Electronic Mail: An exploration of the level of use and knowledge of the email facility by Business Studies academic staff at Massey University.

A thesis presented in partial fulfilment of the requirements
for the degree of Master of Business Studies in
Human Resource Management at Massey University

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March 1995

Abstract

Despite the widespread adoption and use of electronic mail in academia we still do not have a clear understanding of how well it is used or how knowledgeable users are of the email systems they use.

In the present study, academic staff members in Business Studies at Massey University completed a questionnaire detailing their use of email in terms of frequency and ability to use sophisticated functions. The effects email has on communication behaviours, including effects on communication participants, content, and process was also investigated as well as the knowledge users had of the Massey University email system in particular, and the general process of communicating electronically.

The sample included 72 respondents (a 47.5% response rate); of which 60% were male, 39% female, and one respondent failed to supply demographic information. The ages of respondents varied, with 29% in the 26-35 category, 38% in the 36-45 category, 32% in the 46-55 category, and 1 respondent was under 26 years old.

The findings show that while the Massey University email facility is used relatively frequently, the level of sophistication in usage was quite low. Several interesting effects on communication were discovered; typically email provided a potential to communicate with a wider pool of people, although such potential is undermined by colleagues not having the facility, not using the facility if they do have it, and the difficulty in accessing email addresses. Respondents also recognised the need to alter the process of their communication when choosing to use the electronic medium as opposed to more traditional media.

Generally, respondents had a sound knowledge of the email systems and packages that they used, although they were less able to identify all the facilities they had access to. Respondents had received different forms of written information and/or training on how to use email, and the helpfulness of such support was given mixed ratings.

The present study is one of the few that looks at variation in behaviours and attitudes related to email from academic respondents that range in levels of use, including non-users and those demonstrating excessive levels of use. It shows distinct differences in the efficacy of the medium in academia as opposed to the business environment, and suggests that writers need to stipulate more clearly which setting they are referring to.

The findings of the present study point to a need for more effective user support systems to encourage maximum use of the resource, the introduction of an international email directory, more widespread use of the facility, and the development of standardised norms or etiquette of use.

The present study provided important basic information about the use and understanding of email among academics. It also lays the foundation for a longitudinal study of influences on changes in use and understanding following the implementation of the new email system and support network at Massey University.

Preface

The speed-up of diffusion, the self-reinforcing character of technological advance, by which each forward step facilitates not one but many additional further steps, the intimate link-up between technology and social arrangements - all these create a form of psychological pollution, a seemingly unstoppable acceleration of the pace of life.

(Toffler, 1970, p. 380)

Acknowledgments

At this point the end is in sight, and I can thank all the people who have helped me along the way in their own special ways.

First, and academically foremost, I'd like to thank my supervisor, Dr Lesley Frederikson for all of her assistance, advice, and calm-headedness in times of trouble, as well as the occasional verbal reminders that perhaps I shouldn't be too relaxed in getting the ball rolling. Also for all the discussions on other aspects of life that reminded me that there is life aside from the big "T".

Also, Professor Philip Dewe offered his expert knowledge on the ambiguities and ethical concerns involved when designing questionnaires. His dedication to research within the department was duly noted when he was bedridden with jetlag and the flu, yet still managed to coherently proof my draft.

Assistance along the way (in whatever shape or form) was much appreciated. Louise has somehow managed to survive sharing rooms with me throughout the whole ordeal, despite the many piles of junk, scrawlings on the whiteboard, and absentmindedness mixed with an element of spasmodic moodswings.

Friends in HRM that have supported, encouraged (corrupted) me, were there to listen in times of need as well as to tell me to "get a life" when necessary, need some mention; the choice-brother-dude-cats Vince, Jacqui, Karl, as well as good friends Fiona, Bev, and Jo. Sound advice (academic or otherwise) along the way from Glyn, Su, Frank, Paul and Robin Insull. Finally, the assistance and support from the department (hence my unattended in-box for the past 3 months), Chris and Ma and their great computing resources were a bonus!!

Believe it or not, I still managed to have a home life, and the encouragement from friends and family was great, especially Mum, Dad, Tina, my Grandparents, and Brett.

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The Context

CHAPTER ONE: INTRODUCTION

Email Today

Electronic mail (email) is a computer-supported form of communication which allows the rapid exchange of information carried in messages which may include textual and numeric data, computer programmes, and (in some cases) graphics from one user to another over some network (adapted from Fleming & Kilgour, 1994; Updegrove, Muffo & Dunn, 1990). Email operates as a store-and-forward mode of operation. This means that the sender is released as soon as possible and is free to receive messages or to send other messages, as the system assumes responsibility for delivery of the message to the addressee (Vervest, 1985).

Email is viewed as the most common form of computer-mediated communication (Turoff, 1989), surpassing the verbal medium of voice mail, although the two are regularly compared. Historically, email has had the greatest impact on the business domain. This is largely because email has emerged as a useful medium just as many corporations are facing extreme pressure to increase productivity (Leslie, 1994). The efficiency gains which email brings have been widely reported in the business environment. Within the academic setting, email's impact seems to vary dramatically depending on the discipline (Leslie, 1994). However, with recent demands for universities to operate professionally, stressing accountabilities and efficiency gains, email is starting to offer academics what it has long offered the business environment.

Structure of Report

This report will be divided into three main sections: the context, the study, and conclusions. The context presented in chapters one and two will provide the background to the study. The introduction shapes the direction of the report and gives

a brief overview of each chapter. The literature review provides a concise summary of the relevant findings that have shaped and informed the present study. While most of the literature on email is based on the technical aspects of the medium (such as how to implement email and its components, and what system would be best for an organisation), this review will look at the human implementation factors. What emerges from the literature review are the three aspects of email: the good, the bad, and the ugly. The main reason for this style is that there are many good sides to email; however these are primarily recognised in the business environment. What we typically see in the academic setting are the attempts to achieve these benefits, which are sometimes recognised, but more often than not do not meet the specific requirements of the academic setting. Universal to all users of email, there are ugly, or serious downsides to the electronic medium, which must be considered when deciding to use it as a primary communication medium.

Section two includes chapters three to six which outline the present study, including its rationale and the research questions. The methodology follows, which sets out the participants, research design and procedure. These details are provided (along with a copy of the questionnaire in the appendices) for the benefit of putting the results in context, and facilitating follow-up research. The results and discussion compare and contrast the present study with prior research in the existing literature. Conceptually, the results will be divided into two main categories: the use of email; and knowledge in terms of the system and of the process of communicating electronically. The use of the electronic mail facility will be explored in terms of frequencies, sophistication of use, and the communication effects of such use. The level of knowledge will be explored in terms of knowledge of the concept of email and its components, as well as knowledge of the system used at Massey University. Certain relationships between factors will then be discussed, with a view to determine associations between variables.

Section three (chapter seven) will provide the conclusions of the report, which integrates findings of this, and other related research. The chapter will present a

summary of the research, outline its strengths and limitations, and consider the direction of future research. The purpose here is to place the present study in a context of ongoing research.

CHAPTER TWO: LITERATURE REVIEW

The Evolution of Electronic Mail

Nineteen sixty-nine heralded the introduction of the first reported major computer network designed to assist with academic research (Schaefermeyer & Sewell, 1988). Managed by the US Department of Defence Advanced Research Projects Agency (DARPA), the system (ARPANET) connected researchers in academia, industry and government through their computers. The network was conceived as a resource- sharing system for data analysis, which meant that access to powerful but remote computational services was made readily available to members of the network (Schaefermeyer & Sewell, 1988). Often, such resources were too expensive for each organisation to purchase, therefore, a shared centralised system meant that all users had access to many computational tools at a small fraction of their cost. While successful at fulfilling its primary aim of greater access to remote resources, the ARPANET experience demonstrated that computer networking has the key benefit of being an information sharing facility (Jennings, Landweber, Fuchs, Farber, & Adrion, 1986). Users not only had access to equipment that their individual organisations could not afford to purchase, but they also had a vehicle through which information could be shared between remote organisations. This realisation was the first step toward adopting computer networking as a communication tool for researchers.

Since these early stages of email, the introduction and development of computer networks has boomed, the most influential and widely used being the International Network (Internet). This huge 'mother network' is another resource that was introduced to serve the communication needs of government and academia (Brody, 1992). However, the number of computers connected to the Internet (through smaller networks) has grown at a very rapid pace, estimated at between 5 and 10 million in 1992 (Brody, 1992). Although the Internet system facilitates global electronic mail,

there are many additional systems that provide the electronic mail facility on a smaller scale. This makes it extremely difficult to gauge the full extent of use of electronic mail as a communication tool. Perhaps the most reliable estimate is given by the Electronic Mail Association, which states that "approximately 50 million people use electronic mail today, and that number is growing annually by more than 25 percent" (Martinez, 1994, p. 77). Some go further to say that "by the end of the century (the more adventurous [said] by the 1990s) virtually everyone will be connected through a vast array of computer-mediated communications networks" (Heinmiller, 1983, p. 82).

Such estimates of current use, and predictions of future use imply the widespread acceptance and adoption of electronic mail as a form of communication. It is not surprising that high levels of optimism toward the technology were expressed in the early 1980s, when we consider the management writings of the decade such as Toffler, Naisbitt and Drucker. John Naisbitt (for e.g., *Megatrends: Ten New Directions Transforming Our Lives*, 1984) and Alvin Toffler (for e.g., *The Third Wave*, 1981) described our sudden thrust into a new world characterised as 'Post-industrial' or an 'Information Society'. A key characteristic of this new society is that information is more important than products, services or cash; the new source of power not being money in the hands of a few, but information in the hands of the many (Fist, 1993). Peter Drucker (1986) developed this idea further, stating that it is not good enough just to have knowledge, but that structures must be in place that allow that knowledge to be applied efficiently within the society as a whole (as cited in Fist, 1993). By providing such structures, the electronic mail facility can improve the efficiency of our communications.

The concept and use of electronic mail has come a long way since the ARPANET exercise in 1969. Computer-mediated communication technologies have advanced to be able to offer users standardisation of products and declining prices, and with common carriers that offer gateway services between incompatible networks, electronic mail is now at the forefront of such technologies (Richey, 1990). Email is growing at a staggering rate, and is rapidly being transformed from an academic and

research facility into a candidate for an all-encompassing world-wide mail system (Hilvert, 1993). Whether or not this potential is recognised entirely depends on the enthusiasm expressed by eventual users of the system to learn and adopt the facility. This acceptance of new communication technology is sometimes hard to promote but once fully accepted, and achievement of potential has been recognised, we rarely regret the advancement. This observation is best illustrated by Doucette (1992), who reminisces

> Remember the early days of telephone answering machines and how people would dread 'talking' to one? Now those same people complain the loudest when they call someone only to find they aren't home and don't have an answering machine. And how about the bank's automatic teller machines? No way would people use one of 'those things' when they first began appearing in malls and airports. Now there's a near riot when the machine is down for repairs. Attitudes change about technology. And it looks like electronic mail is doing its part to win converts in the industry's crusade to work new ways (p. 14).

The Electronic Message

The specific implementations of email vary across different software environments, but the basic concept is a computer-enhanced memorandum (Updegrove, et al., 1990). Figure 1 (over page) gives an illustration of a basic electronic message.

```
From CWallace@mailserver Tue Oct 11 09:05:12 1994
From: "C.M. Wallace" <C.M.Wallace@massey.ac.nz>
Date: Tue, 11 Oct 94 08:56:45 +1200
To: "N.L. Stirton" <N.L.Stirton@massey.ac.nz>
Subject: Re: Communication Studies Casebook
In-Reply-To: Your letter of Mon, 10 Oct 94 17:52:05 +1200
X-Mailer: NETMAIL/PC Version 1j
Status: RO


Hello Cath
>Hiya Nic!

Sorry to hear that you have not been well lately - must be end of year
infliction syndrome!!!
>Away 1 day and there's 42 bits of email waiting. Help!

Anyway, I am writing to ask if you know what the deadline is for cases
to be included in the Communication Studies Casebook.  The letter I
received just states when Bev and Deborah intend to have an edited draft out.
>It's 20 OCt.

Is your letter more specific???  How are your cases coming along?  I have
decided to add a couple more dimensions to mine.
>Margie doesn't seem to have got the full version either. I got a 'Guidelines'
page, 2 page letter and the Longman Paul Guide for authors (many pages).
Come and have a look if you like. I sent in proposals for 3 cases and have
got 2 accepted- one with Jacqui and Colleen 'Getting offside when going
offshore' and another 'Investigating IT' by me. What are you writing on?

Might see you tomorrow at the lunch in town, otherwise later in the week.
>Don't get sick meantime!
See ya later

Nic
>Cath
```

Figure 1: Example of an email message

Wilson (1983, pp. 13-15) provides a comprehensive summary of the features and handling of electronic mail. Each message consists of an 'envelope' and actual content. The envelope is the information that is required for the message to reach its intended destination, typically the name and electronic address of the receiver. The addressing system should be straightforward, based on the receiver's name rather than cryptic codes (Beaver, 1985) to avoid unnecessary errors when inputting. Most people prefer to use common names, as it is easier to input, and also users are better able to make an educated guess of the address of another user.

Wilson (1983) further categorises the message content into the header information and body of the message. The header contains predefined fields which are specified by the system, and are part of any electronic mailing process. For an example of email headers and their standard contents, see the top of Figure 1 (previous page). The electronic header is much like the header of a written memorandum. It specifies the sender of the message, the intended receiver of the message, the date the message was sent, the length of the message, as well as a brief subject line outlining the content of the message.

The electronic medium requires and provides greater accuracy in heading details than a written memo. The address of the sender is automatically inserted by the system, as is the exact date and time that the message was sent, and the length of the message (Beaver, 1985; Wilson, 1983). This reduces the need to input such detail, and ensures that the receiver has an accurate address for further correspondence. The address of the receiver must be carefully typed in by the sender, otherwise the message will be returned by the system server, or may reach a destination different to that intended. "It does not inspire confidence to send several messages to J. Smith only to discover that the individual you really wanted was J. R. Smith and J. Smith is someone you do not even know" (Heinmiller, 1983, p. 85). The subject line must also be completed by the message sender. This lets the receiver see at a glance what the message is about and how interesting or urgent it is. Finally, the email message contains the actual content, or the reason for the communication. The content and communication effects of the email message will be discussed later in this review.

Aside from the features of an electronic message, users must also be aware of the many handling features of the email facility. Special components of the system assist users at each stage of the messaging process (Wilson, 1983). When creating messages, users have access to special editing facilities. The sophistication of such facilities varies among packages, many email systems providing at least the basic tool of a spellchecker, such as that used in wordprocessing. Sending messages can be much less time consuming, the sender being able to specify any number of receivers, as there are

virtually no boundaries for distribution (Letterie, Morgenstern & Johnson, 1994). The message is sent to a 'mailbox', where it is stored until the receiver is ready to accept it (Beaver, 1985). This means that the message is not sent to the receiver, but can be retrieved from the system at a time and location that is convenient to the receiver (Heinmiller, 1983).

Message retrieval and filing are also much easier than they have been traditionally, the user being able to instantly file to an electronic filing system without needing to physically touch the message, and also having the ability to instantly reply on screen, or forward the message to another user (Beaver, 1985; Perkins, 1982; Wilson, 1983). Finally, Wilson (1983) discusses the security and reliability of email. At the very least, email systems have a password system whereby only authorised people can access the email of another individual. Yet, Wilson (1983) also states that in order for the system to be reliable, back-up facilities must be available so that messages are not accidentally lost. Here lies the principle irony of the concept of email. We want our messages to remain confidential, and yet we demand high reliability, which in effect necessitates the regular backing up and copying of messages on the system. Although the implications of this did not present a problem for those writing on the subject in the past, this very issue has dominated the more recent writings on email. A more extensive analysis of this issue and its implications on the current study will be provided later in this review.

The Use of Electronic Mail

"Electronic mail has come to be used for many purposes by many people in organisations. It is a general-purpose tool that, by virtue of its flexibility, can be useful in many different settings" (Sproull & Kiesler, 1991, p. 131). One particular setting where email is of high benefit, as indicated by the origins of the facility, is in research, specifically the university setting. Komsky (1991) speculated that "as an information processing organisation, a university should provide an exemplary setting for testing the efficacy and acceptance of email as a medium of communication" (p. 310). His

reasoning for this was that "communication for coordination and control is essential for a complex organisation structured into many functional, disciplinary, and departmental units" (p. 310). This observation not only points to the benefits of email to be gained in communicative behaviours, but also to the improvements in intra-organisational coordination. Although a small distinction, it is an important one for any research that aims to assess the levels of use and benefits of an email system. While we traditionally think of email as a facility that offers cheap and quick communication inter-organisationally, we often overlook the added effectiveness and efficiency which the very same facility can provide intra-organisationally. Any exploration of the use and benefits of email must therefore consider both dimensions.

Intra-Organisational Uses of Email

Electronic mail can be used as an internal communication medium for a variety of purposes. The first, and most obvious is to perform administrative duties. In a university setting, much internal memoranda is delivered through traditional written means, using a large quantity of paper. Such waste could be minimised through the dissemination of notices through the electronic medium. However, this can create great difficulties when some individuals do not have access to the facility. Even when such facilities are provided, this approach could still fail. At one campus in California, members of a planning committee were encouraged to communicate through email in between their meeting dates (Komsky, 1991). "Despite a high degree of computer literacy and frequent use of computing for other applications, these faculty have been unwilling to alter their existing communication patterns to include electronic mail" (Komsky, 1991, p. 311). This pilot study showed that acceptance of email reflects the (un)willingness of users to switch to electronic message systems when alternative communication media are readily available.

Obstacles to using email for administrative purposes are also created by the higher echelons of the university system. It has been widely reported that people of higher

authority do not typically utilise the email facility, as they do not want to improve their accessibility (for e.g., Goldfield, 1982). Rather than having to filter through a large quantity of messages daily, senior members of faculty prefer to restrict their communication media to the more traditional methods. Therefore, the potential for email to enhance the administration of university is undermined by users and administrators alike.

Another use of email within a university system is for colleagues to communicate with each other, avoiding the necessity to meet face-to-face, play 'telephone-tag' (the process whereby two individuals try to reach each other by telephone during business hours, usually involving several attempts), or send an internal memo which can take a day to reach the intended destination. Varied work schedules among staff and faculty highlight the needs and advantages of an asynchronous medium of communication (Komsky, 1991). Although this implies that university users should be receptive to the use of email, this is not always the case, and when a large number of people are unlikely to use the system for communication, the system eventually falls down (Komsky, 1991).

For those universities who teach in a 'mixed-mode' i.e., run courses on-campus, as well as teaching through a correspondence system, email provides an additional benefit of keeping closer contact with those students in other locations. By maintaining more open communication lines, students who have the email facility can feel less isolated, and have the opportunity to communicate directly with their course controllers at any time (Cross, 1983; Cutright, 1993; Hawisher & Moran, 1993; Schaefermeyer & Sewell, 1988). Such state-of-the-art teaching methods create environments that are more conducive to learning, and pave the way for more interactive telecommunications, including telecourses, which move further away from the traditional methods of lecture-style teaching (Cutright, 1993). Schaefermeyer and Sewell (1988) elaborate on this point to claim that "we are on the threshold of an *invisible college* where the limitations of information exchange and scholarly inquiry

are no longer controlled by campus boundaries or access (as author or listener/reader) to academic text, journals, and conferences" (p. 113).

Inter-Organisational Uses of Email

There are several reasons why inter-organisational email is so important. The most obvious one is that it provides a fast (often measured in seconds) and inexpensive (often free) medium for communicating with others. Moreover, "with a modem-equipped notebook or laptop computer, you can do this easily while travelling" (Pang, Sadrian & Geoffrion, 1993, p. 28). In the university setting, the most common use of email for external communications involves joint authorship of papers for academics who are geographically dispersed (Solomon, 1990). Other common uses of email are making requests for data or information and subscribing to interest-group lists (Updegrove, et al., 1990). "Since researchers or staff members do not have to pay for every time they access the network, they are encouraged to use it more fully" (Solomon, 1990, p. 64).

Issues Involved in Using Email

Several widely reported issues arise when email is used regularly as a communication tool. Goldfield (1982) presented four prominent problems that may develop when email systems are introduced, giving them the terminology of assured message receivership; documented contact records; intrusive work options; and expanded accessibility. Absolute assured receivership refers to the fact that every message addressed correctly and sent will reach its destination. Stripped of the ability to claim "I didn't get your message," this technology is deemed to "eliminate a great deal of flexibility that is a business fact of life" (Goldfield, 1982, p. 60).

While her reasoning appears sound on first glance, Goldfield (1982) seems to have overlooked two important factors. This 'flexibility' is not a component of an efficient

business system. While it provides individuals a cop-out, it does not represent best practice. Rather, email should be introduced to make communication more efficient, not just to automate an already inefficient system. The other important factor that Goldfield seems to have overlooked in presenting this logic is that not all people who are logged on to an email system are avid users; therefore, they may never have checked their email box, and are justified in claiming the message was not received. Organisations who find this 'inflexibility' issue to be a problem may need to investigate their communication policy, not just blame the tools that are used in the process.

Goldfield (1982) also discusses the fact that all contact via email is recorded and can be stored permanently. This means that other users have a record of your communication with them, which could include any requests or promises of action. In an instant, other users can see whether you have followed up on any action you agreed to take. Once again, this 'problem' seems to only exist for those individuals who have not carried out tasks they agreed to, rather than being a flaw in the email facility.

The third problem that Goldfield (1982) discusses is intrusive work options, also known as 'Saturday morning sign-on syndrome'. This is based on the fact that email provides users with a communication tool at any time and place. The initial excitement of receiving email messages can soon turn into the cause of stress, overwork and burnout, especially when users can access their mail from home and other places through the use of modems.

Finally, Goldfield (1982) talks about the expanded accessibility that email provides. This problem has been recognised by others, and as already mentioned, can result in those people in higher authority refusing to use the email facility to avoid being bombarded with useless information, sent because other users 'could' and not because they 'should'. Rather than being a fundamental fault of the email system, this problem is more a result of the lack of established network ethics and etiquette (Updegrove, et al., 1990). As these evolve into a standard of communicating by email that is made clear to all users, such problems will be minimised, if not eliminated.

The problems outlined by Goldfield (1982) appear to have little relevance to the email users of today, however that is not to say that email does not have recognised problems. Evidence has shown that email messages may be perceived as more impersonal and less work relevant, indicating that organisations should provide users with protocols of what constitutes appropriate use (Adams, Todd & Nelson, 1993). Within academia though, it is not so easy to draw the line between what is work relevant communication and what is not. Universities have therefore traditionally been flexible in allowing such communications, as content restrictions can reduce the value that message systems provide (Adams, et al., 1993). Some authors suggest that informal contact should be encouraged, as it provides users with the experience of using the network, thus they become more comfortable with email making the email facility a part of their daily routine. This is reinforced by Sproull and Kiesler (1991) who state that "people are likely to prefer tools that give them adequate leverage on many tasks over specialised tools that excel at only a few" (p. 132). The argument is that if users can use email for purposes other than just contact with fellow academics overseas, such as contacting relatives; requesting data; making university administrative inquiries; writing to bulletin boards for extramural students, then they will be more likely to use it, and become more skilled and confident with its use.

Potential of Use

Sproull and Kiesler (1991) explain that the benefits of email can be seen at two levels. "First-level effects occur through accelerating the flow of information, regularising communication procedures, and enabling smoother coordination of group tasks. Such improvements are important and may provide the initial cost justification for electronic mail" (p. 128). In this way, email provides efficiency gains to organisations by reducing the cost of communication, as well as the time spent preparing for and participating in that communication. This primary benefit has been recognised since the introduction of electronic mail, however, more recently, second-level effects of the

email facility have become apparent. Sproull and Kiesler (1991) state that these benefits are more interesting, as the technology allows people and groups to interact in ways that were not previously possible. Typically, email gives people greater freedom of expression than other communication media and more choice in the information they give and receive, such benefits being more important for organisations in the long run (Sproull & Kiesler, 1991).

"Universities appear to be conducive settings for new communication and information technologies, but the record shows they have not exploited them to the extent that other organisations have" (Komsky, 1991, p. 332). Electronic mail has failed in many settings. "There are numerous 'ghost' networks that exist on paper and in computer memory banks but are not used. Other networks function but do not come close to reaching their full potential" (Heinmiller, 1983, p. 84). It is important to assess why individuals do not use the system, as it is recognised that the potential for its use is large (Hunter & Allen, 1992). Research has shown that there are two main human implementation factors that are identifiable as most influential in discouraging the use of email. The first is the small number of email counterparts among colleagues (Pliskin, Ball & Curley, 1989; Updegrove, et al., 1990). The second is the lack of a global "directory" of email addresses, or comprehensive directory assistance (Maren, 1993; Pang, et al., 1993; Pliskin, et al., 1989; Schaefermeyer & Sewell, 1988).

Effects on Communication

Most discussions of email will analyse what the medium can do better/faster/easier than more 'traditional' communication media. The nature of the present study will make these kinds of statements necessary, so the following is offered as a basic overview of the communication media which are to be compared with email. The written methods of communication most commonly used within academia as well as the business setting include the letter, memorandum, facsimile, and now computer-mediated communication such as email. The letter provides more formality than the memo and

fax, although memos are primarily used for internal communications. Facsimile provides immediacy in transmission, its simultaneous nature making it more closely linked with the verbal media such as telephone and face-to-face communication than other written forms. The purely verbal methods of communication tend toward informality and immediacy but require synchrony of sender and receiver, and furthermore do not facilitate the transmission of complex data.

While it is similar in some respects to many of the more familiar means of communication - a phone call, a memo, a letter, or a conversation - email also has some unique attributes that create fundamental differences in communication behaviours (Goode & Johnson, 1991). Such differences make email a powerful tool, providing the user with instant benefits. Hirsch (1993) considers the benefits of email to fall within three main categories: 1) email allows for communication that might not otherwise be made; 2) email avoids having to wait until all parties to the communication are 'accessible'; and 3) email enhances the effectiveness of certain kinds of messages.

Studies on the benefits of email have substantiated Hirsch's claims. Plaisent and Bernard (1993) studied the use of email by executives, and found that "email was an obvious response to communication needs as its effects were felt at the individual, inter-group, and intra-group levels" (p. 29). Specific advantages of email for communication that they found fell within the three categories listed by Hirsch (1993), and included the following: "receiving messages does not disturb the executive, as does the telephone; message delivery is independent of the availability of the receiver; messages can be received at the executive's convenience, according to his or her priorities; contacting people becomes independent of locations and time zones; the delay between inquiry and answer is minimised; decision making is thus accelerated; crisis decision making is speeded up; feedback is facilitated" (Plaisent & Bernard, 1993, p. 29).

Undoubtedly, the use of email can bring great benefits to the user, however, its effects on communication have already been demonstrated. Not only does the use of such

communication technology affect the participants to the communication, but it can also influence the content of messages being sent, and the process of that communication. Each of these categories of effects will be discussed below.

Effects on Communication Participants

Most of the conventional methods of communication that we are familiar with, such as the postal system or telephone, transmit information from one physical location to another. They are confined by the limits of geographical dispersion, those being the cost and time involved in communication with people who are at different locations (Perkins, 1982). Email, on the other hand, is fundamentally different in that it overcomes these limits. The email facility recognises that communications is concerned with the transmission of intelligence between *people* (Perkins, 1982). It enables communicators to get on with the task at hand: communication.

Electronic mail brings the participants to the communication to the forefront in other ways.

> [People] who receive email are not passive recipients of data, but active producers of meaning. In interaction with the email system, they transform the data into information they find meaningful. In a sense, an email system might be better described as a reagent than a medium. The users themselves (along with the social construction that they appropriate and that, in turn, appropriates them) join the hardware and software of the email system as processors (or, even better, co-processors) of the data. It is through this interaction that communication richness can emerge (Lee, 1994, p. 154).

Trevino, Rengel and Daft (1987) speculate that the relative newness of email limits its symbolic power in that the medium itself carries no message. This contrasts with a

traditional letter, where the logo or letter head takes care of identifying the sender and their affiliations.

This emphasis on the participant, rather than the actual message can bring new opportunities for those who have limited communication skills or low self-esteem ('E-mail effects on corporate...', 1993). Assisted by the tools of the facility, as well as the informality and extent of perceived anonymity that is afforded, more individuals are encouraged to use email. The interpersonal dynamics, or how individuals relate to each other are relatively more open and egalitarian in electronic communication (Sproull & Kiesler, 1991). This is largely due to the fact that email is a less threatening environment for some people than, say, face-to-face communication. Once again, this encourages communication among participants who would not usually communicate. The elimination of barriers caused by hierarchical differences encourages communication that would not usually occur.

Effects on Message Content

"As the use of electronic mail becomes a larger part of the communication system in an increasing number of organisations, concern is growing among organisational communication scholars over what the impact of that medium will be" (Sherblom, 1988, p. 40). Perhaps the biggest concern is for the ways in which the medium changes what people communicate to each other about (Sherblom, 1988). Proponents of email praise the way in which the medium supports expression of naive opinion (Plaisent & Bernard, 1993), and information that might not normally be communicated (Ross, 1986). However, this can also present grounds for concern, as the willingness of users to type things into a keyboard that they would never say face-to-face provides the opportunity to 'flame' (Edwards, 1993). Flaming is "the heated exchange of messages expressing hostility or defensiveness toward others on the computer network (Thompsen & Ahn, 1992, p. 154). People flame at almost anything from politics to the design of computer programmes to grammar (Turner, 1988). These overly emotional

responses are a direct consequence of the lack of concern for others, and can result in misunderstanding, embarrassment, or even regret (Goode, & Johnson, 1991).

The problems of reduced politeness and concern for others are related *to social psychology.*

> Communication is always social and as far as humans are involved, psychological points of view are often necessary in order to make a fuller understanding possible. Communication through text only excludes *non-verbal behaviour* (tone of voice, smiles, eye contact, etc.) which plays an important role as a regulating feedback in any face-to-face conversation (Clausen, 1991, p. 74).

Although this statement applies to all written forms of communication, email users work remotely on their computers, and have no tangible reminders of an audience, therefore they can easily forget the norms appropriate for communicating with that audience (Sproull & Kiesler, 1991). Therefore, aside from increasing the possibility of flaming, the lack of social cues can also distort the actual meaning of the message (Clausen, 1991; Edwards, 1993; Nall, 1992; Sussman, Golden, & Beauclair, 1991). This is contrary to the earlier writers on the electronic medium, such as that of Kenney (1985), who said that "information delivered by a computer-based message system is easier to understand than a verbal message. Because everything is written in black and white, there is little room for misunderstanding or misinterpretation" (p. 26).

Probably the most common area where meaning can be distorted is where the sender tries to build humour, sarcasm or disagreement into a message. Machrone (1992) states that the writer must work much harder at making such messages clear, otherwise the message could come across as "stupidity, rudeness, or truculence" (p. 87). Fortunately, conventions of language and style are emerging to assist in the construction of such messages (Hawisher & Moran, 1993). One such convention is the use of 'emoticons', or symbols (for e.g., the sideways smile :-)) that are used "to relay

the spirit in which the line is typed, in the way that one would use intonation and rhythm in a spoken message" (Hawisher & Moran, 1993, p. 631). However, these conventions are only just starting to appear, and as with any other kind of communication convention, they are by no means universal or stable (Hawisher & Moran, 1993).

In the meantime, users fall into the pitfalls of flaming; sending inappropriate or irrelevant messages, causing information overload; and most disappointingly, what Edwards (1993) calls creates the 'modem mouth' phenomena, which he so eloquently describes as follows:

> The problem [with email] is, it's so easy for the sender to just dash off whatever comes to mind and hit 'send', that the line between useful messages and self-indulgent mumbling is easily crossed. To make things worse, the phenomenon of the motor mouth (or modem mouth) is almost built-in. Free of the ordinary checks of body English (the blank stare, the fidget, the suppressed yawn, the sidelong glance) or vocal clues (the cleared throat, the all purpose "Look I gotta go"), email enthusiasts ramble on, screen after screen, thrilled to have their uninterrupted say, soliloquising with (they imagine) Shakespearian resonance, blithely forgetting that someone has to *read* this magnum opus (p. 160).

It is surprising that writers of the same time period can assert the very opposite. Plaisent and Bernard (1993) contend that messages "tend to be more concise, less verbose and more disciplined" (p. 29) when using email. Perhaps this is largely determined by the writers' own experiences of email, although more support is provided for the information overload theory, such as that of Martinez (1994), who says "email has led business onto the information superhighway, but on some trips, the drivers can't seem to read the exit signs" (p. 74). White (1993) adds that "there's more material flooding into your inbox each day than anyone could humanly manage to file away, never mind intelligently deal with" (p. 78). This is reinforced by the

comments of Brody (1992), that "computers linked to telecommunications networks spread information - and misinformation - faster than it can be managed" (p. 24). It is important to avoid the problem of info-glut that email, and its ease of communication can bring about. "If there is no way to minimise the amount of information overload from email, people stop using it" ('E-mail effects on corporate...', 1993, p. 8). The problem of information overload can result in individuals ceasing to use email, either intentionally through resisting using the medium, or as a result of their being undermined to use the facility to its full potential, becoming frustrated at the number of messages they have to clear.

The uniqueness of the email facility does have a significant impact on the content of our communications. Not only do we have to pay more attention to the length and tone of our message, but we must also bear in mind that once the 'send' key is hit, we have no comprehension of where it may end up after it has reached our intended receiver, as all systems have a facility to forward messages (Edwards, 1993; Hirsch, 1993). All of these issues demand that much more detail be afforded to the content of our email messages than we do for the more traditional communication media.

Effects on the Communication Process

The electronic medium for communication creates benefits for the communication process. It is ranked among the most important human technologies as it increases the durability, intelligibility, and portability of information (Sproull & Kiesler, 1991). It also allows the integration of communications with other work, so the user can deal with the flow of information to and from them as they see fit (White, 1993). Email also assists in breaking down some of the traditional communication barriers by dissolving boundaries of time and space (Hawisher & Moran, 1993). In its own right, email makes the process of communicating very easy, and we see clearer advantages in the facility when we see how it compares to the more traditional methods of communication.

> Electronic mail is fast. When speed of delivery is important, electronic mail offers clear efficiency gains over hard copy communication. Because electronic communication is asynchronous, it can also offer efficiency gains over telephone communication in which up to 70% of initial attempts fail to reach the intended party (Sproull & Kiesler, 1991, p. 127).

These efficiency gains can become important in most settings, although users should bear in mind the other effects resultant from using the medium that have been discussed.

Knowledge of Electronic Mail

The popularity of email is rapidly increasing, and is even as commonplace as the telephone in some organisations (Cappel, 1993). However, many of these organisations have overlooked the necessity to develop and communicate email usage policies (Cappel, 1993; Heinmiller, 1983; Martinez, 1994). Pearl (1993) stresses, "because an email system is being set up to maximise efficiency, an important step is to encourage users to develop good email work habits. First of all, training throughout the organisation should be mandatory" (p. 50). Pliskin, et al. (1989) found in their research that several other features are essential to have a successful email facility, including "a telephone hotline, a variety of help aids, formal and informal instruction, newsletters, an online directory with a wide range of search options (by name, dept., telephone number, etc.), and a designed 'friendliness' toward non-technical people" (p. 234). Also, in recognition of the potential for system abuse, other researchers recommend that organisations "develop and circulate a written policy forbidding obscene material, racial or sexual material or 'humour', and also forbidding derogatory comments about coworkers, customers, or competitors" (Herr, 1993, p. 37).

It is important that basic training and support is provided to users to increase their understanding of email. In cases where this has not been provided, individuals who have the facility either refuse to use it, or use only a fraction of the power and resources that are available (Updegrove, et al., 1990). A greater knowledge of the system can make email a rewarding and valuable tool for users (Goode & Johnson, 1991). Many of the advantages relevant to email are in terms of efficiency gains, primarily recognised in the business environment. For people in the university setting to reap the same or similar benefits, they must know how to use the facility effectively and the system itself needs policies and controls.

Security Issues

One fear in providing email facilities is that a user could "inadvertently introduce a computer virus into the [organisation's] network via an email file. A virus is a hidden programme designed to vandalise a data bank" (Blackwell, 1994, p. 23). Fortunately, virus detection and eradication software programmes are available and constantly upgraded as new viruses are produced.

One of the biggest disadvantages of the email facility is that users assume their messages are private, especially if they are provided a password (Martinez, 1994). Earlier writers guaranteed the security of email, assuring executives that their communications would never be monitored without their knowledge (for e.g., Perkins, 1982). In fact, this perception of privacy is significantly different to the legal reality (Cappel, 1993). Traditionally, employees have received little privacy protection on the job. This is because privacy hinges on who owns the system and the information on it, and who controls access (Morken, 1991). It is therefore argued that the employers' interests should be favoured because the company's work is done on the employers' premises using the company's equipment (Morken, 1991; Winters, 1993). This means that employers are free to check an employee's email for the purposes of "assuring the

quality and quantity of work-product, and for protecting against theft or fraud" (Winters, 1993, p. 201).

Problems can arise for those employees who communicate through email on the assumption that their messages are private. In at least several cases in the US where employees' email messages have been read by management without their knowledge and consent, leading to lawsuits against employers. Three prominent cases have involved Epson America, Nissan Motor Corp., and Borland International, Inc. (Cappel, 1993). These, and other such lawsuits that have been filed over the email privacy issue illustrate the fact the employees have a poor understanding of their privacy rights, until industrial-type action (such as dismissal) is taken by employers based on information they have received through reading employee email files. "In the cases reported, the employees involved assumed that their email accounts were completely private, and they were surprised to learn later that their email had been accessed by their employer" (Cappel, 1993, p. 9).

This misconception of privacy is not only held by those with limited computer knowledge, but also by those who would be expected to know better.

> This issue was brought home when Eugene Wang, a former vice-president of Borland International, left to work for a competitor, Symantec. After he left, Borland employees logged into Wang's MCI Mail account and found evidence that he had been sending confidential information to Symantec. Borland used this evidence to convince the courts to authorise a search of Wang's home computer to determine if other secrets had been sent ('E-mail effects on corporate...', 1993, p. 8).

This case shows the importance of understanding the extent of privacy afforded to email users. The ability to monitor email communication is a reality, although it may "open a can of legal worms" (Shannon & Rosenthal, 1993, p. 31). Privacy of email messages falls into deeper threat when we consider the amount of messages that end up

on magnetic tape for long-term storage. While email is not intended to be archival, almost every organisation creates regular tape back-ups to combat system failure, and these may contain email documents ('E-mail effects on corporate...', 1993). Although users may delete email messages from their computers, there is a high chance that they are stored away safely somewhere in the system, able to be retrieved on request. Perhaps the most notorious instance of this occurred when such records were retrieved during the Irangate saga.

> Oliver North, the now famous Marine officer at the heart of the Iran-contra scandal, used an email system to communicate with staff at the White House. When it was apparent that he would be charged with illegal activity, he shredded paper documents and purged email messages that might be incriminating. Unbeknownst to him, messages on the email system were routinely copied by a back-up procedure. It was from these back-up tapes that evidence was retrieved and used against him in both the Senate hearings and criminal proceedings (Shannon & Rosenthal, 1993, p. 31).

Although an extreme case, this highlights the need for employees to become informed of the email monitoring policy held by their organisation. A desk, filing cabinet, or office, were traditionally fair game for a search because it was widely recognised that they were used primarily for business purposes (Jacobs, 1992). Likewise, the computer and all applications on it are provided by the employer with the assumption that they are to be used for business purposes, and therefore can be monitored by the employer.

The legitimate reasons for employers to monitor email are very broad (including when an employee leaves, to resolve technical problems, preventing industrial espionage, to name a few listed by Cappel, 1993), giving employers much flexibility to do so. It is therefore important for such employers to establish clear privacy expectations in their employees, and develop and communicate a policy to employees that addresses email

privacy (Cappel, 1993). Typically, these policies specify that the email system is company property and that it is only to be used for business purposes. Such policies may also stress that email files belong to the company, not the individual ('E-mail effects on corporate...', 1993). The development and communication of a privacy policy will align the email user's perceptions with the legal reality, even though the company may never enforce their right to monitor. This is the case with Kodak, where personal files or messages of employees are only monitored under 'special circumstances' (Cappel, 1993). Other companies such as Hallmark Cards and General Motors regard user privacy as a top priority in their email systems, and like to promote an environment of mutual trust and respect through forfeiting their right to access employee email (Cappel, 1993).

Although electronic messaging does present a host of workplace issues, including those relating to individual privacy, its problems are not unique (Cavanagh, 1993). Virtually every form of workplace activity involves privacy issues, and management must make their policies clear at the outset, so that employee perceptions of privacy (including email) reflect the organisational and legal reality.

Section 2:

The Study

CHAPTER THREE: RATIONALE

Overview of Literature

Email is a powerful communication tool that is currently being used in many different settings. Much of the literature emphasises the efficiency gains that are to be made in the business environment through using this fast and cheap medium. Less research has been conducted on the gains to be made in the academic setting (Schaefermeyer & Sewell, 1988). The findings of previous studies highlight the differing perceptions of the efficacy of the email medium within academia. Gurd and Picot (1986) provide one of the few studies on aspects of the use of email by educators. Their research findings indicated relatively little use by participants for academic research and only slightly more for teaching (as cited in Schaefermeyer & Sewell, 1988). A follow-up study was conducted by Schaefermeyer and Sewell in 1988, concluding that academic e-mail users "appear to be utilising e-mail to replace other communication channels - telephone, letter, and face-to-face communication" (p. 120).

While this appears promising, the results must be viewed in light of the experimental design of the researcher, who targeted only the active users of the system. Therefore, their results are not able to be generalised over the entire population of academic staff members. It is easily imaginable how the email facility can be used within the academic setting, yet the value of the facility is measured in different ways than in the business environment. Until we are aware of these differences in value placed on the facility, it is dangerous to generalise the benefits from one setting to another. Existing research can discuss what the facility can do in each setting, yet most literature only discusses the benefits recognised in industry, while observations of an academic nature are noticeably lacking. Even the ABC (association for Business Communications) publications, that follow trends in business

communication from an academic viewpoint, have relatively few published studies of email (Porter, 1993).

Massey System

Email has been on the Massey University network system since (1989). Operating as a wide area network (WAN), the system allows users to communicate with others on the network, as well as use remote services such as private filespace; use and downloading of PC programmes; access to high speed printers, lasers, plotters; and access to high speed compute and statistical services.

Users are also able to communicate with others outside the network through our link with the gateway computer system at Waikato University in Hamilton, where all New Zealand Universities access the internet, and the rest of the world.

From the time of induction, university staff can apply for a user address, which sets up an environment where they can use some or all of the above facilities, and their department is charged a fixed fee for use. The user can then request a copy of a booklet outlining how to use the facility and may also enrol in some training courses run by computer centre staff.

Research Questions

The Massey University email system is perceived by computing services as a necessary facility (as expressed by Mike Ellis, User Support Manager). The aim of the present study is to assess the extent of use, and level of understanding by users of the Massey University internal email system, and its effects on communication. It will identify whether the facility is used to its full potential, and if not, for what reasons. An identification of the barriers

that prevent it from being an effective communication medium may lead to improvements in the system or the support provided. Specifically, the different areas to investigate are:

1. To measure the level of use of the email facility in terms of extent and sophistication of use.

2. To determine the effects on communication of email, focussing on the communication participants, the message content, and the communication process.

3. To explore the knowledge that users have of the Massey system, as well as the fundamental principles of email.

4. To discuss main barriers to use, and suggest ways to overcome these.

CHAPTER FOUR: METHODOLOGY

Design

This research was exploratory in nature, the main aim being to discover the levels of use and understanding of the internal electronic mail system at Massey University. The research also investigated what people think about the system and how well it meets their needs.

Sample

Target Population

The target population included the 152 academic staff members in Business Studies and associated departments whose name appeared in the 1994 Massey University Calendar, who were still university employees at the time of the research, and whose Head of Department had given approval for them to be approached.

The university setting was selected because of the research aim to see how the findings compared with those published in the existing literature, as well as an interest in seeing where the main differences emerged between academia and business. As the researcher was based at Massey University, the research was conducted there to take advantage of an available sample. It was also assumed response time would be minimised and that the academic staff may be more motivated to participate in research conducted by one of their colleagues.

The Business Studies and associated departments were selected as a particular target as they represent one of the largest academic group on campus, and were assumed to have the most representational distribution of electronic mail use on campus. In other

areas, there was a high risk of skewness at either end of the distribution of use; such as the sciences where a lot of research is conducted through email; and say, the humanities where electronic communication media have traditionally not been as widely accepted.

The reasons for selecting the target population from the calendar were threefold. First, this procedure fulfilled ethical requirements, by recruiting participants based on a publicly available document, rather than the documents available to the researcher based on her status as a university employee. Second, the prospective participants were not made to feel "singled out" by being invited to participate. Rather, they were informed of how they had been selected, which did not discriminate between themselves and their colleagues. Finally, this recruitment procedure meant that all prospective participants would hold an academic position equal to or more senior than assistant lecturer (determined by calendar policy). Bearing this in mind, most individuals would have had some introduction to the electronic mail facility, either at the time of induction; through its use while conducting research; or its use in contacting various people in their field.

The target population included the discipline areas of Accountancy, Agricultural Economics and Business, Economics, Finance, Business Law, Human Resource Management, Information Systems, Management Systems, Marketing, and Property Studies. Demographic information about the target population could not be identified from the calendar. Although these departments are not all strictly within the Business Studies Faculty, they do notably participate in the Business Studies degree.

Respondents

From the target population of 152 individuals, one questionnaire was returned with a note saying the recipient was not in the Business Studies Faculty, and therefore would not participate. Another said that they were not listed in the University Calendar, even

though their Head of Department had requested a copy for them to complete. These reasons may have also accounted for others not participating. A total of 72 questionnaires were completed and returned to the researcher, which meant the response rate was 47.37%. The demographic information supplied showed that 43 (59.72%) were male, 28 (38.89%) were female, with one person not specifying his/her gender. The age of respondents varied; 20 (27.78%) in the 26-35 category; 27 (37.5%) in the 36-45 category; 23 (31.94%) in the 46-55 category; one under 26 and one not specified. The literature shows that the other characteristics have little impact on use of email or are not associated.

Materials

The questionnaire was accompanied by a covering letter (see Appendix 1) which specified who the researcher was, the voluntary nature of participation, informed consent issues, confidentiality of individual responses, anonymity of respondents, participants rights to decline, use of the information, and arrangements to receive information.

The questionnaire (see Appendix 2) was designed to reflect issues discussed in relevant journal and magazine articles. It covered issues such as extent of use and level of understanding of the email system, level of formal and informal training on how to use email, and perceived benefits and shortfalls of its use as a recognised means of communication. Specifically, questions were asked to determine frequencies of use; sophistication of use; effects on communication in terms of participants involved, content of messages, and the process of communicating through the electronic medium. Knowledge of the system and particular packages were also examined.

Frequencies of use were determined by responses to questions such as "How often do you use the email facility?" (questionnaire, p. 1), and "On average, how many email messages would you receive [send] each week?" (questionnaire, p. 4 [p. 6]).

Respondents were also asked what the main barriers were to them using email more frequently (questionnaire, p. 1).

Participants were also asked questions identifying their sophistication of use, such as "Have you ever incorporated small portions of messages received into the messages you send?" (questionnaire, p. 6); "Have you ever prepared a document in advance and attached it to an email document?" (questionnaire, p. 5); "Do you ever forward messages . . . and in what instances?" (questionnaire, p. 4); and "Do you set up mailboxes/directories for files?" (questionnaire, p. 4).

The communication effects made up a large proportion of the questionnaire, ranging from "How important are [typing ability, computer literacy, and proof reading] in order to use email?" (questionnaire, p. 3) to "Have you ever received an email message that you thought was unnecessarily abrupt or rude ... how did you respond to this message?" (questionnaire, p. 6).

An examination of the knowledge of the system and packages used involved respondents specifying which packages they have access to and what packages they use, as well as questions such as "Are any other people able to access your email?" (questionnaire, p. 4); and "What provisions do you make for your email when you are away for extended periods of time?" (questionnaire, p. 4).

The ordering of questions was not determined by these specific areas of interest, but rather was designed to provide a logical progression for the participant. The questionnaire started with specifications of what system and packages the respondents were using, to overall observations of the email facility and email messaging, to messages received, to messages sent, and concluding with demographic details. The questionnaire was primarily quantitative to facilitate statistical analysis, although numerous opportunities were provided for respondents to elaborate on their ratings with individual comments and notes.

Procedure

Once the questionnaire was designed and the research methodology planned, the proposal was submitted to, and approved by the Massey University Ethics Committee. After this, a letter was sent to the Head of Department of each targeted discipline area, which listed their members of staff identified in the university calendar (see Appendix 3). The aim of this was to seek their approval to invite participation from their departmental staff, as well as to have any names deleted if individuals had left the department. Although such approval was not required by the ethics committee, it was still sought out of courtesy. The opportunity was also provided for each Head of Department to request extra unnamed questionnaires for people who had since joined their department.

Once each Head of Department had returned their consent form with alterations to their staff list, the questionnaires and cover letters were sent out for participants to complete individually, and return to the researcher anonymously through the internal mail system. Similar research has been conducted, that used email as the medium for questionnaire distribution and return (see for e.g. Schaefermeyer & Sewell, 1988). However, the intention of the present study extends beyond merely identifying characteristics of *use*, but also looks at the reasons for *non-use*. Therefore, the target population needed to include active users as well as non-users of the email facility, most appropriately contacted through written mail on paper.

To ensure anonymity, self-addressed envelopes were supplied so that there would not be any markings on them that could identify the participant in any way. Preserving anonymity was deemed more important than a high response rate, and therefore a trade-off was made on the ability to send reminder letters to people who had not participated. Rather, a follow-up letter was sent to each Head of Department, thanking all staff members for their participation and advising that completed questionnaires could still be returned (see Appendix 4). The returned questionnaires then went

through data entry and statistical analysis. Qualitative data was content-analysed into categories to show areas of agreement in responses.

CHAPTER FIVE: RESULTS

Use Of Email

A. Frequencies

When monitoring the level of use of the email facility, one of the most important factors to consider is how often the email facility is used. Figure 2 shows how frequently the email facility is used by respondents.

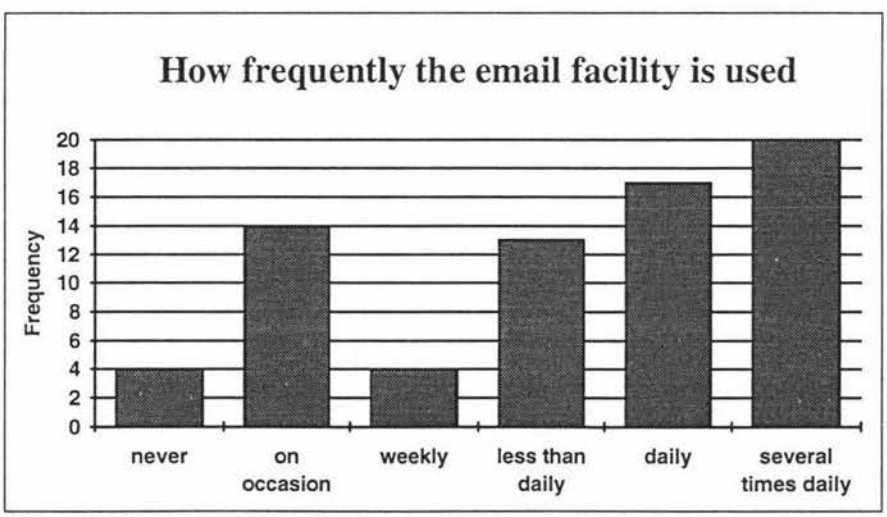

Figure 2: Frequency of email use

From 72 valid responses, 4 (5.6%) never used the email facility; 14 (19.4%) occasionally; 4 (5.6%) weekly; 13 (18.1%) more than weekly but less than daily; 17 (23.6%) daily; and 20 (27.8%) several times daily. The main advantages of email identified in responses by 56 respondents (more than one advantage permitted) were speed (n = 30); international

contact (n = 22); cost-related (n = 16); ease of use (n = 12); accessibility of people (n = 7); asynchronous nature (n = 5); and the informal nature of communication (n = 3).

Qualitative responses (n = 58) revealed that the most common barriers to using the email facility more often were: not enough knowledge of how to use it (n = 13); the time involved (n = 13); that other colleagues do not have the facility (n = 10); and that it is hard to obtain email addresses of other users (n = 8).

The frequency of use of the email facility can be broken down in terms of the gender and age group of the respondents. Figures 3 and 4 show these comparative distributions, although statistical analysis showed no evidence of an association. The chi-square statistic for use of email by age group was non significant (χ^2 = 9.01, $d.f.$ = 15, p = 0.877). For use of email by gender group, chi-square approached but did not reach significance (χ^2 = 10.19, $d.f.$ = 5, p = 0.07).

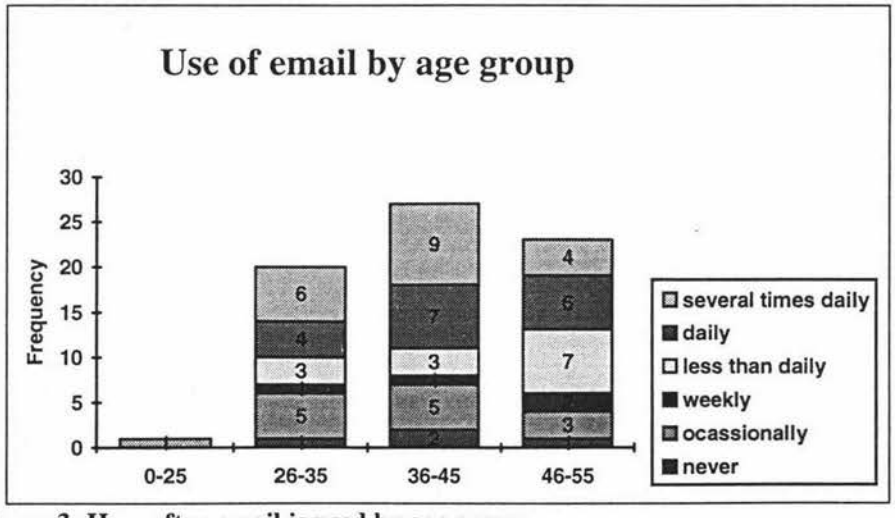

Figure 3: How often email is used by age group

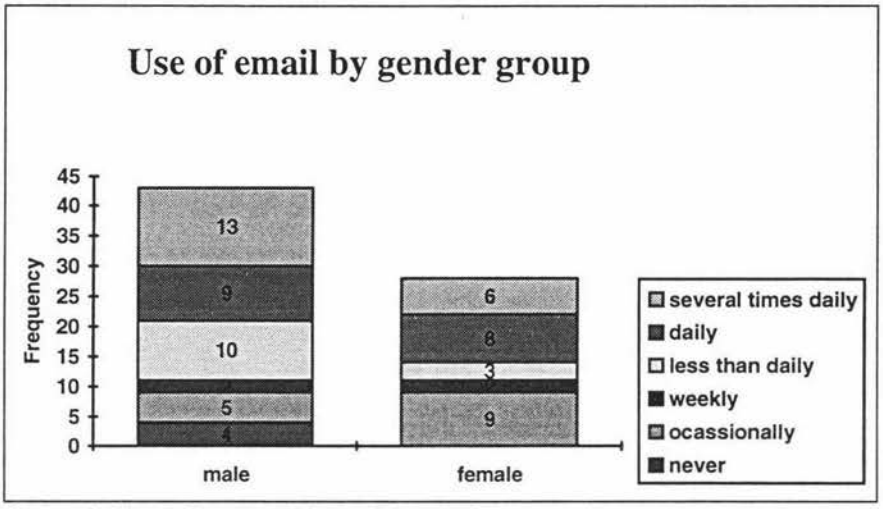

Figure 4: How often email is used by gender group

The level of usage also had no association with whether training had been received (χ^2 = 5.851, *d.f.* = 5, p = 0.321); or whether the respondent had some form of written information (χ^2 = 8.380, *d.f.* = 5, p = 0.137). The number of messages received and sent each week varied widely across the respondents. The mean number of messages received per week was 30.582 (*s.d.*. 76.607), and ranged between 0 and 500. Figures for messages sent per week were not as dispersed, with an average of 8.723 (*s.d.* = 13.595), ranging between 0 and 90. As each of these variables show a skewed distribution, medians are a better indication of central tendency. Table 1 shows the mode, range, percentiles and median for the amount of messages received and sent each week.

Table 1: Distribution of messages sent and received each week

	Mode	Range	5 %	Median (50%)	95 %
receive (n = 67)	2	0-500	0	6	130
send (n = 65)	5	0-90	0	5	30

Although the means were high, especially for the number of messages received each week, both variables were positively skewed, with a high kurtosis (receive = 25.414; send = 20.554). The percentiles show the direction of skewness, with the ranges for both having a maximum value that is much higher than the value at the 95 percent interval. The median (50% interval) indicates that respondents receive and send six and five messages per week respectively, which is lower than the mean values would suggest (8.723; 30.582).

B. Sophistication

The extent of sophistication of use of the email facility was explored in terms of whether respondents carried out certain functions within their email construction and handling. These functions are more sophisticated than the basic sending and receiving of email messages. Responses were dichotomous, whereby the respondents either replied "yes", that they had performed that function; or "no", that they had not. The results are shown in Table 2.

Table 2: Percentages showing sophistication of use

	Yes	No	Missing
Incorporate parts of messages	33.3%	58.3%	8.3%
Prepare documents in advance	45.8	51.4	2.8
Forwarding email messages	50	43.1	6.9
Messages stored in mailboxes/directories	41.6	48.6	9.7

From those respondents who had not incorporated parts of previous messages into the messages they send (n = 42), 7 said that the need had not arisen and 6 said they did not know how to. Of those who said "yes" (n = 24), 15 said it saves time retyping information; and 10 said that it gives a reference point, or reminds the receiver of the

context of the issue being discussed, because it is "important to provide continuity in conversation".

Of the 37 respondents who said they had never prepared a document in advance and attached it to an email message, 19 said that it was because they did not know how to; 14 did not need to, or felt there was no point, as "it would be better to fax it"; and 3 discussed limitations in the system that created barriers to doing so, such as "the limitations of email mean WP files and spreadsheets are easiest sent on disk".

For the 36 (50%) respondents who had forwarded email messages, they mostly did this when they believed someone else was interested in the information (n = 23). Other reasons included when passing on requests (n = 2), and when acting as an intermediary when the message was meant for someone else (n = 7). One respondent used the forwarding function for humorous items, and another forwarded items that they "didn't know what to do with".

A total of 41.6% of respondents set up mailboxes or directories to store their messages in. The number of messages stored from every 10 received ranged between 0 and 10, with a mean of 3.3 (*s.d.* = 3). Figure 5 shows the frequencies for message storage.

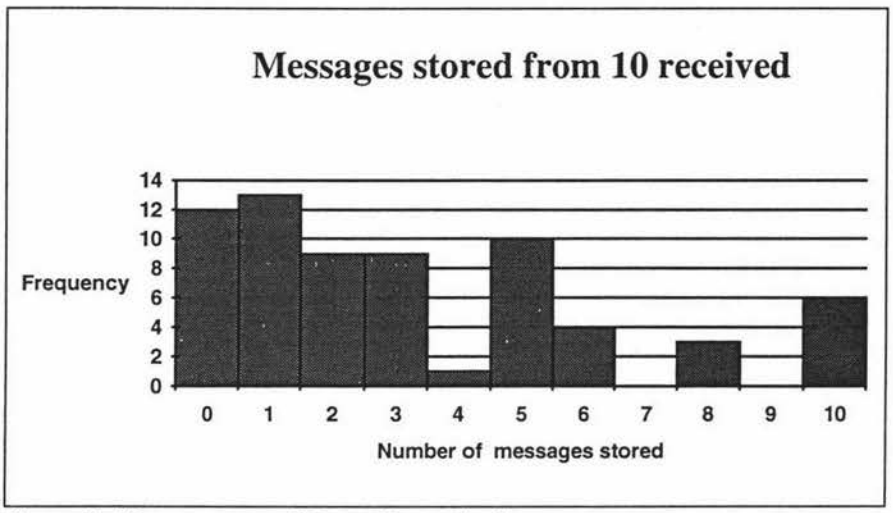

Figure 5: Messages stored from 10 received

Most respondents store fewer than that indicated as the average number, and those who do save a high proportion of their messages either do so purposively, or merely because they think they have to, as indicated in the comment "I save them all just in case. Don't refer to them though". Qualitative responses also indicated that "storage" was taken to mean either electronically or physically printing the message and storing in a filing cabinet. This is illustrated in the comment, "I print out any I want. I don't really know what else to do".

C. Communication Effects

(i) Participants

The extent to which respondents communicated with other categories of user is shown in Table 3. Responses were within a range of 1 to 5; 1 being *never*, and 5 being *frequently*.

Table 3: Analysis of recipients of email messages

	mean	sd	range
Members of own department	2.39	1.24	1-5
Members of same university	2.35	1.08	1-5
Colleagues at other universities	3.25	1.35	1-5
People in different fields and universities	2.38	1.27	1-5

Communication by email was clearly more frequent between colleagues at other universities (M = 3.25). The three remaining categories were ranked quite similarly, members of own department (M = 2.39), people in other fields and universities (M = 2.38), and members of other departments at the same university (M = 2.35). When asked whether email gave respondents better access to people in higher authority, 19% replied "yes", and 64% replied "no". Explanations for this response revealed that 12 of the respondents did not communicate differently according to the status of the receiver (for eg. "I don't use it to access forbidden territory, but because it is fast"); 11 did not think it was the appropriate channel to use (for e.gs. "I prefer to speak to those of higher authority face-to-face where possible" and "A letter seems to carry more weight or 'credence'"); 8 believed that access to senior staff was easier or improved; and 6 did not believe that senior staff used the facility (some of the more extreme examples are "Senior staff are largely computer illiterate- in my opinion and experience" and "'Older' senior people don't seem to use it - they seem to derive power from sending formal memorandums").

Respondents were asked how they had learnt the email addresses of other users. Personal contacts or colleagues were used by 44.4% of the 54 respondents who replied; 42.6% (n = 23) mentioned email received; 25.9% (n = 14) used the postmaster facility; 16.7% (n = 9) from business cards; 16.7% (n = 9) from other print form such as articles and business letters; 11.1% (n = 6) from the gopher facility; and 1 person guessed.

(ii) Content

Respondents were asked how important the factors listed in Table 4 were in the content of email messages. The range was 1 *not important* to 5 *very important*.

Table 4: The importance of factors in email messages

	mean	sd	range
Number of topics	2.34	1.15	1-5
Choosing a heading	2.56	1.20	1-5
Salutation and introduction	2.82	1.71	1-5
Length of message	2.65	1.27	1-5
Incorporation of humour	2.52	1.13	1-5

According to the respondents, all these factors appeared to be somewhat important in email messages, the mean ratings falling between 2.34 and 2.82. It is interesting to note the bigger standard deviation for salutation and introduction, showing a wider spread of ratings across the sample.

The incidence of flaming is small (n = 14), 6 respondents reporting that they ignored the message, 3 responded normally, 2 responded in the same manner, and 2 responded assertively. Respondents were asked to rate the usefulness of the email facility for performing particular functions. Table 5 shows that responses ranged between 1 *not useful*, and 5 *very useful*.

Table 5: Usefulness of the email facility

	mean	sd	range
Administration	3.01	1.38	1-5
Research	4.11	1.02	1-5
Teaching	2.80	1.25	1-5
Socialising	3.49	1.24	1-5

The mean ratings for these factors show clear preferences for use of the email facility. The most use of the facility is made for research (M = 4.11); followed by socialising (M = 3.49); administration (M = 3.01); and teaching (M = 2.80), all mean ratings falling above the mid-point of the range (being 2.5 for all variables). However, there was no significant difference in means at the 0.05 level in the Scheffé multiple comparison procedure. Research had the smallest standard deviation (1.02) indicating ratings more concentrated close to the mean suggesting a greater degree of agreement over the utility of email for research purposes.

(iii) Process

To better understand the process of email communication, it is important to establish which medium the users believe email replaces. This then shapes the way in which they approach their email communications. Figure 6 shows the findings.

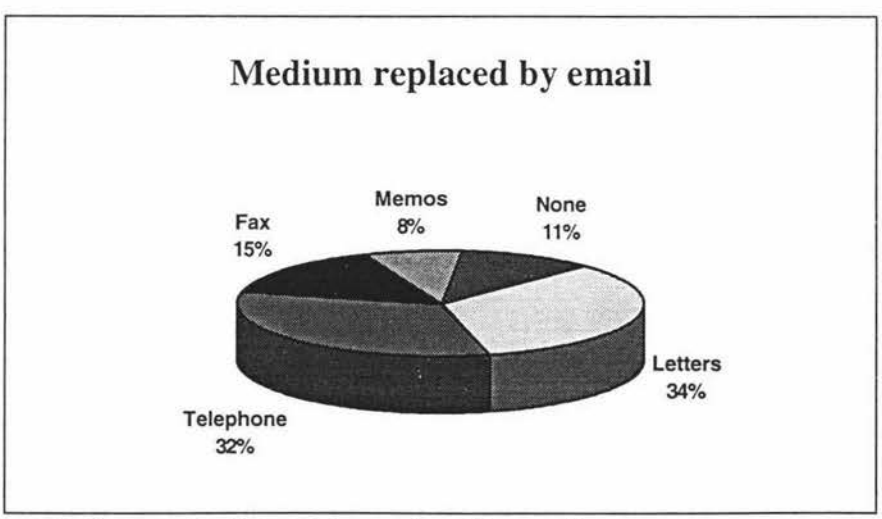

Figure 6: Communication medium replaced by email

Most respondents felt that email replaced either the business letter (34%) or the telephone (32%), followed by facsimile (15%), and memoranda (8%). Another 11% of the respondents did not think email replaced any medium in particular, but rather, enhanced existing communication media. The chi-square statistic showed no association between medium replaced and age group ($\chi^2 = 15.75$, *d.f.* = 15, $p = 0.399$) or medium replaced and gender ($\chi^2 = 10.40$, *d.f.* = 5, $p = 0.065$).

The ratings given to how important particular skills are in constructing email messages are shown in Table 6. Once again, responses were on a 1-5 scale, 1 being *not important* and 5 being *very important.*

Table 6: The importance of factors in constructing email messages

	mean	sd	range
Typing ability	2.67	1.13	1-5
Computer literacy	3.33	1.02	1-5
Proof reading	2.54	1.32	1-5

Computer literacy was deemed more important ($M = 3.33$) than typing ability ($M = 2.67$) and proof reading ($M = 2.54$), although qualitative data revealed different reasons why. Five respondents felt that one or two finger typing is adequate to get the message across. Another six also believed that typing skills were not vital, although conceded that greater efficiency would result from such skills (for e.g. "Typing ability will improve efficiency, but is not vital"). This point was developed further by another four respondents who said that people would be more likely to use email if they had typing ability, reasoning that "One needs to be able to type faster than handwriting, else why bother?".

Computer literacy was more important in so far as enabling better use of the facility for eight respondents. They expressed a desire to improve their use of the facility and become

more confident with using special functions (for e.g. "you can get by with little computer literacy, but those who are more capable can get a lot more use out of it"). Another six respondents did not think computer literacy was important, as they indicated that the system was user friendly, whereas three others thought the system was not user friendly. The differences in opinion of 'friendliness' of the system may be explained to some extent in the comment that "email is not very difficult to learn and doesn't need high level computer skills, but might frighten off novices".

Proof reading skills were also valued differently amongst respondents. Eight people did not think the occasional error affected the message. One person said that "people shouldn't waste time proofing email", while another said "it will slow responses to be too correct". On the other hand, nine respondents said they would not send a message that was not thoroughly proof-read, commenting that "messages should be accurate and well presented"; "if you don't get it right, you're a klutz"; "if you write poorly people might not bother to respond"; and "garbage in causes garbage out". Six respondents determined the need for proof reading by the purpose of the message and the intended receiver.

Knowledge

A. System

Respondents were asked to identify what electronic package(s) and systems they had in order to use the email facility. The frequencies are shown in Figures 7 and 8.

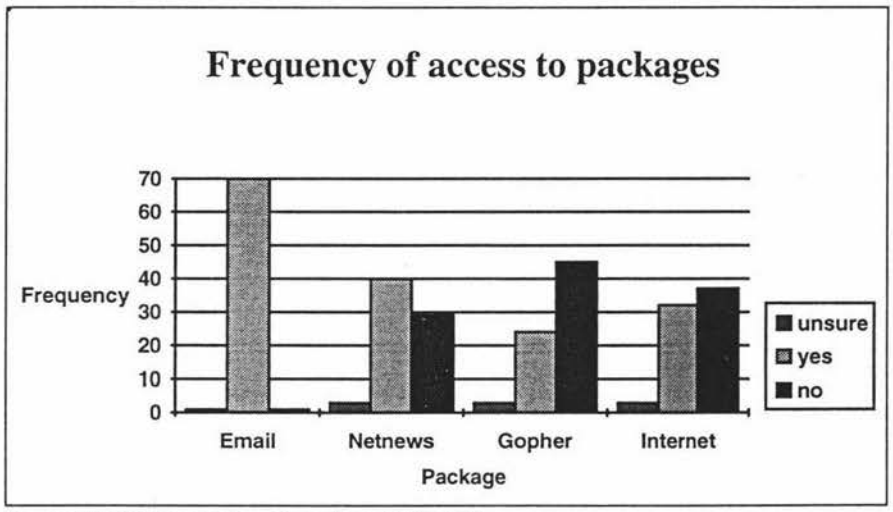

Figure 7: Frequencies of package(s) used.

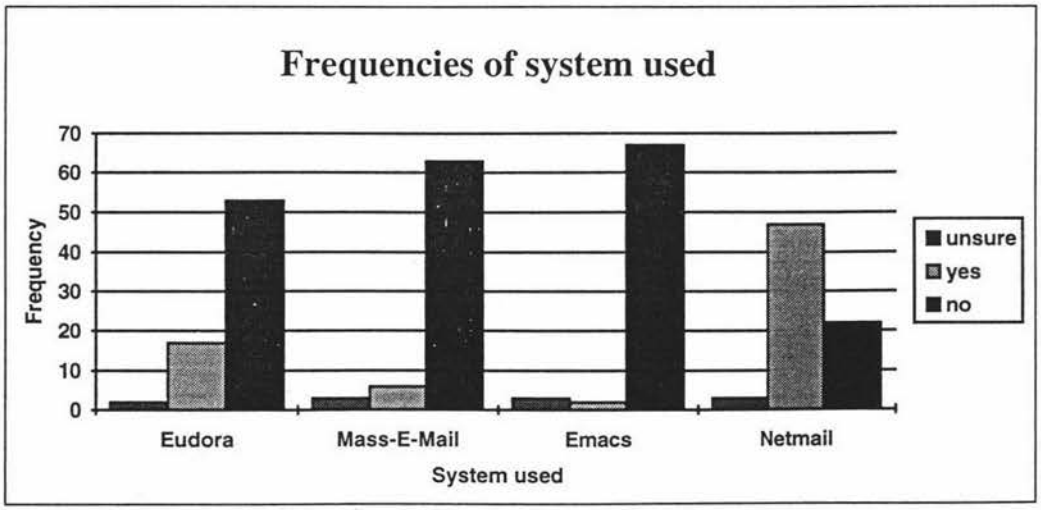

Figure 8: Frequencies of system used

Some of the systems and packages are mutually exclusive, whereas some need to be used together. Tests for association were done, and excluded the "unsure" responses, as these affected the dichotomous nature of the variables being tested. This procedure did not influence the validity of each remaining response category. Results show that at the 0.01 level, a significant association was found between *internet* and *gopher* ($\chi^2 = 30.35$, *d.f.* = 1, $p = 0.000$); *gopher* and *netnews* ($\chi^2 = 21.652$, *d.f.* = 1, $p = 0.000$); *gopher* and *eudora* ($\chi^2 = 18.870$, *d.f.* = 1, $p = 0.000$); *internet* and *netnews* ($\chi^2 = 21.357$, *d.f.* = 1, $p = 0.000$); and *eudora* and *netmail* ($\chi^2 = 23.374$, *d.f.* = 1, $p = 0.000$). An association was also found between the *internet* and *eudora* at the 0.05 level ($\chi^2 = 6.25$, *d.f.* = 1, $p = 0.012$). No association was found between any of the remaining combinations of packages and systems. Packages that are/should be used together are internet and gopher, email, netmail, mass-e-mail, eudora, netnews and emacs; eudora and netmail, mass-e-mail; email and netmail, eudora, gopher; netmail and emacs.

B. Process

The extent to which respondents have gained their knowledge on email from training and/or written sources of information was measured. The respondents with some form of training comprised only 36% of the population, whereas 60% had none. Specifically, from the 66 responses, 34 had no training; 10 had been taught by their department's technician, commenting that it "gave the bare essentials to get started", was "personal", and "generally good"; 9 learnt from colleagues, which was "helpful", although a case of "the low-vision leading the blind"; 8 attended a computing services course, which provided a "good introduction", but "needed to be followed by practice"; and 8 called the computing services help-line, which was "useful, if you could clearly identify the problem".

More individuals had some form of written information to help with the use of email (50%), while 49% did not. Specifically, from the 71 responses, 33 had no written forms of

information; 21 had the computer centre booklet, which was "good to get started", "provided the basics", "excellent", but for some "too general" and "not very helpful"; 6 had departmental guidelines, that were "good", "helpful", and "simple", while also being "confusing"; 6 used on-line hints that were "better than nothing"; and 2 had their system manual, although this was "rarely referred to".

Table 7 shows the crosstabulations between respondents having some form of written information and some form of training. There is some evidence that respondents who were motivated to learn about the facility would have both forms of support, rather than just one and not the other ($\chi^2 = 5.72$, $d.f. = 1$, $p = 0.017$).

Table 7: Crosstabulation of written information by training

		WRITTEN	
TRAINING	Some	None	Total
Some	18	8	26 (37.7%)
None	17	26	43 (62.3%)
Total	35 (50.7%)	34 (49.3%)	69 (100%)

When asked whether any other people could access their email, 80% ($n = 57$) said "no", 10% ($n = 7$) said "yes", and 10% ($n = 7$) were unsure, as identified in comments such as "not officially they aren't". Respondents were also asked what provisions they make for their email while away for extended periods of time. From the 62 responses, 36 (58.1%) made no provisions; 13 (21%) said the need had not arisen; 8 unsubscribe from mailing lists and tell others they are leaving; 5 make room for messages to pile up; 3 get someone to clear it; 2 get their message forwarded; 1 uses an autosave function; and 1 dials in from another connection. Although most respondents (58.1%) made no such provisions, it is unclear whether this is because they did not want to, or because they did not know how to.

CHAPTER SIX: DISCUSSION

Introduction

The present study explored the extent of use and knowledge of the electronic mail facility by 72 academic staff in Business Studies at Massey University. The research sought to provide an overview of the frequencies and sophistication of use, as well as investigating the effects the email facility has on communication. The research also sought to examine the level of knowledge that the participants had of the Massey University email facility, as well as their general understanding of the characteristics of the medium. The various forms of user support (both written information and training) that the participants had was examined, and their helpfulness explored.

Primarily, quantitative data was collected to show trends in email use, while qualitative responses provided reasons and comments to explain and/or illustrate the quantitative data. The results of the present study show that the Massey University email facility is used relatively frequently, with more respondents at the *frequent* end of the scale than those using it infrequently. More messages were received than sent on average each week, with some cases indicating very small use, as well some demonstrating excessive levels of use. The level of sophistication in usage reported by respondents was quite low, which may be more a reflection of lack of knowledge as to how to perform these functions than an informed decision not to do so.

Several interesting effects on communication were also discovered. Individuals were willing to replace traditional communication media with email in their pre-existing communication relationships, and some people saw the electronic medium as providing an opportunity to communicate with people they would not normally have access to, such as those in higher authority. More common was the complaint that colleagues did not have the facility, did not use the facility, or that their email addresses were hard to

access. The process of communicating is different, according to the medium perceived to have been replaced by email. This factor also has an impact on the content of email messages, although there were differing opinions as to the extent of extra allowances that have to be made when using email as opposed to other communication media.

Generally, respondents had a sound knowledge of the email systems and packages that they were users of, although they were less able to identify all the facilities they had access to. Respondents had received different forms of written information and/or training on how to use email, and their helpfulness was given mixed ratings. Respondents were more likely to have had both forms of user support than just one. This would have assisted users in understanding the basic principles of electronic messaging systems, but may not have educated them on the intricacies of procedural issues involved in email, such as the lack of guaranteed privacy.

Use Of Email

A. Frequencies

The frequencies of use of email showed that all respondents except four used the email facility at least occasionally, and at most several times daily. The highest frequency was for the *several times daily* category, followed by *daily*, then *occasionally*, which had one more response than *less than daily*. It is reassuring to see this trend in high levels of usage, particularly when much of the literature stresses the requirement of frequent use in order for the facility to be successful. Suggestions for frequency of use vary, either daily or every day being the most common (for e.g. Phillips, 1992). Others say the system should be used at the very least two to three times a week (for e.g. Pang, et al., 1993). Writers do agree that a high frequency of use is vital in maintaining interest in using email as a preferred communication medium.

It was expected that age group and gender would have some influence over the frequency of use, as it did for Kerr and Hiltz (1982), however, the chi-square statistic showed no association. It is important to note that the gender and age group of the target population could not be determined, and it is therefore impossible to establish whether the demographics of respondents are representative of the target population. This leads to hesitancy in generalising these present results to the entire population.

The main advantages that respondents believed the email facility provided were speed of delivery, the opportunities for and improvements in international contact, reduced costs, the ease of use, accessibility of people, and the asynchronous nature of the medium. Schaefermeyer and Sewell (1988) obtained similar results from their academic research participants, who identified speed, convenience, time, and asynchronicity as their main advantages. Some of these advantages are linked to gains in efficiency in terms of time and cost, and therefore may be more closely likened to gains in the business environment that originally suspected. This may reflect recent moves made in academia to become more efficient, and adopt business-like management policies and procedures.

However, it is questionable why respondents would claim that cost was an advantage, if they do not have to pay for the facility, like many other facilities for communication on campus. The most likely reason would involve the potential decrease in costs of personal international telephone calls, which are usually charged back to the user (as identified in respondents giving a high rating for the usefulness of email for socialising). From an ethical standpoint, this observation is interesting if we consider the underlying perception that it is permissible to use organisational resources for personal use, and it is even better if these resources are free for the user, as the department pays the user charges (a fixed charge calculated on estimated total yearly cost to the computer centre, divided by the number of registered users within each department). Communicating electronically means that individual actions have no discernible impact on the department. Whereas, if a user cheats and makes a phone call, they are directly

responsible. Here, cheating has no immediately recognisable cost to the individual or their department.

Reasons given as barriers to using the facility more included lack of knowledge on how to use the facility, the time involved, colleagues who do not have the facility, and the inability to find the email addresses of colleagues who do use the facility. The lack of knowledge on the email facility can be overcome by appropriate training and/or resource manuals. Although courses and help are presently available, the users have to know that they exist to be able to request them. Traditionally, notices for training courses have been sent to departmental secretaries, to be circulated accordingly. More recently, these notices have been published within *Contact*, the monthly newsletter printed by computing services, and distributed to all people logged onto the network. However, this still creates problems for those people who are not users of the system but would like to be. The manuals for use of the network are even more difficult to come by, as individuals must request them from computing services, which once again necessitates the knowledge of their existence and source. These support resources need to be more forthcoming than waiting for the user to ask for them. This will make the help timely, and teach the user good work habits right from the start (Adams, et al., 1993).

In their review of the literature on human factors on electronic mail systems design, Hjalmarsson, Oestreicher and Waern (1989) found that users commonly complain about both manuals and on-line help, finding human advisers much more helpful. The present study reinforced this conclusion, as comments on the helpfulness of training were far more positive than those for written sources of information. Perhaps this is due to the fact that training and personal advice can help with many of the psychological aspects of email, helping users overcome any anxieties that the medium may cause. Advisers can give much more of 'personal touch' than any manual can, thus addressing the psychological as well as the technical aspects of the medium, both identified as necessary for effective email training by Sussman, et al. (1991). An

effective level and amount of support will impact on the knowledge of email that users have, and ultimately, on the frequency and sophistication of use of the medium.

The time involved, it is assumed, relates to inefficient use of the facility, or a lack of practice in using email. It may also relate to the lack of time to overcome the initial learning curve to use the system (Clausen, 1991). Email is relatively less time consuming than other communication media, if we consider the time taken to draft, proof, and carefully format and send a letter; the time often wasted engaged in playing telephone tag; or the time taken to type, print, and then send a message through an available facsimile machine.

The inability to contact colleagues is related to others not having, or using the facility, as well as an inability to find out their email address. The research conducted by Schaefermeyer & Sewell (1988) as well as that documented by Pliskin, et al. (1989) found a main barrier to more frequent use of email being to be an inability to contact colleagues, either through their lack of use of the facility, or through the inability to find their email address. Recognition of the lack of an international directory is becoming widespread throughout recent email literature, which would suggest some form of global directory service will be introduced in the near future to meet the demands of users. Also, those who do not have the facility, or do but are infrequent users, may soon feel the pressure to become frequent users of email. This will be the combined result of hearing the benefits email can bring, as well as pressure from others to become connected. Studies by Hjalmarsson et al. (1989) revealed that "most subjects thought that it was more or less necessary to start using the system, since a lot of people were already using it and made it possible to reach them very rapidly" (p. 466). The present users of email therefore have a vested interest in persuading others to become connected so they can have more contacts at their electronic fingertips. This will also facilitate some 'critical mass' being achieved, ensuring the adoption and continuation of use of the facility (Palmer, 1992).

The various barriers described by respondents go some way towards explaining 'low-level' patterns of use, however, some participants were deemed to be high-level, or excessive users. These people are identified by their high frequency of use; clearing their mail several times daily, as well as sending and receiving in excess of 50 messages per week (10 daily). This description of excessive use was used in similar research conducted by Schaefermeyer and Sewell (1988).

Mackay (1988) explained the way some people find themselves in the situation of excessive use through a high frequency of checking electronic mailboxes.

> [Some people] treat the appearance of a 'new mail' message as if it were a telephone call; they retrieve mail as soon as it arrives. Those who feel out of control are often those whose jobs do not require immediate responses to mail but feel they can not stop themselves from reading it anyway (p. 388).

This is similar to what Goldfield (1982) termed 'intrusive work options', where the medium becomes more of a disruption than a complement to our daily work pattern. It is possible that the practice of clearing mailboxes as frequently as this may be more common to the new users of email, for whom receiving an electronic message is still a novelty.

The appropriateness of the frequency of mailbox clearance must be viewed in the context that some people use email for its speed of delivery, and therefore expect messages to be cleared soon after they have been sent. This assumption by message senders can cause problems when messages are not read in time, and therefore users must be careful when choosing which medium to use when sending messages of an urgent nature.

The other measure that indicates whether a user is excessive in their use of email is the number of messages received within a specific time frame. Schaefermeyer and Sewell

(1988) benchmarked excessive use to be sending and receiving in excess of 10 messages each day (equivalent to 50 per week in the present study, assuming a 5-day working week).

The median values for messages sent and received on average each week were five and six respectively. These figures are much lower than the averages, especially the value for messages received (M=30.582), as several excessive users skewed the results. For Schaefermeyer and Sewell (1988), just under 26% of their sample were classified as excessive users, as they received more than 50 messages each week. In the present study, 12 respondents (11.4% of valid responses) received 50 or more messages each week; one respondent as many as 500. The emphasis on messages received rather than messages sent reflects the lesser amount of control the user has over how many messages they receive compared to the number they send.

The present study also shows that we tend to send much fewer email messages than we receive. As these messages have to originate from somewhere, the most plausible sources are people who set up group lists, and messages received from mail listings of interest groups. From 66 of the respondents who answered, 61.3% (n=38) only sent messages to other individuals, 1.6% (n=1) only sent messages to groups, and 37.1% (n=23) said they sent messages to a combination of individuals and groups.

If there is a tendency for some people to send to groups more than just individuals, it may be seen less of a personal communication medium. It is therefore important to question the people who do send to *groups only* what kinds of messages they are sending. The present study does not allow such analysis, as only one respondent was within that category, and although their email communications mostly replaced telephone calls, no generalisable conclusions can be drawn.

An implication of excessive frequency of use, and excessive number of messages received (and to a lesser extent, messages sent) is the risk of the user being in a state of 'information overload', where they are unable to comprehensively manage and process

all the information they receive (White, 1993). Once users become overwhelmed by the volume of information they receive each day, and the number of times they feel they have to clear their mail, the gains that the medium promised to make have been eroded (Cloke, 1994). Fortunately, those who want to be free from their state of information overload have strategies at hand to overcome the problem, whether its cause is too frequent usage, or too many messages. Mackay (1988) provides one method for people who typically clear their email too frequently. She says that rather than letting email become 'seductive', users must "carefully restrict their mail reading, either by limiting the actual time spent or by restricting the number of times mail is retrieved per day" (p. 388).

One way for users to limit incoming messages is to implement special screening software, which looks for certain keywords, phrases, or even senders, in order to prioritise email. However, such facilities are not easily accessible in an academic network setting; therefore, a more practical solution may be to get off voluntary distribution lists, keeping incoming mail to a minimum. But like all 'prescriptive remedies', acceptance will differ among respondents, as illustrated by Mackay (1988), "some people are quite willing to do this ("after a while you get tired of all the junk"), while others are not ("it's worth it to have to delete 90% if 10% is interesting") (p. 387).

B. Sophistication

Many writings stipulate a "how to" guide on writing email messages, although there is no universal etiquette, or standards for use. Some of the sophisticated functions identified in the questionnaire are efficiency gains in terms of time and reduced effort. Others are merely practical tips that make the facility easier to work with.

Under each of the special functions, where respondents had replied that the need had not arisen, it is not clear whether they fully understood the function, and how it would

(or could) contribute to much more efficient message handling, or whether they believed that they were special tools only to be used in certain instances. For example, did these respondents know that incorporating parts of the original text into messages they send would save their own time in typing, as well as facilitate comprehension by the receiver. Likewise, forwarding messages can save time retyping information, and the users are able to insert their own comments to the original message.

Incorporating information saves retyping and puts the message into context for the reader. Goode and Johnson (1991) say that if the message is referencing an earlier note, it is important to include enough of the original message to make the reference clear. "Email is an environment in which the physical separation of speakers requires a greater need to explicate in writing the connections between ideas in new messages and prior messages" (Myers, 1993, p. 261). It is not entirely clear how this is different to any other medium of communication such as the letter, facsimile, or telephone conversation.

Preparing documents in advance can also create efficiency gains, although difficulties can arise when working with long or graphical detail, especially when transporting documents across configurations that may cause message distortion. When analysing the value of this facility, users must first ask themselves why it is necessary to send such documents; and also why it is best to prepare the documents in advance in anticipation of them being later attached to an email message. The most likely need for documents to be prepared in advance and attached to email would be in collaborative research efforts. Colleagues who are geographically dispersed can participate in collegial research through email. Information and drafts can be quickly and cheaply distributed, regardless of length, and regardless of the number of researchers. However, the difficulty involved in trying to edit work on screen (Bucher, 1993; Hawisher & Moran, 1993) means that most users will print out a copy for editing and make changes on the screen to send back electronically. People may also like a printed copy for portability, enabling them to edit to work at their own leisure. For these reasons, it may be more logical to send these longer documents in paper form in the

first place. Speedy delivery would be retained if these documents were sent via facsimile, although costs to the sender (or their department) would dramatically increase.

When forwarding messages, users need to closely monitor how they determine who the message is to forwarded to. How do they determine whether someone else would be interested in it? Care must be taken when deciding to forward a message, avoiding irresponsible instances such as the respondent who forwarded a message because they did not know what else to do with it.

If the current directory (or 'in-box') becomes full, the email facility is disrupted, or even inaccessible. Therefore, messages must be dealt with soon after their receipt; either deleted or stored. The most efficient way to store messages is to file them within predefined mailboxes or directories within the email facility. Some people merely print out all their messages and physically store them in a filing cabinet. These employees haven't made the 'mental switch' that they don't have to print out everything they receive (Pearl, 1993). This causes inefficiencies in the communication process, as the inability to forego printed copy undermines the basic foundation of the electronic medium. However, sometimes users will require a paper copy if any editing is required, or the message is more complex than what can be cohesively absorbed from the screen.

There are differing opinions as to what percentage of messages should be stored. Computing centre staff say that all should be stored (M. Ellis, User Support Manager, personal communication, July 1994), while others say less, as the facility takes longer to process if there is more data in memory (for e.g., Pearl, 1993). Rather than follow prescriptions for what percentage of messages should be stored, users need to devise a system that is meaningful to them. The design of the Massey email system presupposes that users want to keep their email, as you have to specifically "kill" them if they are to be deleted, otherwise they remain in the in-box. Therefore a distinction needs to be made between passively saving messages by leaving them where they are, and actively

saving, or moving them to another mailbox. Each alternative can cause problems for the user, the in-box can only hold a limited number of messages; but users can only create a certain number of mailboxes. Whichever system the user chooses, they must be consistent. Some people may prefer to scroll through pages of messages in their in-box, while others create mailboxes with subjects and headings that are meaningful to them. The latter alternative also has limits depending on user efficiency; whether they are consistent in their filing, and can remember all the mailbox titles they have created.

C. Communication Effects

(i) Participants

The analysis of recipients of email messages (Table 3, p. 44) showed that respondents used the email facility mostly for contacting colleagues at other universities. Substantially behind this was contact with members of the respondent's own department, people in other fields and universities, and members of other departments at the same university. Schaefermeyer and Sewell (1988) had similar results, and concluded that "those using e-mail would seem to recognise its usefulness in contacting their disciplinary or job-related peers in distant locations" (p. 119). While the support for research that email can provide has been clearly recognised, other areas have yet to see the full advantages that email can bring. There are efficiency gains to be made in communications within departments, which email is geared toward bringing about.

Respondents commented on whether or not they thought email gave them greater access to higher authority than the more traditional communication media. As can be expected, responses varied greatly, according to the perceptions each respondent had of such 'higher authorities' and their experiences of communicating with them. Removing the traditional barriers may "lead to more open and honest communication" (White, 1993, p. 75), but it may also deter management from becoming personally involved in using email as they "can become so inundated with mail by subordinates

that they lose control of their time" (Phillips, 1992). Responses in the present study show support for both these comments.

Here lies the irony; for email to work well, it must be used by everyone in the chain of communication (Phillips, 1992); however, in the excitement of being able to communicate with those in higher authority more freely, users abuse the system, and overload management with information of very little use to them, causing them to stop using the facility. We have now become aware of two reasons why participants may choose to stop using the email facility - too many messages coming through. This provides a contrast to another potential reason for discontinuation of use - too few messages coming through. This is most likely caused by an insufficient number of colleagues using the facility, and therefore the user tires of checking their in-box in anticipation of there being any mail when there is none.

Previously discussed as a major barrier to use, the lack of global directory support affects the pool of potential participants to our communications. Recommendations are frequently made in the literature for better directory support to provide the email addresses of other users. The present study supports this recommendation. Although campuses have their own on-line directory and some have a 'postmaster' facility, there needs to be a universal equivalent to the telephone white pages and directory assistance (Updegrove, et al., 1990).

(ii) Content

Respondents did not identify a standard 'style' guideline for how email messages should look, and what they should include. Factors they were asked to consider included the number of topics, choosing a heading, salutations and introductions, length of the message, and the incorporation of humour. Quantitative responses (see Table 4, p.) revealed that all of these factors were moderately important (average

ratings ranged between 2.34 and 2.82 on a 5-point scale), salutation and introduction being the most widely dispersed.

Experienced users and writers on email give some conventions on the importance of these factors. Most of these writers stress the importance of email messages being brief (Bucher, 1993; Goode & Johnson, 1991; Newby, 1993; Turner, 1988). Bucher (1993) states that the main reason for this is that "shorter messages will be read more thoroughly and have more impact" (p. 4). The most likely explanation for this would be if the reader of such a message expected the medium to only be used for memoranda-type messages, or for short trivial messages. The stress on brevity in email would therefore eliminate the need for functions such as that allowing documents to be inserted or attached to email messages. These restrictions that are placed on the way in which we can use email diminishes the opportunity for the medium to be chosen over say, a facsimile, letter or phone call.

Most writers also state that email messages should be limited to a single topic (Bucher, 1993; Goode & Johnson, 1991; Newby, 1993; Updegrove, 1991; Updegrove, et al., 1990). Once again, an investigation for the need to do this is required in order to decide whether it is a legitimate assertion. Updegrove (1991) is one of the only authors who qualifies his statement, by saying that keeping messages to one subject facilitates replies, forwarding and filing. While to some extent this may be valid, there are several flaws to the argument which undermine the ability to make the suggestion into a prescription.

When analysing the statement in the context of basic communication processes, replying is seen to facilitate feedback, forwarding will include more participants to the communication, while filing does not easily integrate into the communication process. Moreover, as the statement is focussing on factors for the sender to consider, it is not the responsibility of the author of an email message to be concerned about how the receiver will file it. The receiver may not file it, and even if they want to, they are able to move one file to more than one mailbox. Therefore, the argument has been reduced

to two elements; that it makes for easier replying and forwarding if the message covers a single topic.

However, one may ask why it is easier to reply if the message only covers one subject. A message with many complex questions and requests may confuse the reader, but this is not always the case. Readers have the ability to successfully deal with multiple subjects in an email message. Given that not all parts of a message necessarily have to be complex requests, we can safely say that readers will be able to comprehensively respond to a message that includes a variety of facts, requests and comments (i.e., we can absorb different types of message in one communication). This reflects the way in which people normally communicate. We are not such linear beings who maintain restricted relationships, discussing one subject at a time and disallowing digression. Likewise, we have the ability to carefully choose whether or not to forward a message, and in what circumstances. And as receivers of these forwarded messages, we are able to pick out the details that are relevant to us.

So the argument that Updegrove (1991) presents has flaws, but this does not altogether discount the suggestion that email messages should cover a single topic. A more general approach to analysing the suggestion may uncover its inherent problems. If we are encouraged to send many messages with a single topic, rather than just one with several topics, then we will be sending a larger number of email messages, often to the same person. This means that receivers will have to clear their mailboxes more and/or spend more time doing so; factors that were earlier identified as contributing to excessive use. The larger number of messages will take up more memory space in the system, as essential information in headers will be repeated. The sender will spend more time constructing and sending the separate messages instead of amalgamating them into one, and sending these multiple messages will cost the sender's department more than if just one message was sent (as their charges for estimated use will increase in the following year). All these implications of the suggestion to keep email messages to one subject equate to efficiency loss, which undermines the preference for the medium in the first place.

Authors such as Goode and Johnson (1991) and Newby (1993) recommend the incorporation of a clearly defined subject line, which is obviously beneficial for the reader when scanning the contents of their in-box or other mailbox, as demonstrated in Figure 9.

```
Folder: NEWMAIL, 9 Letters
Num Status From/Subject                                          Lines/Chars
  0       rre-request@weber.ucsd.edu      Wed, 24 Aug 1994 02:45:11   36/1143
          archive retrieval error
  1       rre-request@weber.ucsd.edu      Wed, 24 Aug 1994 02:45:11 1278/68127
          archive send: network
  2       "C.M. Wallace" <C.M.Wallace@ma Wed, 05 Oct 94 15:48:38 +    52/2475
          Forwarded Mail
  3       "C.M. Wallace" <C.M.Wallace@ma Tue, 11 Oct 94 08:54:37 +    46/1750
          Forwarded Mail
  4       "C.M. Wallace" <C.M.Wallace@ma Tue, 11 Oct 94 08:56:45 +    41/1517
          Re: Communication Studies Casebook
  5       willie@cass.manawatu.planet.co Sun, 30 Oct 94 16:45:13 +    40/1428
          First ever reply!!!
  6       "Mail Delivery Subsystem" <MAI Sun, 20 Nov 94 16:20:01 +    44/1713
          Returned mail: Host unknown
  7       Help.Desk                       Mon, 28 Nov 1994 14:39:19   82/3179
          Delivery Report (failure) for willie@cass.manawatu.planet.co
  8       "Mail Delivery Subsystem" <MAI Thu, 2 Feb 95 11:27:01 +1    38/1239
          Returned mail: User unknown

[E]xit   [H]elp   [D]ir    [R]ead   [L]etter [K]ill   [U]nKill [M]ove    [C]opy
                                                                        More →
```

Figure 9: Content listing of mailbox

Some authors even say that some form of salutation and introduction are necessary, especially when contacting someone you do not know (Bucher, 1993; Newby, 1993). Granted that such detail is required in new communications, our pre-existing communication relationships should dictate the way in which we structure messages to people we are familiar with. Without an adequate definition of what these writers consider to be an appropriate introduction in email, it is difficult to assess the need for one, unless it is used only when the message needs to be put in some kind of context to make it more meaningful, Once again, this may then overstep one of the other recommendations; the emphasis on brevity in email messages. As was suggested within previous discussion, perhaps the decision is best made by the user, in consideration of the message intent and prospective receiver(s). After all, the details of sender, receiver, date, and subject are incorporated within the header, so logistically,

the sender could merely type the body of the message, which would be received in the context of all the header information.

It is interesting that much of the literature discourages the incorporation of humour and jokes in email messages. Humour can increase the informality of conversations, lighten up a dull message, portray a more realistic image of the sender, and may merely reflect the same communication style that is transmitted through all communication media. The distinction between humour and sarcasm needs to be made clearer, the former being appropriate in many situations, the latter inappropriate in most situations. Messages of humorous intent can be interpreted differently by the receiver, and where there is a likelihood of this happening, message senders are encouraged to include clues as to their emotional intent (Newby, 1993; Updegrove, et al., 1990), which have come to be called emoticons. However, as is the case in all communication, the line between light-hearted humour and messages with more sinister overtones can be easily crossed. Machrone (1992) "commonly sees people write the most appallingly insulting things to one another. They then shrug it off with a <smile>. [He] considers I-didn't-really-mean-it technique to be a cop-out, a thinly disguised hostile and unbusinesslike act" (p. 88). Therefore the lack of nonverbal indicators may mean that attempts at humour may lead to the incidence of flaming.

Although any communication medium has the capacity for individuals to regret parts or all of their message, email is said to be more prone to such instances due to the manner in which email messages are constructed and sent. Typically, email messages are written rapidly on the screen. They may be a new contact, or an instantaneous reply to a previous message. Either way, the writing style tends to be more direct, often simplifying the issue by avoiding superfluous detail. This brevity may make the message intent less obvious, and the lack of social presence or closeness of others may cause message senders to pay less attention to how the message will be interpreted, or what the consequences may be.

In the present study, 14 respondents had been 'flamed'. Although this is a small proportion, what is most interesting is the way in which they responded to the message, and how this will impact ongoing communications. The message was ignored by six of the respondents, halting the communication. Three respondents responded normally, ensuring an ongoing relationship. Two responded in the same manner, which could potentially halt the communication or exacerbate the flaming, and two responded assertively, which could have various consequences depending on how the response is perceived.

People who flamed back must ask themselves whether they are equally to blame for any communication breakdowns resulting from the flaming. Adages come to mind such as "two wrongs don't make a right"; "it takes two to tango", and what about the good old, "you must have misinterpreted what I said". The latter can be very embarrassing if proven correct, so it is probably better to avoid 'enter key regret' by following the simple guideline of rereading messages before sending, carefully looking at content and tone (Nall, 1992).

Schaefermeyer and Sewell (1988) found that respondents were more likely to use email to seek information, especially for research purposes. In the present study, respondents ranked the functions of seeking information, distributing information, and answering requests as comprising roughly equal proportions of the total number of messages sent. The main reason for this difference is likely to be that the survey by Schaefermeyer and Sewell (1988) was distributed by electronic mail to individuals to three separate computer media for BITNET users (Because It's Time NETwork: a network not limited to specific academic disciplines or functions created in 1981). As these facilities typically attract users for research purposes, it is not surprising that this was their primary use of email. Recognising that these earlier respondents may have been biased toward the use of email primarily for research purposes, it may also be possible that users have changed their attitude toward the medium over the seven or so years since that finding, in recognition of the wider uses of email.

The usefulness of the email facility for the various functions of administration, research, teaching and socialising was explored. The *research* function received the highest mean score rating for usefulness (4.11 on a 5-point scale), followed by *socialising* (M = 3.49), *administration* (M = 3.10) and *teaching* (M = 2.80). Although all these mean scores are above the mid-point of their scale for usefulness, the ratings are still surprisingly low in areas other than research and socialising (primarily used to contact friends and family overseas). As one respondent replied, "the full potential of these four areas is nowhere near used at Massey". A survey by D'Souza and Smith (1989, as cited in D'Souza, 1992) reported that collaborative research remains the primary reason academicians and researchers use email. "Until recently, . . . email was primarily used for scholarly activities. Faculty used email to communicate with other colleagues and research facilities. Very little consideration was given to how this communications medium could support other areas in the academic environment" (D'Souza, 1992, p. 22). The other areas of the academic environment of primary concern in the present study were teaching and administration.

We would expect "teaching" to be higher than its current position of being having the lowest mean score for usefulness. This may improve somewhat with the introduction of a new mass-e-mail manual, although it does need to be more widely disseminated. Also, it is important to remember the other party in the communication process. Many academics may not rate the usefulness of email for teaching highly, as they have not received the demand to use it more often. Costs of having the facility represent a large barrier for some extramural students, and therefore, academics are restricted by the levels of use that students are willing to make. The facility cannot be used for important teaching functions unless all students have the facility. For example, it would be unfair for a teacher to post a message on a group bulletin board advising of changes to an assignment if not all students could access it. The important point here is that researchers have to be aware of other extraneous factors that inhibit use of email other than the choice of the respondents. This point was recognised by Schaefermeyer and Sewell (1988) who stated that "applications for teaching are seen as limited by most users if students do not have access to terminals" (p. 119).

The other area for potential use is in administration, especially that requiring communication within a department. This application of email can only succeed if all members of the department are committed to making it work successfully. This will more likely happen if the Head of Department and senior staff show enthusiasm, sending meeting notices and internal memoranda via email only (Updegrove, 1991).

Within the Business Studies area at Massey University, use of email for administrative purposes, as well as for communication with colleagues within the same department is relatively low. To increase such use, thus using the email facility more extensively, departments within Business Studies could adopt the system used within the psychology department at Massey. According to one of the secretaries (M. Robertson, personal communication 30 January, 1995), there are two electronic communication facilities the psychology staff can use. The first is a type of bulletin board service, whereby authorised users connect to the k: drive that was set up specially for their use. Any staff member can post notices of a general nature (for e.g., committee meeting minutes, conference details), and all members of the department have access.

The second facility is where different group lists are constructed, and important notices or memos can be sent to a predefined set of staff members (for e.g., all staff, senior lecturers, graduate assistants, the members of a particular committee, or just one particular user). Typically, the Head of Department posts messages (although secretarial staff input some), that would have traditionally been photocopied and distributed. Staff also use this facility to request jobs to be done by other staff members, such as the administrative support team, or graduate assistants.

These facilities were first introduced to decrease paper wastage and speed up the administration function, and have also had the additional benefit of keeping close communications with staff members who are dispersed throughout the Massey campus, as well as those located at Albany, north of Auckland. The system stands as a model for others wanting to use email to improve efficiencies in the administration on campus.

(iii) Process

The medium that respondents most often replaced when using email must be examined in order to better understand the main reasons for use. Email is an odd amalgamation of communicative forms, analogous to a phone call, only written; like a paperless letter, but faster; like a casual conversation; like a postcard; or a scribbled note (Leslie, 1994). So it is all of these things, and yet a distinct medium of its own. An analysis of how email compares with more traditional forms of communication is therefore necessary.

The email facility is meant to provide users with the layout for an electronic memo, although respondents did not believe that the medium replaced the written memo often. Although this comprises email's greatest use in the business setting, as it is formatted much like a memo, the value of the facility in the academic setting is less in replacing the memo. Perhaps this reflects on the disparate values placed on the memo in the business environment as opposed to the academic one. This perception may largely contribute to the lack of use of email for intra-organisational purposes within the academic setting that was studied.

Hjalmarsson, et al., (1989) prefer email to be more closely likened to paper mail; "a connection which is reflected in the different metaphors used to talk about [it]: mailboxes, letters, recipients, addresses, etc" (p. 464). Also, like email, the letter is another form of asynchronous communication, which distinguishes it from 'real-time' communication such as that made through a phone call or face-to-face (Bucher, 1993). However, email cannot replace all letters, especially those used for more formal reasons, such as letters requiring the signature of the sender (Hjalmarsson, 1989; Phillips, 1992; Robertson, 1991).

Comparisons can also be made between facsimile and email, proponents of each asserting the capability of each to deliver messages directly from individual to individual, placing them in a form of competition (Batheja, 1995). Some writers

believe that the email facility overcomes the most problematic aspects of facsimile, namely confidential faxes being read by others, received faxes not being delivered promptly, having to wait for a free fax device, archiving and filing difficulties (Batheja, 1995), and that it requires another machine to transmit the message (Richey, 1990). However, it is evident that some of these problems persist within the electronic medium. Assuming that the intended receiver has the facility and the message was addressed correctly, the message will be delivered promptly, although there can be no guarantees that other people will not have access to that mail.

The frustration of having to wait for an available facsimile machine does not necessarily outweigh the advantage of having a machine that is solely dedicated to communication. The fact that email is merely one application of a PC means that email can be disrupting for the user when working within a different application. Likewise, it becomes difficult for people without a PC, or those who have to share to send and receive email messages at their leisure. This lack of all-round access to email facilities make the medium less flexible than its proponents claim it to be. While there are many public facsimile machines available for people to send messages if they do not own a fax machine, or are at a distant location from their fax machine, no such services exist for email. However, these comments may be unfair if we consider the fact that email is a still evolving medium. The conclusion that Batheja (1995) wanted to make was not whether email should replace facsimile, but rather that a combination of both will lead to a more effective communication process.

Email cannot replace all synchronous communications such as telephone calls and face-to-face discussions (for e.g., Phillips, 1992). However, it can replace a large number of them, and support the remainder through being able to email any background information, supporting documents, as well as providing a facility for follow-up communication.

The literature therefore supports what respondents indicated; that the situation determines which communication medium email should replace (if any), and that email

can also impact on other aspects of the communication process than just message transmission (Sherblom, 1988). What is of greatest concern is those respondents who replied that email does not replace any other medium of communication. For these individuals, how would they normally have communicated the messages that are sent electronically? The most plausible explanation is that they were probably thinking in general terms rather than thinking of their specific experiences with email, (for e.g., they were not willing to disconnect their phone service just because they had the email facility, although they would use email instead of the telephone in some instances).

Respondents had mixed opinions on the importance of typing ability, computer literacy, and proof reading in constructing email messages. The most common finding was that although these functions were not vital in the case of email, they would make the process more efficient. Typing ability improves efficiency through less time being spent constructing email messages; computer literacy improves efficiency through the use of more specialised functions and improved confidence in using the tools; and proof reading improves efficiency in providing more effective communications, a clearer error-free message that is easier to read. Once again, the literature gives mixed recommendations, although it is likely that more professionalism is required in the business environment than in the academic setting.

Knowledge

A. System

The research also sought to examine the extent of knowledge users had about various software packages and systems that were available for their use. It became evident that respondents could identify those systems they used, and were not so familiar with the systems and packages they had access to. This conclusion is based on the fact that although some systems and packages are mutually exclusive, others are complementary (a list of mutually exclusive and complementary packages was provided in the results

section). This means that people can use some systems, or have to be using one system to be able to access another (i.e. users have to be using an email package such as email, mumail, or eudora to be able to access gopher).

B. Process

This section looked at whether users were familiar with the general characteristics of the email facility and its operations. All Massey University systems are protected from viruses. Incoming email is screened; the system looking for 'something different' to the forms that normal communication takes. This method is superior to those that merely look for specific viruses, as new viruses are constantly being introduced, and can pass through such systems undetected. The Massey University system can also trace the origin of incoming messages, and even has checks in place that disallow people from receiving messages from particular sites that are deemed 'inappropriate' for academic use. The system will identify such users to computer centre staff, who then contact the individual accordingly.

The most interesting finding is the low number of respondents who knew others could access their mail. The computing centre back up all systems daily, weekly, monthly, and yearly. This means that any email messages that have not been read by the user at the time of back-up each day will be in storage, "almost forever" (Mike Ellis, personal communication, January 1994). This means there is a permanent copy of that message, even if the user subsequently deletes it from their own hard drive. While the university policy has always been that the only person that can authorise access to these back-up messages is the owner of the messages, there is no absolute guarantee that these messages will not be accessed by other people.

Some instances of access will be legitimate, such as where a user gives their password to another person, although this is not recommended, removing all liability from the computer centre. Another is where, in certain cases, computer centre staff will open

someone else's hard drive when written permission from the Head of Faculty is given, as long as it foreseeable that the owner of the files would not object.

However, more sinister access to files is possible. All computer centre staff have access to these files, however, being discovered accessing them is grounds for instant dismissal. Computer hackers may also try to break in to the files, although there are different levels of security that they must break into. So, although it is "highly unlikely" (Mike Ellis, personal communication, January 1995) for them to access the system, all security systems are potentially breachable. This issue was recently raised when computer hackers discovered the password to access the Victoria University central computer system (Shelton, 1995). Although it was believed to be an inside job (i.e., computer staff gave the password out), the incidence highlights the fact that no system is entirely secure. Security breaches are a reality, and although problematic, they are not as threatening to academic institutions as they could be in the highly competitive business environment, where the loss of trade secrets could mean the downfall of an organisation. Frank March, the Director of Victoria University's Information Technology Services said "we are trying to run an open system with access to the world. We are not trying to run high-tech security stopping people" (Shelton, 1995, p.2).

Whatever the policy or practice of an organisation regarding the privacy of email messages, this must be made clear to all employees. "Whether it's 'big brother' monitoring the email system, or glitches that allow messages to be intercepted, nothing is sacred and employees need to be aware of this" (Martinez, 1994, p. 74). A guide for the formulation of such policies in New Zealand must follow the conventions set out in the Privacy Act 1993, particularly principles 1, 3, and 5. Principle 1 states that "personal information shall not be collected by any agency unless it is needed for a lawful purpose connected with a function or activity of that agency (Institute of Personnel Management, 1994, p. 2). As 'personal information' is any information about an identifiable individual, email would fall into that category, as it is the communication of an individual. Therefore, the onus is on the organisation to

demonstrate that such collection is necessary. Given that it is a necessity for all systems applications to be periodically backed up, this provides enough cause to collect such personal information, even if it is just a consequence of performing the function of system back-up.

Following this, components of principle 3 stipulate that "when collecting personal information, an agency must ensure that the person knows in advance that the information is being collected; and why it is being collected; and who will receive and hold the information" (Institute of Personnel Management, 1994, p. 3). The Act gives a broad definition of 'document' to include information recorded or stored by a computer or other device. Therefore, employees must be fully informed of the privacy policy that the organisation has with regard to collection of messages sent through the electronic medium.

Finally, principle 5 of the Privacy Act 1993, states that "an agency that holds personal information shall ensure that the information is protected by reasonable security safeguards against loss; unauthorised access, use, modification or disclosure; or other misuse" (Institute of Personnel Management, 1994, p. 4). The "reasonableness" of safeguards is entirely dependent on the situation, taking into consideration the physical location of the information, and the sensitivity of the information and the damage that could occur from a breach of this principle (Institute of Personnel Management, 1994).

As in many instance within law, the terms of reference can be ambiguous, and open to further discussion and negotiation. The Privacy Commission of New Zealand (personal communication, December 1994) are not aware of any cases pertaining to the privacy of electronic mail to date, but do agree that it may only be a matter of time before we start to see cases emerge such as those witnessed abroad. To safeguard the extent of such cases, it is beneficial for organisations to take a proactive stance by creating a clear privacy policy, which fulfils obligations under the Privacy Act 1993. One option is for employees to sign an email acknowledgment form that states acceptable uses of email and reminds them that the equipment is business property, and therefore

employees should have no expectation of privacy with respect to email (Martinez, 1994). In communications with employees, including such written guidelines, as well as company training and manuals, it must be made clear by managers, especially the human resource specialist, that mail belongs to the company, much like files and other corporate documents, and should not be used for personal or frivolous communication ('E-mail effects on corporate...', 1993; Rudman, R., personal communication, December 1994; Shannon & Rosenthal, 1993).

Section 3: Conclusions

CHAPTER SEVEN: CONCLUSIONS

Summary

The present study revealed that Business Studies academic staff at Massey University use the email facility quite regularly on average, although the sophistication of use and level of knowledge of the medium is relatively low. Email is still used primarily for research purposes and, as also shown in previous studies, the potential for its use in other areas such as administration and teaching is a long way from being achieved.

Existing literature has three views of the efficacy of email. The first approach outlines the good points of email. Largely dependent on the argument that email brings efficiency gains, proponents are more likely to be drawing conclusions from the business environment. Although academia is moving toward this business-like environment, academic communication behaviours are still unique and therefore the bad sides, or disadvantages of email can arise in this setting. The present study, as well as previous research highlights these bad sides, which undermine the universal acceptance of the medium. Within business and academia, email's ugly side is beginning to emerge, specifically the way in which the medium lends itself to employer monitoring and access by external hackers. This is dangerous for both business and academia; resulting in the loss of trade secrets, thus competitive advantage, as well as the crumbling of the strong culture of academic freedom.

The present study is one of the few that looks at differences in behaviours and attitudes related to email between users and non-users in the academic setting. The sample size (n = 72) was large enough to draw valid conclusions, and as respondents were from the same university they were making ratings in response to the same system. The study was timely;

conducted prior to major changes within the university email system that are presently being implemented. This will facilitate follow-up research, whereby changes in usage can be monitored once the system and its support services changes to one that is more standardised. Such a study is beneficial if we consider that technology upgrades imply improvements in the system and its use. Finally, this research has measured email in academia and compared it with email in business, highlighting the differences and issues of divergence between the two.

Despite these strengths, the present study was not without limitations. The data was collected solely by questionnaire, which means that objective responses may not have been given. Objective data, such as the number of messages and the content of the email messages themselves would be beneficial, although, as in the present study, institutional policies may limit such data collection. Also, a large proportion of the target population did not respond, which may or not mean that they are non-users, hence overestimating usage levels of the entire population. Also, the results are only relevant for a particular time period, however, as previously mentioned, this may set the foundation for a follow-up study. Such an amalgamated study would contribute greatly to the understanding of email use, and would therefore need to collect objective data on use as well as perceptions of use.

A theoretical implication of the present study is that in future writings, the distinction between business and academic use of email needs to be clearer, as they are different environments with different needs and communicative behaviours.

There are also practical implications of the present study, at both the specific level of the Massey University email facility, and globally, to all email users and administrators. The Massey University email system is still evolving, as is to be expected of any technology-driven system. Our email environment is not yet mature, and neither are the patterns of

use of the people who use the facility. Basic usage of the facility is evident, yet the sophistication of use (and hence the efficiency of communication) is low. Rather than choosing not to use these sophisticated functions, the reason is largely due to users not being aware of the capabilities of the system. Therefore, despite technical soundness (or user friendliness) of the system, sufficient user support must be provided to give users the confidence to use the facility to its greatest potential. As with many email support systems, the difficulty lies not in the quality of manuals or training, but in the knowledge of the availability of such support. In the present study, like so many others reported, users are required to know about the existence and location of the support, and then take action on their own behalf to get the help required. Information regarding the support facilities needs to be more widely disseminated, during induction and thereafter periodically, through media that is not just targeted to present users of the system, but to all potential users as well.

One positive step toward this goal may well have been the widespread dissemination of the questionnaire used in the present study. Certain questions, especially those related to sophistication of use, may have triggered users to ask appropriate people how to use certain tools and perform special functions. For example, under the question asking what provisions users make while are away for extended periods of time, one respondent said "Don't know, haven't made any. Should I?" Hopefully the mechanisms will be put in place that will let this, and other respondents know the capabilities of their system, what help is available, and where to seek this help.

On a more global scale, the main problems that need to be addressed are the lack of an international email directory; lack of use of use facility by colleagues; and the absence of standardised norms, or an etiquette of use, including addressing techniques as well as content. It seems that these concerns are widely expressed throughout the email community, leading to the assumption that this pressure will result in rectification of the

problems in the near future, in order for the technology to be truly accepted within academia.

Although the study was exploratory in nature, and therefore cause and effect cannot be determined, some interesting implications related to the level of use and knowledge of email facilities have been posited from the observed statistical relationships and qualitative data, and used as bases for future research.

Directions for the Future

Research that collects data from users as well as non-users clearly has a greater capacity to aid our understanding of the use of email. As previously mentioned, the present study provides an excellent framework for research that aims to monitor changes in the patterns of use following implementation of a new email system. Such research would prove invaluable to any organisation wanting to introduce an email system, or upgrade the one they presently have. While a systems implementation manual can handle all of the technical difficulties that could arise, there is no such manual that will cover all the human implementation difficulties that may arise. Therefore research such as that contained in the present study can enable improvements in the introduction of email through following more appropriate implementation procedures, providing better documentation and encouraging greater use.

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FACULTY OF
BUSINESS STUDIES

DEPARTMENT OF
HUMAN
RESOURCE
MANAGEMENT

Electronic Mail: Its Impact on Communications in the Business Studies Faculty.

About the study:
I am inviting your participation in this study based on your employment as an academic staff member in the Business Studies Faculty at Massey University, as identified in the 1994 calendar. All members of the Business Studies Faculty listed in the 1994 calendar have been invited to participate, and approval has been gained by your Head of Department to participate in this study. The aim of the study is to explore the use of the internal electronic mail facility at Massey. The project is being run by Nicole Stirton, a postgraduate student in the Human Resource Management Department at Massey University. The results will be used in a research project for the postgraduate paper 14-490, Research Methods in Human Resource Management, and parts may be published in peer-review journals. Funding and support for the project has been provided by the Department of Human Resource Management.

What participation means:
If you agree to take part, you will complete a questionnaire which asks a number of questions concerning your use of electronic mail and how effectively it meets your specific needs. Your completed questionnaire can then be sent directly back to the researcher in the self-addressed envelope provided through the internal mail system. This means that the researcher cannot personally identify you. It is assumed that, by filling in the questionnaire, the participant consents to taking part in the research. Your department will receive a summary of the findings, based on accumulative results of all the individual questionnaires.

What your rights are:
You may decide not to participate, or refuse to answer specific questions. All information you supply remains confidential to the researcher. It will not be possible for others to identify you in any reports that are prepared from the study. Your Head of Department will receive a summary of the findings from the study when it is complete, the final document to be requested from the researcher.

You can contact me at ext. 4274, for further information or to clarify questions you may have about the study, although this may jeopardise your anonymity to the researcher.

Nicole Stirton
Graduate Assistant
Department of Human Resource Management

Electronic Mail Questionnaire

Statistical Purposes Only

What kind of email package(s) do you have access to?

- email ☐
- netnews ☐
- gopher ☐
- internet ☐

☐

What type(s) of email system are you presently using?

- eudora ☐
- mass-e-mail ☐
- emacs ☐
- netmail ☐
- none ☐

☐

How often would you say that you use the email facility?

- never ☐
- occassionally ☐
- weekly ☐
- daily ☐
- several times each day ☐

☐

Please explain the barriers to you using email more frequently

_____

_____

_____

_____

_____

☐

What written sources of information do you have for assistance in using the email facility?

_____

_____

_____

_____

_____

☐

Comment on the helpfulness of these resources

_____

_____

_____

_____

_____

What forms of personal training have you received for using the email facility?

_____

_____

_____

_____

_____

Comment on the adequacy of this training.

_____

_____

_____

_____

_____

Does the email facility give you greater access to those of higher authority than more traditional methods of communication?

Yes ☐
No ☐

Please explain your response

_____

_____

_____

_____

_____

How important do you think the following factors are for using email:

Typing ability

1----------2----------3----------4----------5 ☐
Not Important Very Important

Computer literacy

1----------2----------3----------4----------5 ☐
Not Important Very Important

Proof reading

1----------2----------3----------4----------5 ☐
Not Important Very Important

Please explain your ratings

_____

_____

_____

_____

_____

How would you describe the extent of contact through email with the following users:

Others in department

1----------2----------3----------4----------5 ☐
Never Frequently

Others in university

1----------2----------3----------4----------5 ☐
Never Frequently

Others with same interests at other locations

1----------2----------3----------4----------5 ☐
Never Frequently

Others with different interests at other locations

1----------2----------3----------4----------5
Never Frequently

On average, how many email messages would you receive each week?

_____

Are any other people able to access your email?

Yes ☐
No ☐

What provisions do you make for your email when you are away for extended periods of time?

_____
_____
_____

Out of every 10 messages you receive, how many would you store for later use?

_____

If you save email messages, do you set up mailboxes/directories for files?

Yes ☐
No ☐

Do you ever forward messages?

Yes ☐
No ☐

In what instances would you typically forward a message?

_____
_____
_____
_____

Have you ever prepared a document in advance and attached it to an email document?

Yes ☐
No ☐

☐

If not, why not?

_____

_____

_____

_____

When constructing an email message, how important do you consider the following factors to be?

Amount of topics

1----------2----------3----------4----------5
Not Important Very Important

☐

Choosing subject headings

1----------2----------3----------4----------5
Not Important Very Important

☐

Salutation and introduction

1----------2----------3----------4----------5
Not Important Very Important

☐

Length of document

1----------2----------3----------4----------5
Not Important Very Important

☐

Incorporating humour

1----------2----------3----------4----------5
Not Important Very Important

☐

Have you ever received an email message that you thought was unnecessarily abrupt or rude?

Yes ☐
No ☐

☐

How did you respond to this message?

_____

_____

_____

Have you ever incorporated small portions of messages received into the messages you send?

☐

_____

Why/why not?

_____

_____

_____

On average, how many email messages would you send each week?

☐

_____

Do you send email messages to

individuals only ☐
groups only ☐
individuals and groups ☐

☐

If you have constructed group lists, how do you determine who goes on it?

_____

_____

_____

Thinking about the email messages you send, which of the following activities would you engage in the most?

seeking information ☐
distributing information ☐
answering others requests ☐

What sources have provided you with the email addresses of people you have sent messages to?

_____

_____

_____

How useful do you think the email facility is for the following functions:

Administration

1----------2----------3----------4----------5
Not Useful Very Useful

Research

1----------2----------3----------4----------5
Not Useful Very Useful

Teaching

1----------2----------3----------4----------5
Not Useful Very Useful

Social

1----------2----------3----------4----------5
Not Useful Very Useful

Explain the main advantages of email for you personally.

_____

_____

_____

_____

_____

Which means of communication do you think email replaces the most?

_____

_____

_____

What are the most common problems you have encountered when using the email facility?

_____

_____

_____

_____

_____

How do you think these problems could be overcome?

_____

_____

_____

_____

_____

The following demographic details will be used for statistical analysis only.

Gender

Male ☐

Female ☐

Age Group

-25 ☐

26-35 ☐

36-45 ☐

46-55 ☐

56- ☐

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FACULTY OF
BUSINESS STUDIES

DEPARTMENT OF
HUMAN
RESOURCE
MANAGEMENT

1 August 1994

« 1»
Head of Department
« 2»

Dear « 3»

I am a postgraduate student in the department of Human Resource Management, currently completing a masters thesis, and 14.490 - Research Methods in HRM. As part of the requirements for this paper, I am conducting a research project that looks at the extent of use and level of understanding of the university internal electronic mail system. In particular, I am focusing on the Business Studies Faculty, as it will be interesting to observe how much we are following the trends of the business sector.

In accordance with ethical guidelines, my method of participant recruitment is to contact the academic staff members listed in the 1994 university calendar and invite their participation. Out of courtesy, I am seeking your approval to contact the members of your department, inviting them to fill in a brief questionnaire. The names from the calendar will only be used for recruitment purposes, while the data collected will be kept confidential and enable participants to remain anonymous. I have enclosed a copy of the participant information sheet outlining the study.

Could you please return the reply slip of this letter to me as soon as possible so that I can start sending out questionnaires.

Thank you for your assistance in this matter.
Yours sincerely

Nicole Stirton
Graduate Assistant

REPLY SLIP

I give Nicole Stirton permission to contact the academic staff of the « 2» department at Massey University to invite participation in her study of the use of electronic mail.

« 3»
Head of Department
« 2»

From this list of people who appear in the university calendar, please delete those who are no longer in your department.

« 4»

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FACULTY OF
BUSINESS STUDIES

DEPARTMENT OF
HUMAN
RESOURCE
MANAGEMENT

17 October 1994

« 1»
Head of Department
« 2»

Dear « 3»

I would like to take this opportunity to thank you and your staff for participating in my electronic mail study.

Preliminary analysis of the results show some interesting trends and practices, and a full set of results will be available nearer the end of the year.

I trust that you will pass on this expression of gratitude to your staff, and inform those who have not yet participated that I am still happy to receive completed questionnaires.

With thanks

Nicole Stirton
Human Resource Management