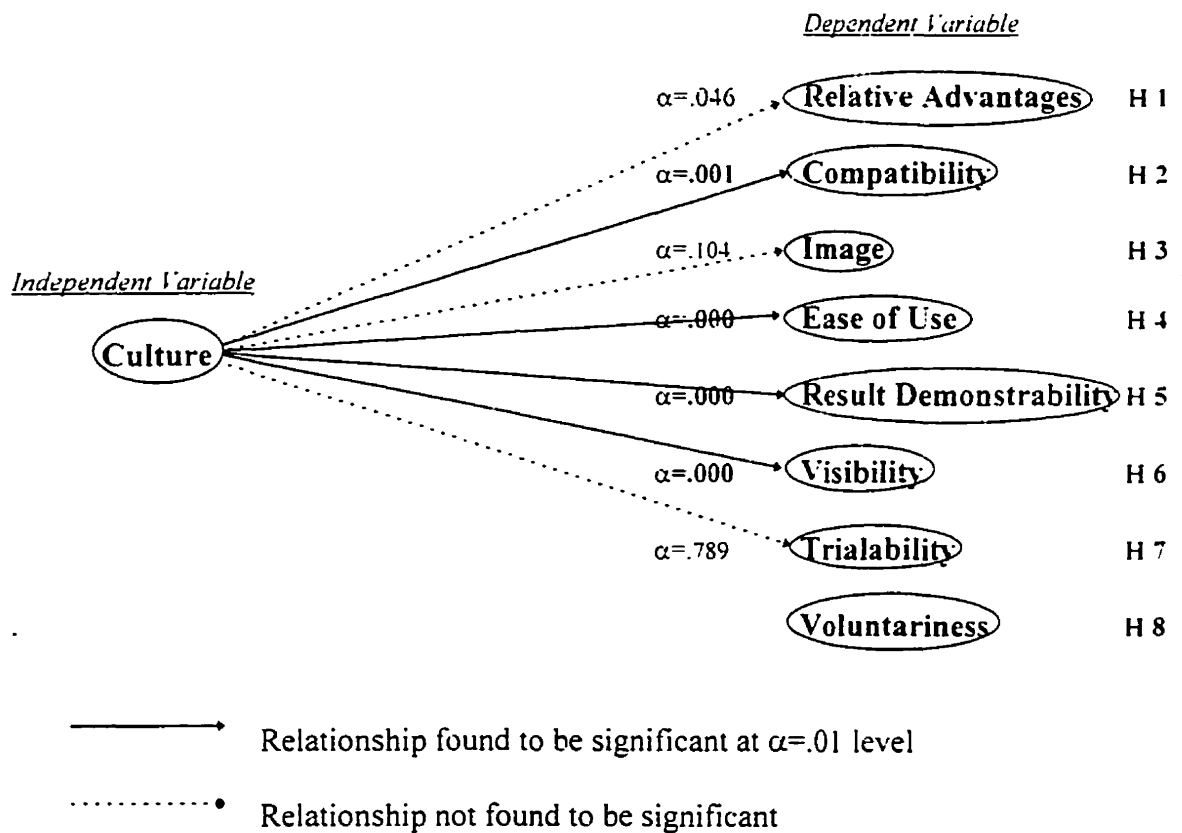
Figure 7. The Results between Culture and the PCI Factors

H 1: Canadians perceive more *__Relative Advantage__* than do Taiwanese in adopting e-mail.

According to the Bonferroni Inequality adjustment. the data showed that this hypothesis did not pass critical value for alpha .01 level. Thus. the result of no statistically significant difference (α=.046) shows that the hypothesis was not fully supported.

However, table 18 shows that the mean scale of relative advantage in Canada (5.298) was higher than that in Taiwan (4.610). On average. Canadian managers still perceived higher Relative Advantage than did Taiwanese.

H 2: Canadians perceive more *__Compatibility__* than do Taiwanese in adopting e-mail.

The α value of .001 shows statistical significance and that the results support hypothesis. As discussed in literature (see pp. 33). the adoption of e-mail is seen to more compatible to Canadian than to Taiwanese managers. Based on Hofstede's study. Weak Uncertainty Avoidance (WUA) societies are more willing to have change in their life. E-mail communication brings new innovation to the society. Canada is a WUA society and enjoys more compatible with the values of the society in adopting e-mail. On the contrary. Taiwan is a Strong Uncertainty Avoidance (SUA) society. which is more resistant to uncertainty in the society. In addition. Small Power Distance (SPD) societies are less concerned about hierarchy than Large Power Distance (SPD) societies. E-mail

communication breaks down hierarchies. Thus. SPD society gains more compatible advantages. The adoption of e-mail counters this tendency. and as a result. Taiwanese managers may be less willing to adopt e-mail. Table 18 shows that the mean scale of compatibility in Canada (5.216) was higher than that in Taiwan (4.141). On average, Canadian managers perceived higher Compatibility than did Taiwanese.

H 3: Canadians perceive more *Image* than do Taiwanese in adopting e-mail.

The $\alpha=.104$ shows that there is no statistical significance and the hypothesis should not be supported. As discussed in literature (pp. 34. 35). Canadians were expected to see Image more enhanced by e-mail than were Taiwanese. However. the findings suggest that the Image of adopting e-mail might be lower in Canada and higher in Taiwan. The possible reason is that Canadian managers were more familiar with e-mail. and so it did not bring more prestige to the individual adopter in Individualist societies. However. Taiwanese managers were less familiar with e-mail. and so it might give more distinction to the individual adopter in Collectivist societies. Table 18 shows that the mean scale of compatibility in Canada (3.327) was lower than that in Taiwan (3.949).

H 4: Canadians perceive more *Ease of Use* than do Taiwanese in adopting e-mail.

The result of a statistically significant difference ($\alpha < .001$) shows that the hypothesis was supported. As discussed earlier (pp. 35), the adoption of e-mail was seen to provide more Ease of Use to Canadian than to Taiwanese managers. According to Hofstede, WUA societies believe that there should be as few rules as possible. The use of e-mail leads to a flexibility of communication with in a society. Canada is a WUA society and enjoys the ease of use of e-mail communication. In contrast, Taiwan is a SUA society, which believes that there is a need for written rules and regulations. The ease of use of e-mail interferes with the bureaucratic structure and as a result, Taiwanese managers may be less likely to consider adopting e-mail. Table 18 shows that the mean scale of ease of use in Canada (5.294) was higher than that in Taiwan (4.315). On average, Canadian managers perceive higher Ease of Use than do Taiwanese.

H 5: Canadians perceive more *Result Demonstrability* than do Taiwanese in adopting e-mail.

The statistically significant difference ($\alpha < .001$) shows that the hypothesis was supported. As discussed earlier (pp. 35, 36), the adoption of e-mail was expected to have more Result Demonstrability in Canada than in Taiwan. According to Hofstede, people in SPD societies can easily observe the results of others, because they believe that everyone should have equal rights. Thus, the demonstrability of result of e-mail communication is

more visible in Canadian organizations, because Canada is a SPD society. On the other hand, the performance of people is less conspicuous in LPD societies like Taiwan, because they believe that power-holders should have more authority. Taiwanese managers in a LPD society may be more reluctant to adopt e-mail. Table 18 shows that the mean scale of Result of Demonstrability in Canada (5.342) was relatively higher than that in Taiwan (4.101) and the mean difference was 1.241. On average, Canadian managers perceive higher Result Demonstrability than do Taiwanese.

H 6: Canadians perceive more *Visibility* than do Taiwanese in adopting e-mail.

The statistically significant difference ($\alpha < .001$) shows that the hypothesis was supported. From the literature (see pp. 36), the adoption of e-mail was expected to have more visibility in Canada than in Taiwan. The condition of visibility is similar to that of result demonstrability as explained in H5 above. Table 18 shows that the mean of visibility in Canada (4.838) was relatively higher than that in Taiwan (3.493) and the mean difference was 1.345. On average, Canadian managers perceived higher Visibility than did Taiwanese. The result also indicated that e-mail communication was less seen, because the score of visibility was lower than that of result demonstrability.

H 7: Canadians perceive more _**Trialability**_ than do Taiwanese in adopting e-mail.

The result of no statistically significant difference (α=.104) shows that the hypothesis should not be supported. As discussed in literature (pp. 37), Canadian were expected to perceive more trialability than were Taiwanese. However, the findings suggest that the trialability of adopting e-mail might be lower in Canada and higher in Taiwan. The possible reason is that Canadian managers were more familiar with e-mail and so it was less necessary to use e-mail on a trial basis before adopting it than in Taiwan. Table 18 shows that the mean scale of trialability in Canada (3.864) was slightly lower than that in Taiwan (3.957).

H 8: Canadians perceive more _**Voluntariness**_ than do Taiwanese in adopting e-mail.

As mentioned earlier in reliability test, the lower reliability coefficients alpha (.456) in Voluntariness indicates problems of instrument. In addition, earlier research (Moore and Benbasat, 1991: Gagliardi 1995) also reported several fundamental problems relating the Voluntariness instrument to findings. The construct of Voluntariness might be less suitable for IT fields and dropping it from the study should be considered. Therefore, this hypothesis will not be discussed in this research.

5.6.2 Managerial Issues

The hypotheses of Critical Issues are shown in Table 19 and 20. Only Medium Richness, H 13, was statistically significant (α = .025). indicating a significant relationship between national culture dimensions and Medium Richness. However, H 9 to H 12 showed no significant difference and were still supported. The results implicated that there was no significant relationship between national culture dimensions and managerial issues -- Cost. Communication Speed. Security, and Privacy -- in adopting e-mail in Canada and Taiwan.

As discussed earlier. because concepts of critical issues had not been well defined it would be hard to measure each of them precisely. In addition. there was no well established instrument available to evaluate managerial issues for this e-mail study. Thus. the questionnaire design intended to measure each critical issue from diverse angles. Table 19 measured the effectiveness of managerial issues, and Table 20 focused on the importance of managerial issues. such as the difference between colleagues and customers in using e-mail in the bank. Some interesting findings relating to each hypothesis. as shown in Tables 19 and 20 will be explored later.

Table 19. Summary of Results for Research Model Hypotheses – The Effectiveness of Managerial Issues

Hypotheses	Canada		Taiwan			
	Mean	Std. Dev.	Mean	Std. Dev.	T-value	P-value
H 9 Communication Cost: **No Significant Difference**	5.607	1.227	5.705	1.467	-.28	778
H 10 Communication Speed with Colleagues: **No Significant Difference**	6.000	1.069	5.735	1.258	.88	.383
Communication Speed with Customers: **No Significant Difference**	5.680	1.405	6.058	1.013	-1.20	.234
H 11 E-mail is secure: **No Significant Difference**	4.185	1.798	4.617	1.435	-1.04	.300
H 12 E-mail is Private: **No Significant Difference**	4.296	1.937	4.588	1.305	-.70	.486
H 13 Medium Richness: **Significant Difference**	4.819	1.131	5.397	.861	-2.30	**.025**

Table 22. Summary of Results for Research Model Hypotheses – The Importance of Managerial Issues

Hypotheses	Canada		Taiwan		T-value	P-value
	Mean	Std. Dev.	Mean	Std. Dev.		
H 9 *Communication Cost*						
Cost with Colleagues :						
No Significant Difference	4.896	1.588	4.676	1.551	.550	.581
Cost with Customers:						
Significant Difference	4.200	1.633	5.029	1.403	-2.09	**.041**
Office Expenses:						
No Significant Difference	5.518	1.251	5.852	1.258	-1.03	.778
H 10 *Communication Speed*						
Internal Communication :						
Significant Difference	6.137	1.216	4.882	1.409	3.75	**.000**
External Communication:						
No Significant Difference	5.545	1.010	5.205	1.122	1.15	.256
Service Hours:						
Significant Difference	5.259	1.831	6.265	.931	-2.78	**.007**
H 11 *Security*						
Security with Colleagues:						
No Significant Difference	6.166	1.416	5.852	1.416	.93	.356
Security with Customers:						
Significant Difference	6.928	.262	5.823	1.402	4.10	**.000**
H 12 *Privacy*						
Privacy with Colleagues:						
No Significant Difference	6.133	1.455	6.000	1.180	.40	.687
Privacy with Customers:						
Significant Difference	6.892	.315	5.969	1.334	3.57	**.001**

Results

The answer to the second research question "What are the managerial issues according to Canadian and Taiwanese managers?" is Communication Cost. Communication Speed. Security, Privacy, and Medium Richness. As Figure 8 illustration. however, four of five hypotheses showed no significant relationship between national culture (DV) and managerial issues (IV). Thus, national culture should not be considered as a good predictor to explain managerial issues in adopting e-mail in this case. The next section provides explanations for each hypothesis.
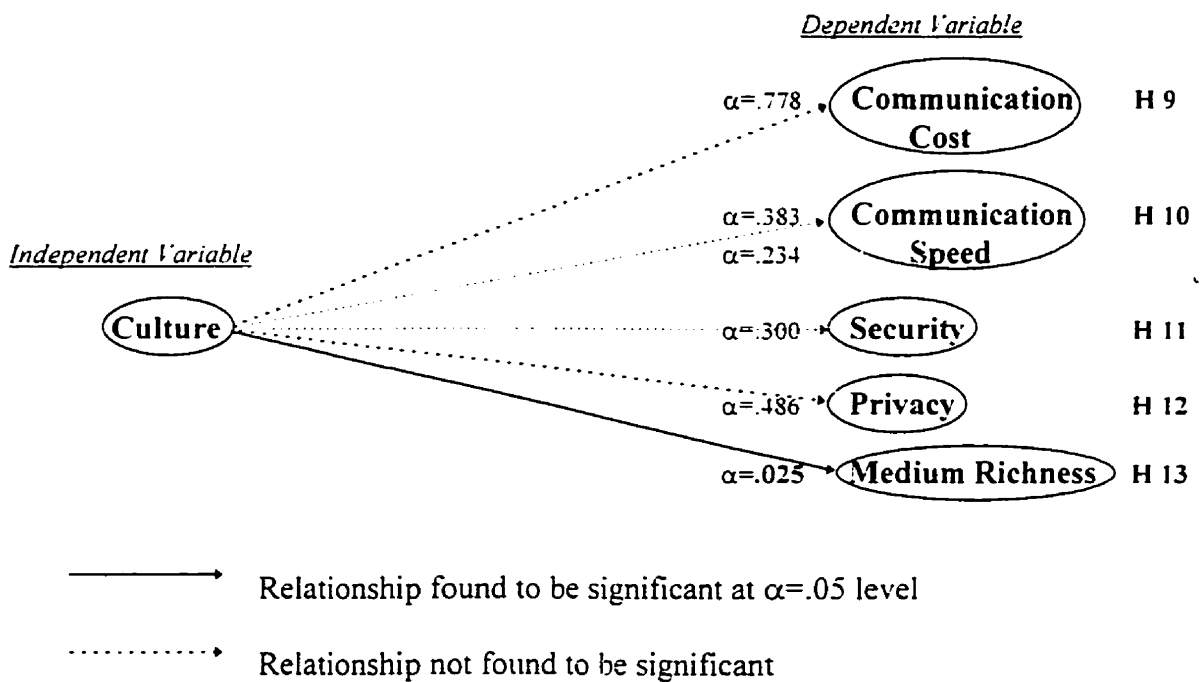
Figure 8. The Results between Culture and the managerial Issues

H 9: There is *no significant difference* in the perceptions of the importance of *Communication Cost* in adopting e-mail between Canada and Taiwan.

The result of no statistically significant difference (α= .778), a general level of communication cost (Table 19), shows that the hypothesis was supported. It implied that national culture did not affect communication cost. As discussed in literature (pp. 39), the concept of cost of e-mail varies. As shown in Table 20, three items were examined the importance of cost in this study: cost with colleagues, cost with customers, and office expense. The results indicated that office expense and cost with colleagues showed no significant difference; however, cost with customers displayed a significant relationship. This interesting consequence shows that organizational factors, such as organizational culture (i.e. attitudes towards technology) and organizational cognition (i.e. decision-making process) (Nelson, 1991) might be better predictors.

H 10: There is *no significant difference* in the perceptions of the importance of *Communication Speed* in adopting e-mail between Canada and Taiwan.

Both communication speed with colleagues and with customers were explored to examine this hypothesis (Table 19). The results of no statistically significant difference (α= .383 and .234), a general level of communication speed, show that the hypothesis was supported implying that national culture did not affect communication speed with either colleagues nor customers of the bank. Moreover, in Table 20, there is no significant difference with regard to external communication speed (.256), either. However, in Table 20, internal communication speed (.000) and service hours length (.007) both show a

significant difference. This evidence revealed that other organizational factors might be more important than cultural factors. It is interesting that e-mail was more important to internal communication in Canada than in Taiwan. A possible explanation could be that more Canadian bank mangers have been using e-mail for internal communication than Taiwanese managers and, therefore. Canadian managers are rely more on e-mail.

H 11: There is *no significant difference* in the perceptions of the importance of *Security* in adopting e-mail between Canada and Taiwan.

H 12: There is *no significant difference* in the perceptions of the importance of *Privacy* in adopting e-mail between Canada and Taiwan.

Similar situations were discovered with regard to Security (H 11) and Privacy (H 12) and so they will be discussed together. No statistically significant difference was found concerning security (.300) or privacy (.486). in Table 19. which indicated that the two hypotheses were supported. The results demonstrate that national culture did not affect either security nor privacy in adopting e-mail. However. managers from both countries disagreed that e-mail communication is secure or private. Furthermore. they also agreed that security and privacy are the two major factors to be considered when using e-mail to communicate with colleagues and customers. It is a surprising result that security with customers (.000), and privacy with customers (.001) showed a significant difference; whereas, security with colleagues (.356) and privacy with colleagues (.687) did not (Table 20). It is possible that certain organizational factors caused these relationships. Further, managers consider that security and privacy in communicating

with customers are more important than with colleagues in the banking industry. Table 20

also shows that the mean scores with customers in either security or privacy are higher

than that with colleagues in Canada. The results can be explained by the fact that

Canadian managers did not apply e-mail communication with customers. because security

and privacy are not good enough for external communication. Thus. Canadian managers

believed that security and privacy are important issues.

H 13: Canadian perceive more *Medium Richness* than do Taiwanese in adopting
e-mail.

The result of a statistically significant difference (α= .025) shows that the

hypothesis was supported. It indicated that national culture affected medium richness.

As discussed earlier (pp. 41. 42). the instrument of medium richness was not completely

reliable. An interesting phenomenon which appeared (Table 19). is that the mean scale in

Taiwan (5.397) was higher than Canada (4.819). It indicated that Taiwanese managers

would agree to a greater extent that e-mail is a rich communication tool. The possible

reason is that Canadian managers were more familiar with e-mail. and so it did not bring

more medium richness to the adopters. However. Taiwanese managers were less familiar

with e-mail, and so it might give more medium richness to the adopters. As a matter of

fact, the findings showed the opposite situation to the original hypothesis. Therefore. the

hypothesis should be modified as follows: Taiwanese managers perceive more medium

richness than do Canadian in adopting e-mail.

5.6.3 Correlation Coefficient

In this section, the correlation coefficient will be discussed in two groups: PCI factors and managerial issues. Basically, a higher correlation value indicated that there was a high interaction between two variables; a positive value indicated a positive relationship, while a negative value indicated a reverse relationship.

5.6.3.1 PCI Factors

Tables 21 and 22 show the correlation matrix among PCI factors. The results show that six correlations were significant in the group of PCI factors in two countries. They were Relative Advantage and Compatibility, Relative Advantage and Ease of Use. Relative Advantage and Result Demonstrability. Ease of Use and Result Demonstrability. Ease of Use and Visibility, and Result Demonstrability and Visibility.

As shown in Table 21 and 22. the positive correlation between Relative Advantage and Compatibility (Canada was .664 and Taiwan was .613). Relative Advantage and Ease of Use (Canada was .592 and Taiwan was .586). and Relative Advantage and Result Demonstrability (Canada was .754 and Taiwan was .600) indicated that the Relative Advantage strongly impacted on Compatibility. Ease of Use . and Result Demonstrability in both countries. Further. relative advantage can be considered as one of the important factors in adopting e-mail in the banking industry.

Result Demonstrability and Visibility had a strong and positive correlation. which was .765 in Canada and .544 in Taiwan (Tables 21 and 22). It indicates that if mangers were able to observe more e-mail communication adopters in organizations they would reach a better opinion of the performance of e-mail communication. Due to the information intensive nature of the financial industry, e-mail communication is still an

innovation to the banking environment. Thus. the results suggest that managers would prefer to see adopters operating e-mail at their work in current phase in terms of potential adopters may be more encourage to adopt e-mail in bank.

From Tables 21 and 22, Ease of Use was highly correlated to Visibility (Canada was .601 and Taiwan was .740) and to Result Demonstrability (Canada was .598 and Taiwan was .711). which is not a surprising consequence since Visibility and Demonstrability already had a strongly positive relationship. As discussed in literature. e-mail can be considered easy to use for the individual adopter. The correlation also implies that the individual's e-mail communication experience enhances the total adoption in an organization. Unfortunately, the results show that the use of e-mail was primarily for internal communication in managerial level in branches": so e-mail was not conspicuous in the bank. The other explanation is that if e-mail communication is easy to use. it should be more visible and its results more demonstrable within the organization. However. e-mail communication was more likely not available to most workers in bank. Therefore. only more e-mail adoption can be seen and then the ease of use in e-mail will be recognized.

Moreover, three variables -- Trialability. Compatibility. and Image – were relatively higher correlated to other PCI factors in Taiwan.. It was an interesting result which indicated that e-mail adoption was in a trial stage in the banking industry in Taiwan; as a result, e-mail might be enhance a user's image and create more compatibility for potential adopters. Trialability. particularly, poses a strong influence to other variables in Taiwan. However, Canadian managers were more familiar with e-mail

and did not need to use it on a trial basis. Thus, e-mail did not enhance image and

compatibility for the current users.

Table 21. Correlation Matrix among PCI Factors -- Canada

	Rel.	Com.	Imag	Ease	Result	Vis.	Trial.
Rel.	1.000						
Com.	.664***	1.000					
Image	.276	.138	1.000				
Ease	.592***	.484	.450*	1.000			
Res.	.754***	.477*	.050	.598***	1.000		
Vis.	.669 **	.561 **	.007	.601***	.765***	1.000	
Trial.	.505*	.352	.367	.435*	.372	.407*	1.000

* for p < .05; ** for p < .01; *** for p < .001

Table 22. Correlation Matrix among PCI Factors -- Taiwan

	Rel.	Com.	Imag	Ease	Result	Vis.	Trial.
Rel.	1.000						
Com.	.613***	1.000					
Image	.543***	.429 *	1.000				
Ease	.586 ***	.511**	.392*	1.000			
Res.	.600***	.603***	.381*	.711***	1.000		
Vis.	.479**	.531***	.439 *	.740***	.544***	1.000	
Trial.	.578***	.682***	.605***	.648***	.624***	.603***	1.000

* for p < .05; ** for p < .01; *** for p < .001

Three conclusions can be summarized from the results of the correlation of PCI factors. First, the correlation matrix shows that Trialability and Compatibility were more important factors in Taiwan. Secondly, Image in the e-mail adopting had less effect in both countries.

Finally, the results indicated that the four major variables impacting on other PCI factors were Relative Advantage, Ease of Use, Result Demonstrability, and Visibility, the implication being that potential adopters would like to see the effects of e-mail on other users before adopting it. In addition, managers would be content observing the outcome of e-mail communication, which demonstrate the benefits of Relative Advantage, Compatibility, and Ease of Use. Eventually, as the performance of e-mail communication is clearly exhibited and recognized, people would more confident in applying it.

5.6.3.2 *Managerial Issues*

Tables 23 and 24 showed that two similar correlations, Security and Privacy, and Communication Cost and Medium Richness, were found in the managerial issues in both countries. However, only Security and Privacy had a strong and positive correlation among all the managerial issues. Besides, Canadian managers perceived a higher positively correlation between Security and Privacy (.888) than did the Taiwanese (.673). From a theoretical point of view, research relating to e-mail adoption often took the issues of security and privacy into consideration at the same time. As well, from a managerial perspective, the relationship between security and privacy is almost inseparable in practical implementation. Thus, security and privacy should be considered as a significant influence in e-mail adoption.

Communication Cost and Medium Richness were correlated but not highly

correlated. which indicated that Communication Cost and Medium Richness had less

impact on each other in adopting e-mail. The situations are quite similar in Canada (.420)

and in Taiwan (.400), as shown in Tables 23 and 24.

Table 23. Correlation Matrix among Managerial Issues -- Canada

	Cost	Speed	Security	Privacy	Medium Richness
Communication Cost	1.000				
Communication Speed	-.040	1.000			
Security	.360	.244	1.000		
Privacy	.290	.194	.888***	1.000	
Medium Richness	.420*	.285	.349	.365	1.000

* for p < .05: ** for p < .01: *** for p < .001

Table 24. Correlation Matrix among Managerial Issues -- Taiwan

	Cost	Speed	Security	Privacy	Medium Richness
Communication Cost	1.000				
Communication Speed	.342	1.000			
Security	.160	.284	1.000		
Privacy	.153	.344	.673***	1.000	
Medium Richness	.400*	.117	.163	-.011	1.000

* for p < .05: ** for p < .01; *** for p < .001

Discussion

As discussed earlier, the demographic data such as gender, age, and branch size were controlled. However, other factors might influence the adoption of e-mail in this study. Table 10 shown that education level was statistically significant difference (α=.009). Thus, education level and adoption stage in using e-mail could be other possible predictors to explain the difference of e-mail adoption between two countries.

Table 25 presents three levels of education: secondary or community, bachelor, and master. By comparing the means of the three groups shows that the education level does influence e-mail adoption. The results show that as education level increased, the mean scores of the six PCI factors (except Image and Trialability) as also increased in Canada. Thus, education level can be considered as a factor to explain the e-mail adoption process.

Table 26 shows that the mean scores of the eight PCI increased as the stage of adopting e-mail from the "Never Used Group" moves to the "Used Group" in Canada. For example, the mean of Relative Advantage was from 4.356 to 5.366. Thus, the stage of adopting e-mail can be considered as the other factor to predict the diffusion of e-mail.

However, Image, Use of Use , and Trialability reduced as the stage of adopting e-mail from the "Never Used Group" moves to the "Used Group" in Taiwan. An interesting result indicated that Image dramatically reduced from "Never Used Group" to "Used Group" in Taiwan. One possible explanation could be that there is contrast perception between "Never Used Group" and "Used Group". For example, the potential adopters

might believe that e-mail might be bring more stature to them; however, actual adopters

found that e-mail did not create more image to them.

Table 25. The Levels of Education in Adopting E-mail in Canada and Taiwan

	Secondary Community	Bachelor	Master	Total Group	
	Mean	Mean	Mean	Mean	Country
Relative Advantage	5.002 4.503	5.733 4.731	6.200 4.533	5.298 4.619	Canada Taiwan
Compatibility	5.129 3.787	5.222 4.333	5.722 4.277	5.216 4.141	
Image	3.500 3.803	2.881 4.010	3.333 4.055	3.327 3.949	
Ease of Use	5.319 3.969	5.250 4.281	5.250 5.041	5.294 4.315	
Result	5.129 3.947	5.428 3.979	6.416 4.708	5.342 4.101	
Visibility	4.611 3.413	4.865 3.581	6.214 3.404	4.838 3.493	
Trialability	3.851 3.697	3.906 4.026	3.833 4.250	3.864 3.957	

Secondary or Community: Canada = 19; Taiwan = 11
Bachelor's Degree: Canada = 8; Taiwan = 17
Master's Degree: Canada = 3; Taiwan = 6

Table 26. The Stage of Adopting E-mail in Canada and Taiwan

	Never Used Group	Used Group	Average Group	
	Mean	Mean	Mean	Country
Relative Advantage	4.356	5.366	5.298	Canada
	4.559	5.050	4.619	Taiwan
Compatibility	4.916	5.194	5.216	
	4.137	4.166	4.141	
Image	3.425	4.222	3.327	
	4.023	3.416	3.949	
Ease of Use	5.000	5.375	5.294	
	4.376	4.375	4.315	
Result	4.555	5.430	5.342	
	3.994	4.875	4.101	
Visibility	3.445	5.273	4.838	
	3.482	3.571	3.493	
Trialability	3.800	4.333	3.864	
	3.977	3.812	3.957	

Used Group: e-mail moderate users from 6 months to less than 24 months
   (Canada = 6; Taiwan = 4)
Never Group: e-mail never users (Canada = 11; Taiwan = 30)

Chapter 5.   *Conclusion*

5.1   Implications for Management

Do Canadian managers differ in perceptions of e-mails from Taiwanese managers?

The answer is: Yes, they do. Canadian perceive higher Relative Advantage. Compatibility. Ease of Use. Result Demonstrability, and Visibility than Taiwanese. Based on the theory of innovation diffusion by Rogers, the study examined the PCI factors in e-mail adoption. The findings show that e-mail communication brings three important competitive advantages: Relative Advantage. Compatibility, and Ease of Use to managers in Canada and Taiwan. As well. Result Demonstrability and Visibility had a strong impact on those three factors. Because, e-mail is an innovation comparing with those traditional communication tools in the banking environment; as a result. managers' desire to applying this innovation were more conservative attitudes. If the benefits of e-mail communication can be better observed by potential adopters, a higher rate of e-mail adoption is expected in the banking industry. Further. Image and Trialability were less influential factors in Ottawa due to the fact that Canadian managers already familiar with e-mail; while, Taiwanese managers perceived Image and Trialability as larger factors in adopting e-mail. In addition, Trialability, Compatibility, and Image were relatively higher correlated to other PCI factors in Taiwan. Thus, the more PCI factors were perceived by managers, the more stimulate them to adopt e-mail in business.

What are the managerial issues according to Canadian and Taiwanese?

The study identified that Communication Cost, Communication Speed, Security. Privacy, and Medium Richness are the essential factors concerning managers in adopting e-mail in both countries. The results show that e-mail communication which brings faster value-added information to business is the most important factor motivating managers to adopt e-mail. However, mangers did not consider that Security or Privacy was well established enough to employing e-mail in the banking industry, because it deals with intensely personal and financial information either with colleagues or with customers on a daily basis. Further. Security and Privacy were highly correlated in both countries. Therefore, Security and Privacy are the two important managerial issues which contribute to the increase of adopting e-mail in banking industry.

Other Implications

As discussed earlier. according to Hofstede's study. the cultural dimensions suggested that Canadian culture is more welcome to adopting e-mail than that of the Taiwanese. The findings supported that national culture impacted on the PCI factors (Figure 7). Thus. national culture served as a predictor to explain that Canada had a higher e-mail adoption rate than that of Taiwan. On the other hand, the results showed that national culture did not influence managerial issues (Figure 8). Thus. other organizational factors, such as education level. stage of e-mail adoption, and a firm's policy or strategy might be better predictors to explain the differences of managerial issues in e-mail adoption.

For example, Canadian managers who did not use e-mail reported that they would like to adopt e-mail communication in their workplace, but the e-mail was not available in their branches. However. Taiwanese managers often reported that due to the policies of firms or companies who did not plan to apply e-mail in terms of managers were unable to use e-mail in their organizations. This evident also can be explained that e-mail is less popular in Taiwan.

The study provides a general picture of using e-mail as a communication strategy in the banking industry in Canada and Taiwan. The research focuses on the banking industry as the research sample. but other financial sectors such as insurance. securities. and financial consulting firms can also apply e-mail as a communication. The results of the study should be able to be applied to other similar information technology. such as Internet and WWW in the financial industry of two countries.

5.2   Limitations

The sample concentrated on the banking industry and involved two countries that reflect the North American culture and the South-East Asian culture. Therefore. this study is more applicable to similar industries or to similar cultures. The study focused on the influences of national culture to predict the managerial decision in adopting e-mail by controlling industry variable and position variable. However. the decision making process is a complex one which not only have to deal with many other factors (such as education. technology. occupation, corporate variables, etc.) which were not included in the study. but other uncontrolled variables, such as managers' perceptions. Thus. applying the results of this study to non-banking industries or other specific cultures may not be direct.

However, for those countries with similar profile on a cultural dimension. similar results should be predict able by applying the hypotheses from the study.

The reliability of the study relates to the representative nature of the sample. The study assumes that the sample can be representative for the total population of its respective country. However, the reliability of this assumption is not tested in this study.

The research design uses a survey method to collect data. and may reflect bias as a result of individual respondents' subjective prejudices. Any individual respondent has his or her own views due to diverse backgrounds. Therefore, the final result can not eliminate this bias.

5.3   Future Study

Possibilities for future research include an examination of how the research model fits in the whole financial industry. Future studies should be conducted within a larger sample set including diverse financial industries. such as security companies, insurance companies. stock companies. and consulting firms. A large sample would provide more information to increase the capability for explanation.

Future studies might consider to examining the Internet or WWW. or other information technology in diverse industries cross other countries. PC banking and E-cash (E-money) are the popular electronic commercial issues which might be subjects for useful future studies in the financial industry.

It had been determined in this study that there was no strong relationship between national culture and managerial issues in the banking industry. The findings suggested that organizational culture might be more important than national culture in this case.

Further research is needed to explore the influence of the organizational culture or other factors on managerial issues. Given the global nature of the banking industry, it is important to recognize that it can be interpreted and responded to in different ways from an organizational standpoint regardless of national culture. In addition, the study identified that age and gender did not affect the e-mail adoption, but at the level of education did. Thus, it is necessary to study other factors, such as technology, skill, knowledge, policy and strategy in order to investigate organizational level factors.

This study concentrated on five managerial issues in e-mail adoption: Communication Cost, Communication Speed, Security, Privacy, and Medium Richness. As e-mail becomes a common communication tool in business, the importance of reliability of e-mail increased. For example, if e-mail system is broken down, the negative effects will be serious to the users. Therefore, the popular issues such as reliability, electronic regulation and law, and information overload should be included in the future study.

As discussed in this study, the lower reliability in Voluntariness shows that future research should pay special attention to this construct in order to improve its validity. For example, using more questions to measure those constructs with low reliability could be one solution. The instrument of Medium Richness should be modified somewhat in questionnaire design before applying it. Two constructs -- Feedback and Personal Communication -- also require more indicators to enable a better reliability of measurement.

5.4 Summary

The primary purpose of this study was to review the literature on national culture, the theory of diffusion of innovation, and managerial issues relating to e-mail adoption and to use empirical research to examine the relationship among those factors in bank in Canada and Taiwan. The results show that national culture had an effect on the PCI factor, but did not influence the managerial issues. The findings pointed out that e-mail communication will be a favored communication strategy for banking in the future.

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Appendix A

E-mail Questionnaire -- English

School of Business
Faculty of Social Sciences
Dunton Tower
1125 Colonel By Drive
Ottawa, ON K1S 5B6 Canada
Tel: (613) 520-2388
Fax: (613) 520-2532 or (613) 520-4427

Carleton
UNIVERSITY

Re: **E-mail Survey**

Welcome,

Electronic mail (e-mail) is becoming very popular in our society. As the number of e-mail users grows, the importance of e-mail as a communication tool increases, especially in the office. We are studying the use of e-mail in financial institutions (banks) in Canada and Taiwan in order to evaluate the extent of e-mail usage in business in these two countries.

E-mail refers to the information technology that allows network users to communicate with other individuals or groups by sending text messages or documents from one electronic workstation to another or to multiple receivers.

Your participation is very important to this study. As part of this study, you are asked to take between 5 to 10 minutes to fill out this questionnaire pertaining to your attitudes and behaviors regarding e-mail. All of the information you provide will be held in confidence.

You were randomly chosen from the list of banking industry. None of the information will be used to identify you. The questionnaire is anonymous. Please try to answer all of the questions. Remember, there are no right or wrong answers. We are interested in your opinion. Though your participation is completely voluntary, we would appreciate you completing the questionnaire and returning by fax if possible to:

> Chung-Chu Wang
> School of Business, Carleton University
> Ottawa, ON K1S 5B6
> Phone: (613) 727-0602
> Fax: (613) 520-2532
> e-mail: cwang@business.carleton.ca

If you do not use e-mail in your bank, please try to express your impression on e-mail communication. It is not necessary that you have to use e-mail to respond the survey. We are only interested in your personal opinion. This survey is only for research purpose.

THANK YOU VERY MUCH FOR YOUR SUPPORT AND COOPERATION! :-)

SECTION A

This section of the questionnaire presents beliefs that some people may hold about issues relating to e-mail adoption. For each of the statements, please indicate whether you agree or disagree with the belief expressed. (please circle the appropriate number)

	STRONGLY DISAGREE	NEUTRAL	STRONGLY AGREE	NO OPINION
1. E-mail is an effective way to ***share information*** between ***colleagues*** in my organization.	1 2 3 4 5 6 7			N.A
2. E-mail is an effective way to ***share information*** between ***customers*** and my organization.	1 2 3 4 5 6 7			N/A
3. E-mail is an effective way to ***save communication costs***	1 2 3 4 5 6 7			N/A
4. E-mail is an effective way to ***save office expenses***.	1 2 3 4 5 6 7			N A
5. E-mail can improve ***internal communication***.	1 2 3 4 5 6 7			N A
6. E-mail can improve ***external communication***.	1 2 3 4 5 6 7			N A
7. E-mail communication extends ***service hours.***	1 2 3 4 5 6 7			N/A
8. E-mail communication is ***secure***. (Messages are delivered to the correct system mailbox without being accidentally or deliberately altered.)	1 2 3 4 5 6 7			N A
9. E-mail communication is ***private***. (Only authorized persons can see a message.)	1 2 3 4 5 6 7			N/A

2

SECTION B

This section of the questionnaire describes different business communication tools. For each of the following tools, please indicate whether you believe your organization will, currently uses that tool, plans to use it in the future, never adopt that tool, or no opinion. (please check the suitable item and specify how many years in the second item)

1. The ***phone*** is/will be used to communicate
    general information with customers.

    ☐ CURRENT
    ☐ IN _____ YEARS
    ☐ NEVER
    ☐ NO OPINION

2. The ***phone*** is/will be used to communicate
    personal account information with customers.

    ☐ CURRENT
    ☐ IN _____ YEARS
    ☐ NEVER
    ☐ NO OPINION

3. The ***fax*** is/will be used to communicate
    general information with customers.

    ☐ CURRENT
    ☐ IN _____ YEARS
    ☐ NEVER
    ☐ NO OPINION

4. The ***fax*** is/will be used to communicate
    personal account information with customers.

    ☐ CURRENT
    ☐ IN _____ YEARS
    ☐ NEVER
    ☐ NO OPINION

5. ***E-mail*** is/will be used to communicate ***general
    information*** with customers.

    ☐ CURRENT
    ☐ IN _____ YEARS
    ☐ NEVER
    ☐ NO OPINION

6. ***E-mail*** is/will be used to communicate ***personal
    account information*** with customers.

    ☐ CURRENT
    ☐ IN _____ YEARS
    ☐ NEVER
    ☐ NO OPINION

7. ***World Wide Web sites*** is/will be used to communicate
    general information with customers.

    ☐ CURRENT
    ☐ IN _____ YEARS
    ☐ NEVER
    ☐ NO OPINION

8. ***World Wide Web sites*** is/will be used to communicate
    personal account information with customers.

    ☐ CURRENT
    ☐ IN _____ YEARS
    ☐ NEVER
    ☐ NO OPINION

SECTION C

This section of the questionnaire asks about some of the factors that might or might not be important in choosing whether to adopt e-mail. For each statement. please indicate the extent to which you personally agree or disagree. (please circle the appropriate number)

	STRONGLY DISAGREE	NEUTRAL	STRONGLY AGREE	NO OPINION

1-A. *Cost* is a major factor to be considered when using e-mail to communicate with *colleagues*.
1 2 3 4 5 6 7 N/A

1-B. *Cost* is a major factor to be considered when using e-mail to communicate with *customers*.
1 2 3 4 5 6 7 N/A

2-A. *Communication speed* is a major factor to be considered when using e-mail to communicate with *colleagues*.
1 2 3 4 5 6 7 N/A

2-B. *Communication speed* is a major factor to be considered when using e-mail to communicate with *customers*.
1 2 3 4 5 6 7 N/A

3-A. *Security* is a major factor to be considered when using e-mail to communicate with *colleagues*.
(Security means messages are delivered to the correct system mailbox without being accidentally or deliberately altered.)
1 2 3 4 5 6 7 N/A

3-B. *Security* is a major factor to be considered when using e-mail to communicate with *customers*.
1 2 3 4 5 6 7 N/A

4-A. *Privacy* is a major factor to be considered when using e-mail to communicate with *colleagues*.
(Privacy means only authorized persons can see a message.)
1 2 3 4 5 6 7 N/A

4-B. *Privacy* is a major factor to be considered when using e-mail to communicate with *customers*.
1 2 3 4 5 6 7 N/A

5-A. Whether *competitors' use* e-mail or not is a major concern when using e-mail to communicate with *colleagues*.
1 2 3 4 5 6 7 N/A

5-B. Whether *competitors' use* e-mail or not is a major concern when using e-mail to communicate with *customers*.
1 2 3 4 5 6 7 N/A

SECTION D

This section of the questionnaire asks you to rate some of the characteristics of e-mail as a communication tools. For each statement, please indicate the extent to which you personally agree or disagree. (please circle the appropriate number)

To what extent would you characterize e-mail as having the ability to:

		STRONGLY DISAGREE	NEUTRAL	STRONGLY AGREE	NO OPINION
1.	give and receive timely feedback.	1 2 3 4 5 6 7			N/A
2.	transmit a variety of different cues beyond the explicit messages (including nonverbal cues).	1 2 3 4 5 6 7			N/A
3.	tailor messages to your own or other personal circumstances.	1 2 3 4 5 6 7			N.A
4.	use rich and varied language.	1 2 3 4 5 6 7			N/A
5.	provide immediate feedback.	1 2 3 4 5 6 7			N A
6.	convey multiple types of information (verbal and nonverbal).	1 2 3 4 5 6 7			N A
7.	transmit varied symbols (e.g., words, numbers, and pictures).	1 2 3 4 5 6 7			N/A
8.	design messages to your own or others' requirements.	1 2 3 4 5 6 7			N/A

5

SECTION E

This section of the questionnaire asks about your general perceptions of adopting e-mail in your organization. For each statement, please indicate the extent to which you personally agree or disagree. (please circle the appropriate number)

		STRONGLY DISAGREE	NEUTRAL	STRONGLY AGREE	NO OPINION
1.	Although it might be helpful. using e-mail is certainly not compulsory in my job.	1 2 3 4 5 6 7			N/A
2.	I believe that it is easy to get e-mail to do what I want it to do.	1 2 3 4 5 6 7			N/A
3.	In my organization, one sees e-mail widely used.	1 2 3 4 5 6 7			N/A
4.	Using e-mail improves the quality of work I do.	1 2 3 4 5 6 7			N/A
5.	I believe I could communicate to others the consequences of using e-mail.	1 2 3 4 5 6 7			N/A
6.	I know where I can go to satisfactorily try out various uses of e-mail.	1 2 3 4 5 6 7			N/A
7.	I have seen what others do use their e-mail.	1 2 3 4 5 6 7			N/A
8.	My boss does not require me to use e-mail.	1 2 3 4 5 6 7			N/A
9.	My interaction with e-mail is clear and understandable.	1 2 3 4 5 6 7			N/A
10.	Using e-mail enables me to accomplish tasks more quickly.	1 2 3 4 5 6 7			N/A
11.	I would have no difficulty telling others about the results of using e-mail.	1 2 3 4 5 6 7			N/A
12.	I have had plenty of opportunity to see e-mail being used.	1 2 3 4 5 6 7			N/A
13.	Using e-mail makes it easier to do my job.	1 2 3 4 5 6 7			N/A
14.	The results of using e-mail are apparent to me.	1 2 3 4 5 6 7			N/A
15.	E-mail was available to me to adequately test run various applications.	1 2 3 4 5 6 7			N/A

6

16. Using e-mail is compatible with all aspects of my work. 1 2 3 4 5 6 7 N/A

17. Overall. I believe that e-mail is easy to use. 1 2 3 4 5 6 7 N/A

18. I have seen e-mail in use outside my firm. 1 2 3 4 5 6 7 N/A

19. People in my organization who use e-mail have a high profile. 1 2 3 4 5 6 7 N/A

20. I was permitted to use e-mail on a trial basis long enough to see what it could do. 1 2 3 4 5 6 7 N/A

21. Using e-mail gives me greater control over my work. 1 2 3 4 5 6 7 N/A

22. It is easy for me to observe others using e-mail in my firm. 1 2 3 4 5 6 7 N/A

23. Using e-mail fits into my work style. 1 2 3 4 5 6 7 N/A

24. Having e-mail is a status symbol in my organization. 1 2 3 4 5 6 7 N/A

25. Learning to operate e-mail is easy for me. 1 2 3 4 5 6 7 N/A

26. E-mail is not very visible in my organization. 1 2 3 4 5 6 7 N/A

27. I think that using e-mail fits well with the way I like to work 1 2 3 4 5 6 7 N/A

28. I would have difficulty explaining why using e-mail may or may not be beneficial. 1 2 3 4 5 6 7 N/A

29. Before deciding whether to use an e-mail system. I was able to properly try it out. 1 2 3 4 5 6 7 N/A

30. Using e-mail enhances my effectiveness on the job. 1 2 3 4 5 6 7 N/A

31. I have not seen many others using e-mail in my department. 1 2 3 4 5 6 7 N/A

32. People in my organization who use e-mail have more prestige than those who do not. 1 2 3 4 5 6 7 N/A

SECTION F

The remainder of the questionnaire asks you for some background information about yourself and your company. All of the information you provide will be held in confidence.

1. What is your gender?

    A. MALE
    B. FEMALE

2. What is your age?

    _____ YEARS

3. What is your company's name?

    NAME _____

4. What is your company's location?

    CITY _____

5 . What is the highest level of education you have attained? (circle one)

    A. ELEMENTARY SCHOOL
    B. SECONDARY SCHOOL
    C. COMMUNITY OR TECHNICAL COLLEGE
    D. BACHELOR'S DEGREE
    E. MASTER'S DEGREE
    F. DOCTORAL DEGREE
    G. OTHER
       please specify: _____

6. How many people work in your department?

    _____ PEOPLE

7. How many people work in your branch of bank?

    _____ PEOPLE

8. Please circle the electronic communication tools that are *generally* in use in your company *now*? (circle ALL that apply)

    A. PHONE
    B. FAX
    C. E-MAIL
    D. ELECTRONIC DATA INTERCHANGE
    E. WORLD WIDE WEB SITES
    F. OTHER
       please specify: _____

9. Please circle the electronic communication tools that you expect will be *generally* in use in your company *in the future*. (circle ALL that apply)

    A. PHONE
    B. FAX
    C. E-MAIL
    D. ELECTRONIC DATA INTERCHANGE
    E. WORLD WIDE WEB SITES
    F. OTHER
       please specify: _____

10. How long have you been using e-mail in your company? (circle one)

    A. NEVER USED
    B. LESS THAN 6 MONTHS
    C. 6 MONTHS TO 12 MONTHS
    D. MORE THAN 12 MONTHS TO 24 MONTHS
    E. MORE THAN 24 MONTHS

11. How often do you use e-mail in your company? (circle one)

    A. DAILY
    B. WEEKLY
    C. MONTHLY
    D. NEVER

Do you have any suggestions which you feel would be helpful for this research?

Thank you very much for your assistance!

Appendix B

E-mail Questionnaire -- Chinese

您好：

　　目前電子郵件(E-mail)在社會上是一個很受歡迎的通訊工具。隨著電子郵件使用者的增加，電子郵件在商業上的應用也日愈重要。本問卷是針對電子郵件在商業上的應用而設計的：介由比較臺灣和加拿大兩國的財務機構(銀行)，目前使用電子郵件的情形來評估電子郵件未來的發展方向和國際應用前瞻。

　　電子郵件是指一項資訊科技，它可以讓網路使用者透過電子工作站來傳遞訊息或文件，而和其他的個人或團體通訊。

　　您的參與對於這個研究是非常的重要。請您花幾分鐘時間來填寫本問卷，將有助於了解您對於電子郵件所持有的態度。

　　您是經過隨機抽樣選擇後的問卷調查對象。本問卷是採不計名方式，您所提供之資料僅供本研究使用。所有的問題都沒有對錯之分，我們僅對您的意見有興趣，請您儘可能回答所有的問題。我們非常感謝您的鼎力協助，並請您在填寫完本問卷後，以傳真方式將資料傳至臺北：

臺北聯絡地址：　　　　　　　　　　　加拿大聯絡地址：

王瓊珠　　　　　　　　　　　　　　　Chung-Chu Wang
電話：(02) 581-9397　　　　　　　　Phone : (613) 727-0602
傳真：(02) 581-4366　　　　　　　　Fax　 : (613) 520-4427
　　　　　　　　　　　　　　　　　　e-mail : cwang@business.carleton.ca

　　如果您對於本問卷有任何問題，或有興趣於未來做更深入的研究，請接洽上面的聯絡地址。

<div align="center">非常感謝您的支持與配合！ :-)</div>

A

下列的敘述是有關於您對於使用電子郵件的一些基本看法 。〔 請圈選一個最符合您狀況的號碼〕

	非常不同意	中立	非常同意	無意見

1. 使用電子郵件是一種有效率的方式與*同事共用資訊*。   1 2 3 4 5 6 7   N/A

2. 使用電子郵件是一種有效率的方式與*顧客共用資訊*。   1 2 3 4 5 6 7   N/A

3. 使用電子郵件是一種有效率的方式來*節省溝通成本*。   1 2 3 4 5 6 7   N/A

4. 使用電子郵件是一種有效率的方式來*節省辦公室費用*。   1 2 3 4 5 6 7   N/A

5. 使用電子郵件可以改善*內部溝通*。   1 2 3 4 5 6 7   N/A

6. 使用電子郵件可以改善*外部溝通*。   1 2 3 4 5 6 7   N/A

7. 使用電子郵件可*擴大服務時間*。   1 2 3 4 5 6 7   N/A

8. 電子郵件是具有*安全性*。   1 2 3 4 5 6 7   N/A
   〔安全性是指訊息傳遞至正確的信箱而沒有被更改。〕

9. 電子郵件是具有*隱密性*。   1 2 3 4 5 6 7   N/A
   〔隱密性是指只有收信人有權力查閱訊息如信件或文件等。〕

B

下列的敘述是有關於不同的商業通訊工具的趨勢。請勾選一個最適合您的狀況 "目前正在使用"、 "未來_____年將使用" 〔請註明時間〕、 "都不考慮使用"、及 "無意見"。

1. 我們會使用*電話*與顧客溝通*一般資訊*。

    □ 目前正在使用
    □ 未來_____年將使用
    □ 都不考慮使用
    □ 無意見

2. 我們會使用*電話*與顧客溝通*個人帳戶資訊*。

    □ 目前正在使用
    □ 未來_____年將使用
    □ 都不考慮使用
    □ 無意見

3. 我們會使用*傳真機*與顧客溝通*一般資訊*。

    □ 目前正在使用
    □ 未來_____年將使用
    □ 都不考慮使用
    □ 無意見

4. 我們會使用*傳真機*與顧客溝通*個人帳戶資訊*。

    □ 目前正在使用
    □ 未來_____年將使用
    □ 都不考慮使用
    □ 無意見

5. 我們會使用*電子郵件*與顧客溝通*一般資訊*。

    □ 目前正在使用
    □ 未來_____年將使用
    □ 都不考慮使用
    □ 無意見

6. 我們會使用*電子郵件*與顧客溝通*個人帳戶資訊*。

    □ 目前正在使用
    □ 未來_____年將使用
    □ 都不考慮使用
    □ 無意見

7. 我們會使用*全球資訊網路*與顧客溝通*一般資訊*。
    (World Wide Web)

    ☐ 目前正在使用
    ☐ 未來_____年將使用
    ☐ 都不考慮使用
    ☐ 無意見

8. 我們會使用*全球資訊網路*與顧客溝通*個人帳戶資訊*。
    (World Wide Web)

    ☐ 目前正在使用
    ☐ 未來_____年將使用
    ☐ 都不考慮使用
    ☐ 無意見

C

下列的問題是探討貴公司在採用電子郵件時，對主要影響因素的考量程度。〔請圈選一個適合您狀況的號碼〕

	非常不同意	中立	非常同意	無意見

1-A. 使用電子郵件與*同事*們連絡，*成本*是重要的
      考量因素？   1 2 3 4 5 6 7   N/A

1-B. 使用電子郵件與*客戶*們連絡，*成本*是重要的
      考量因素？   1 2 3 4 5 6 7   N/A

2-A. 使用電子郵件與*同事*們連絡，*時效*是重要的
      考量因素？   1 2 3 4 5 6 7   N/A

2-B. 使用電子郵件與*客戶*們連絡，*時效*是重要的
      考量因素？   1 2 3 4 5 6 7   N/A

3-A. 使用電子郵件與*同事*們連絡，*安全性*是重要
      的考量因素？   1 2 3 4 5 6 7   N/A
      〔安全性是指訊息傳遞至正確的信箱而沒有被更改。〕

3-B. 使用電子郵件與*客戶*們連絡，*安全性*是重要
      的考量因素？   1 2 3 4 5 6 7   N/A

4

		非常不同意 中立 非常同意 無意見

4-A. 使用電子郵件與*同事*們連絡，*隱密性*是重要的考量因素？　　　　　1　2　3　4　5　6　7　　N/A
〔隱密性是指只有收信人有權力查閱訊息例如：信件或文件等。〕

4-B. 使用電子郵件與*客戶*們連絡，*隱密性*是重要的考量因素？　　　　　1　2　3　4　5　6　7　　N/A

5-A. 使用電子郵件與*同事*們連絡，*同行是否使用*是重要的考量因素？　　　　　1　2　3　4　5　6　7　　N/A

5-B. 使用電子郵件與*客戶*們連絡，*同行是否使用*是重要的考量因素？　　　　　1　2　3　4　5　6　7　　N/A

D

下列的敘述是有關於電子郵件的一些基本特性。〔請圈選一個最符合您的狀況〕

請根據下列對電子郵件的描述，您覺得《電子郵件》具有的能力：

| | 非常不同意 中立 非常同意 無意見 |

1. ….. 在極短的時間內，可以給與或接收訊息的答覆〔例如：信件、文件、公文、或商業書信等〕。　　1　2　3　4　5　6　7　　N/A

2. ….. 傳送多樣化但非語言性的訊息。　　1　2　3　4　5　6　7　　N/A

3. ….. 給予自已或他人修改和修飾訊息的環境。　　1　2　3　4　5　6　7　　N/A

4. ….. 使用豐富和不同的語言。　　1　2　3　4　5　6　7　　N/A

5. ….. 提供及時的答覆。　　1　2　3　4　5　6　7　　N/A

6. ….. 傳達多元化的資訊。　　1　2　3　4　5　6　7　　N/A

7. ….. 傳送多樣化的符號。〔字，數字，圖型。〕　　1　2　3　4　5　6　7　　N/A

8. ….. 依據自已或他人的需求設計訊息。　　1　2　3　4　5　6　7　　N/A

E

下列的敘述有可能解釋您在公司中，對電子郵件所持的態度。〔請圈選適當的號碼〕

	非常不同意　　中立　　非常同意　無意見
1. 雖然採用電子郵件可能有幫助，但是我的工作上並沒有強制要求去使用它。	1 2 3 4 5 6 7　N/A
2. 透過電子郵件，可以容易達成我想要它做的事。	1 2 3 4 5 6 7　N/A
3. 在公司內，電子郵件是很普遍的。	1 2 3 4 5 6 7　N/A
4. 使用電子郵件可以提高我的工作品質。	1 2 3 4 5 6 7　N/A
5. 我能與別人交換使用電子郵件的心得。	1 2 3 4 5 6 7　N/A
6. 我知道那些地方提供試用不同類型的電子郵件的服務。	1 2 3 4 5 6 7　N/A
7. 我看過別人使用電子郵件。	1 2 3 4 5 6 7　N/A
8. 我的主管沒有要求我使用電子郵件。	1 2 3 4 5 6 7　N/A
9. 我對電子郵件的互動性是清楚和明了的。	1 2 3 4 5 6 7　N/A
10. 使用電子郵件可使我完成工作更有效率。	1 2 3 4 5 6 7　N/A
11. 我能夠告訴別人使用電子郵件的心得。	1 2 3 4 5 6 7　N/A
12. 我有很多機會看到別人使用電子郵件。	1 2 3 4 5 6 7　N/A
13. 使用電子郵件可以簡易我的工作。	1 2 3 4 5 6 7　N/A
14. 使用電子郵件的效果　，對我而言有顯著的效果。	1 2 3 4 5 6 7　N/A
15. 我能充分試用不同的電子郵件。	1 2 3 4 5 6 7　N/A
16. 使用電子郵件與我的其工作它不會互相抵觸。	1 2 3 4 5 6 7　N/A

17. 我認為電子郵件是容易使用的。　　　　　1 2 3 4 5 6 7　N/A

18. 在公司外，我看過別人使用電子郵件。　　1 2 3 4 5 6 7　N/A

19. 在公司中使用電子郵件者具有較高的憑價。　1 2 3 4 5 6 7　N/A

20. 我能獲得電子郵件的試用期，再決定是否採用。　1 2 3 4 5 6 7　N/A

21. 使用電子郵件可使我更能掌握我的工作。　1 2 3 4 5 6 7　N/A

22. 在公司中，我很容易看到別人使用電子郵件。　1 2 3 4 5 6 7　N/A

23. 使用電子郵件能夠與我的工作模式配合。　1 2 3 4 5 6 7　N/A

24. 在公司中使用電子郵件是一種地位的象徵。　1 2 3 4 5 6 7　N/A

25. 對我而言學習使用電子郵件是容易的。　　1 2 3 4 5 6 7　N/A

26. 在公司內，電子郵件不是很普遍的。　　　1 2 3 4 5 6 7　N/A

27. 使用電子郵件能夠密切配合我目前的工作狀況。　1 2 3 4 5 6 7　N/A

28. 我很難解釋為什麼使用電子郵件可能有好處或　1 2 3 4 5 6 7　N/A
沒有好處。

29. 在決定是否使用電子郵件之前，我能充分試用。　1 2 3 4 5 6 7　N/A

30. 使用電子郵件可以強化工作效率。　　　　1 2 3 4 5 6 7　N/A

31. 在我的部門中，我沒有看到別人使用電子郵件。　1 2 3 4 5 6 7　N/A

32. 在公司中使用電子郵件者比沒有使用者有較高　1 2 3 4 5 6 7　N/A
的聲譽。

F

最後的問題是有關於您的個人資料及公司資訊，對於個人資料只用於這個研究並會謹慎保密處理。再次感謝您的協助！

1. 您的性別？

        A. 男性
        B. 女性

2. 您的年齡？

       _____ 歲

3. 公司名稱？

       _____

4. 公司地點？

       _____ 城市

5. 您的最高學歷？〔請圈選一項〕

        A. 小學
        B. 中學、高中或高職
        C. 專科
        D. 大學
        E. 碩士
        F. 博士
        G. 其他
          請說明: _____

6. 您的部門有多少人？

       _____ 人

7. 您的分行有多少人？

       _____ 人

8. 請圈選下列電子通訊工具，您目前正在使用。〔請圈選所有適合的項目〕

    A. 電話
    B. 傳真機
    C. 電子郵件
    D. 電子資料交換
    E. 全球資訊網
    F. 其他
       請說明: _____

9. 請圈選下列電子通訊工具，您預期未來將會使用。〔請圈選所有適合的項目〕

    A. 電話
    B. 傳真機
    C. 電子郵件
    D. 電子資料交換
    E. 全球資訊網
    F. 其他
       請說明: _____

10. 在公司中，您使用電子郵件多久了？〔請圈選一項〕

    A. 不曾使用
    B. 不滿 6 個月
    C. 6 個月至 12 個月
    D. 超過 12 個月至 24 個月
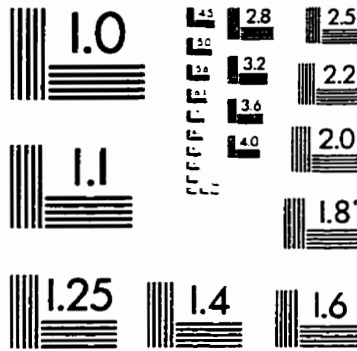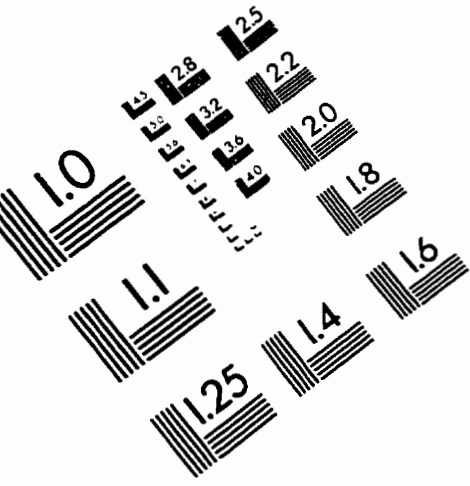   E. 超過 24 個月

11. 在公司中，您多久使用一次電子郵件?〔請圈選一項〕

    A. 每天使用
    B. 每週使用
    C. 每月使用
    D. 不曾使用

您的意見將有助於這個研究，對於本問卷您是否有任何的建意？

謝謝您的協助！

IMAGE EVALUATION
TEST TARGET (QA-3)

150mm

6"