# THE MEDIATING ROLE OF WORKPLACE RELATIONSHIP AND COMMUNICATION SATISFACTION ON THE RELATIONSHIP BETWEEN E-MAIL ATTITUDE AND ORGANISATIONAL COMMITMENT.

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# Abstract

As an exploratory piece of research, this study investigated the use of e-mail by university staff and examined the relationship between e-mail attitude and organisational commitment. The mediating role on the attitude-commitment relationship by both satisfaction with overall communication and satisfaction with workplace relationships was also examined. A questionnaire was designed which incorporated Minsky and Marin's (1999) scale of Social and Nonsocial Uses of Electronic Messaging Systems, measures of satisfaction with the use of e-mail and with e-mail as a communication medium, Meyer and Allen's (1993) revised Organisational Commitment Scale, and subscales from Hill, Bahniuk and Dobos' (1989) Mentoring and Communication Support Scale and Furnham's (1996) Organisational Climate Questionnaire. A scale to measure e-mail attitude was developed specifically for this study using the tri-component model of attitude theory. The questionnaire was sent to all staff at Massey University's Albany and Palmerston North campuses (N = 2253). Of the number sent, 575 were returned, with a proportional representation from the two campuses and the five colleges of the university. Use of e-mail was found to be predominantly used for task related purposes, with administration being the most commonly reported function that e-mail was used for. Factor analysis demonstrated three underlying components, affective, behavioural and cognitive, of the E-mail Attitude Scale. A series of hierarchical multiple regressions as outlined by Baron and Kenny (1986) were conducted to explore the potential mediating effects of both communication satisfaction and workplace relationship satisfaction. Communication satisfaction completely mediated the relationship between affective attitudinal component and both normative and affective organisation commitment. In turn, the satisfaction with workplace relationship variables partially mediated the relationship between the affective attitude component and affective commitment, with only collegial social support partially mediating the relationship between affective e-mail attitude and normative commitment. The results are discussed in relation to relevant demographic variables. Limitations and potential directions for future research are also highlighted.

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# Chapter 1: Introduction

Technology affects not only individual behaviour in organisations, but also effective organisational functioning. It is suggested that for organisations to function effectively, they are dependent upon communication for information exchange and coordination of work activities amongst employees (Neher, 1997; Tourish & Hargie, 2000). The vast technological changes over the past decades have seen computer mediated communication, of which e-mail is the most common variety, become prevalent as a means of organisational communication. This has affected both the formal and informal communication systems of the organisation. Though e-mail is considered to be faster, more efficient, cost effective, easier to use and more accurate (Finholt, 1997; Neher, 1997; Sproull & Kiesler, 1991), it is also viewed to be impersonal and resulting in decreased face-to-face contact (Hallowell, 1999, Sarbaugh-Thompson & Feldman, 1998), as well as having consequences such as overload as a result of unsolicited mail and ease of contact and being viewed as an inappropriate means by which to communicate sensitive information (Hiltz & Turoff, 1993; Zuboff, 1988).

Historically universities have been early adaptors of computer technology, especially with the advent of e-mail as a means to facilitate research based communication between geographically distanced researchers (Baron, 1998; Rice & Case, 1983). Non-technical users of computers have seen the computer undergo profound changes in terms of it's function. Initially the computer was viewed as a calculator, then as a word processor and now as a medium for social communication (Baron, 1998). This has resulted in an upsurge in the use of e-mail in academic and corporate settings, as well as in private homes as an alternative medium to conventional written or oral communication.

Much of the research in this area has tended to concentrate on technological issues (c.f. Korzeniowski, 2000), or trying to incorporate e-mail as a means of communication into existing communication theories (Baron, 1998; Mantovani, 1994), or on the virtues of face-to-face groups versus groups using only electronic communication (Bordia, 1997). This is reflective of the view that computing is often seen as a technical phenomenon concerned primarily with the production of

software and hardware. However, communicating via computer networks, as with e-mail, can be described as essentially a social phenomenon where users, not system designers, create it's meaning and use (Haythornthwaite, Wellman, & Garton, 1998). Little research has questioned how those using e-mail on a regular basis in a non-laboratory setting feel about it as a communication medium. Fulk and Boyd (1991) suggest that research should investigate what the effects of media choice are and whether media choice makes an important difference in organisational or individual functioning. This results from the belief that media choice occurs within well defined communication contexts and organisational climates.

Continued experience and thus familiarity with e-mail is said to contribute positive attitudes toward e-mail (Hiltz & Turoff, 1993; Ku, 1996). To explore more fully how individuals evaluate e-mail, the tri-component theoretical perspective will be utilised, involving affective, behavioural and cognitive components of attitudes, which gives the ability to gain insight into actual and potential behaviour and use (Ajzen, 1988; Franzoi, 1996). Several recent studies have highlighted how e-mail has impacted on communication and organisations (Bordia, 1997; Ku, 1996). However, the investigation of the effects of these changes in terms of individuals' relationship to their organisation have been minimal.

Organisational commitment is described in the literature as an individual's identification with the organisation, how the individual values their membership to that organisation and the degree to which they intend to work to attain organisational goals (Meyer & Allen, 1997; Porter, Steers, Mowday, & Boulian, 1974). It is believed that commitments develop naturally, whether these are to work, careers, hobbies, or to family (Morrow, 1993). Organisational commitment has been shown to have implications for the individual in terms of wellbeing and job satisfaction (Allen & Meyer, 1996; Jaros, 1997), and for the organisation as it is seen to impact on organisational effectiveness, and as a result of being predictive of intention to leave (Mathieu & Zajac, 1990; Meyer & Allen, 1997). It is theorised that greater use of e-mail will result in more highly committed individuals as a result of a perceived increased involvement in the organisation (Sproull & Kiesler, 1991).

Within the communication literature, is the assumption that people communicate with others not only to strengthen or create relationships, but also as a means to gain information to clarify experiences and reduce uncertainty (Hartman & Johnson, 1989). In any organisation, this interaction results in the formation of alliances, collective problem solving and decision making, and also as a

means to access information about policies, procedures and the work skills that are necessary to perform tasks (Neher, 1997). Social or non task related interaction is viewed to be essential as this helps to develop common understanding and meaning between the communicators and thus facilitates task related communication by laying the groundwork for effective communication and enhancing the abilities of individuals to work together (McGrath & Hollingshead, 1994). Lack of routine interaction with colleagues has been found to result in dissatisfaction with organisational communication and the belief that communication channels are blocked with the consequence being withholding of information and negative attitudes toward the organisation (Allen, 1992; Putti, Aryee, & Phua, 1990).

The increasing use of e-mail is seen to result in changed organisational communication patterns, particularly with regards to face-to-face and telephone conservations (Sarbaugh-Thompson & Feldman, 1997; Wellman, 1997). It is argued that the consequent lack of social relationships at work will not only isolate individuals, but also have detrimental effects on overall organisational communication and ultimately organisational effectiveness (Hallowell, 1999; Tourish & Hargie, 2000).

This study will explore the relationship between e-mail attitude and organisational commitment and the impact variables such as communication satisfaction and satisfaction with work place relationships has on that relationship. By examining how a process such as e-mail communication impacts on organisational commitment, this research will not only contribute to the literature exploring how the changing nature of work is influencing individuals, but may also have implications for organisational policy regarding the use of e-mail.

# Chapter 2: E-mail

The use of e-mail, originally a government conceived, academically implemented system as a means to share research information, has predominated communication among the computer literate (Baron, 1998; Rice & Case, 1983). Economic trends in the past two decades have seen the costs of both computer technology and long distance communication decrease resulting in an explosion of national and international computer networks, with e-mail becoming prevalent across most private and corporate settings (Sproull & Kiesler, 1991). This section will begin by defining e-mail in relation to other forms of computer mediated communication, and explain the unique features of e-mail. These features will then be used as the basis for exploring the theory and research currently available and to develop research questions pertinent to this study.

**E-mail defined.**

Computer-mediated communication involves any form of human communication involving the transmission of electronic signals between networked computers (Sallis & Kassabova, 1997). The term computer-mediated communication encompasses a range of functions from remote access to corporate data bases and computer conferencing, to voice mail and e-mail (Fritz, Narasimhan, & Rhee, 1998; Steinfield, 1986b). All these tools are dependent upon computers for storing, editing, and channelling information, and for creating and using data-bases (Mantovani, 1994). Electronic mail specifically involves messages composed of text or graphics sent between identifiable senders and receivers who may be geographically distanced users of computer networks (Baron, 1998). The messages can be addressed as easily to a single recipient, as to a large group, and can be read or re-read at a time convenient to the user (Finholt, 1997). Described as one of the most successful computer applications devised, e-mail has evolved beyond it's original application, that of asynchronous communication, and is often used for other purposes such as document delivery and storage, and task management (D'Souza, 1992; Whittaker & Sidner, 1997). For the purposes of this study, e-mail is defined as communication between individuals, groups, or organisations using

computer technology (Sallis & Kassabova, 1997), as providing a communication function is the most common perception of others when discussing e-mail.

Sproull and Kiesler (1991) argue that computers have altered patterns of information exchange as well as working and social relationships. They believe that the unanticipated consequences of the technology have had less to do with increased communication efficiency in terms of speed, and more to do with changing interpersonal interactions, communication patterns and work procedures. It is also recognised that the well established tendency of users of the networks has been to turn what were initially designed as media for accessing and using remote data into interpersonal messaging systems (Bikson & Panis, 1997). These beliefs have resulted in a plethora of theoretical dissertations and experimental studies. The focus of these has predominantly been in relation to technological issues to improve use (Korzeniowski, 2000; Zabala, 2000), or to alert users to issues related to lack of privacy (Adams, Scheuing, & Feeley, 2000; Schrage, 2000) or human factor assessments (Latrille, 1987) despite the belief that technology both shapes and is shaped by the individuals that use it (Bordia, 1997; Contractor & Eisenberg, 1990). The research that has looked at the impact on individuals has done so from a group perspective in comparing e-mail to face-to-face communication, with little or no research investigating the impact that e-mail has had or is having on individuals and their attitudes toward their organisation. Prior to outlining the research available, I will begin by explaining the characteristics unique to e-mail communication.

**Communication by e-mail.**

A typical communication cycle involves a sender who initiates the process through encoding and sending a message, such that the recipient attends to, successfully decodes and incorporates or acts on the received message (Zack, 1993). This process then continues with feedback, from the recipient to the original sender, the function of which is to demonstrate understanding or to clarify the original message. This process can and does malfunction related to 'noise' which distorts the clarity of the message at any point in the process (Neher, 1997). With e-mail, the flow of any given communication cycle entails a relatively short and finite transmission time, but a substantial composition time, because for most typing is slower than talking (McGrath & Hollingshead, 1994). E-mail is an asynchronous means of communication in that individuals can choose when to receive and

reply to messages as they would with any form of written communication (Straus, Weisband, & Wilson, 1998). Yet unlike most other forms of written organisational communication, e-mail has it's own etiquette which appears to involve poor grammar, spelling and sentence structure, and having more in common with oral communication without the ability to build in facets such as tone or expression, or the means by which clarifying statements can be immediately made, as can occur with face-to-face communication (Baron, 1998; Zack, 1993). This lack of automatic feedback results in the sender having no way of knowing whether their message has been received, as it is possible to receive an e-mail message without either reading or acknowledging it (Mantovani, 1994; McGrath & Hollingshead, 1994). A point that is distinct from knowing that the message has been delivered. It is suggested that widespread use of e-mail has resulted in a paradox, namely the ability for enhanced exchange and processing of information and thus greater efficiency, coupled with the relative inefficiency of the media because of the lack of feedback, context cues and clarity of message, resulting in frustration by the user (Lea & Spears, 1991).

**Theoretical views of e-mail.**

As already implied, e-mail is compared to face-to face communication as the gold standard of communication perfection. The common theoretical explanations for differences between the two, hold that e-mail screens out different types of individuating information, such as non verbal cues, for example body language, or social context cues, such as age, status and gender (Walther, 1992). The absence of such cues is seen to affect users' perceptions of the communication context and other participants, as well as constraining the users' interpretation of the messages. Such characteristics are suggested to render e-mail as less suitable for certain communication purposes because it is viewed as a lean form of communication (Rice & Love, 1987; Trevino, Lengel, & Daft, 1987). Information richness defines the ability of information to change understanding within a given time frame by overcoming different frames of reference or by clarifying ambiguous issues (Daft & Lengel, 1986). Communication media are seen to vary in the capacity to process rich information through feedback, the number of cues and channels used and through personalisation and language variety (Lee, 1994; Rice & Shook, 1990). Face-to-face is considered the richest form of communication followed by telephone, contact via new media such as e-mail, and then written

documents (Daft & Lengel, 1986; Lee, 1994, Webster & Trevino, 1995). Thus choosing which medium to send a message is argued to be the result of a rational process whereby an individual matches the characteristics of the medium to the content of the message (Webster & Trevino, 1995). The rationality inherent in this view has been challenged, as it fails to explain why in the same circumstances, an individual may choose one medium whereas another individual will choose a different medium (Minsky & Marin, 1999). As such, other factors such as attitudes and beliefs about the medium, along with organisational norms and expectations will impact on the choice of medium. The extension of the information richness theory, social influence theory combines these views, suggesting that though the choice of when and how often to use a medium may be rational, but describes that the social context can and does influence individuals' perceptions, choice and use of communication mode (Ku, 1996; Webster & Trevino, 1995). Despite this, it is believed that e-mail will be predominantly used for routine tasks and not for purposes that will involve the inclusion of socio-emotional content (Lee, 1994; Rice & Shook, 1990; Trevino, Daft, & Lengel, 1990).

The other theoretical argument in relation to e-mail, is that e-mail is touted to be an excellent 'equaliser' as it creates a semblance of anonymity by removing all information about the individual that stereotypes or biases could be based on (Sproull & Kiesler, 1991). As a consequence Sproull and Kiesler (1986, 1991) argue that e-mail will increase the amount of inter-organisational communication across all levels, as the user will feel less inhibited about meeting people electronically. E-mail is also theorised to remove the individual from the proximal power of others and from the influence of the group. E-mail is therefore believed to cultivate diversity and democracy in organisational activities, such as decision making (Spears & Lea, 1994). Kraut and Attwell (1997) argue that there is an alternative view to the happy picture that Sproull and Kiesler (1991) paint. That is technologies that are capable of reducing distances, such as e-mail, are more often used to supplement face-to-face communication with prior acquaintances, or to communicate with people who are close by geographically. The implication being that e-mail may not reduce differences, but exacerbate pre-existing inequalities in knowledge and communication within an organisation.

**E-mail research.**

Research comparing face-to-face groups to those using e-mail have found greater equality of participation, less dominance by single members and greater status equality in the e-mail groups (Siegel, Dubrovsky, Kiesler, & McGuire, 1986). E-mail groups also tend to be more uninhibited in relation to their language and their ideas (Siegel et al., 1986; Sproull & Kiesler, 1986), take longer to both begin to communicate and to reach decisions, the decisions made tend to deviate further from their initial individual preferences than in the face-to-face group (Lea & Spears, 1991; Siegel et al., 1986), and members also overestimate their personal contributions to and involvement in communication but are more likely to provide information that would not normally have been shared through other media (Sproull & Kiesler, 1986). Though combined, this research begins to support the theoretical views that email supports greater democracy through communication participation in organisations because of equal access to communication media, Mantovani (1994) argues that any communication medium is dependent upon the social context of the organisation and thus tends to enhance existing patterns rather than create new ones. Communication is thus a result of social influences such as group norms and attitudes and behaviours of coworkers and management (Fulk, Schmitz, & Steinfield, 1990; Webster & Trevino, 1995). In a field study exploring the communication patterns of two organisations, Zack (1993) found evidence that e-mail was used in a way that complemented rather than substituted for other communication forms, and the patterns of communication via e-mail were based on norms of communication already present.

Mantovani (1994) also argues that equality of access to a communication medium does not equate with equality of attention to the message by other individuals, and especially in the light of the amount of unsolicited mail that arrives by this channel. He goes on to suggest that contrary to the experimental studies using anonymous students in laboratories that found there was more equality in e-mail groups (for a comprehensive review of this literature see Bordia, 1997), in reality equality will be dependent on the social context. Mantovani (1994) also argues that within an organisation there is only relative rather than absolute anonymity in that the receiver may not know the person by sight but will be able to know their status in the organisation based on information in the e-mail header. Thus messages coming from low level employees can still be perceived as less important. The argument can also be made that when only limited information is available about others, this may perpetuate a reliance on stereotyping rather than eliminating stereotyping (Brown, 1995). This point

is supported in a study by Weisband, Schneider, and Connolly (1995) who found that when group members were able to label each other by status, based on limited information as would be available organisationally, use of e-mail did not cause equalised participation in the group and instead biases appeared to be exacerbated. Overall, Bordia (1997), suggests that the results regarding quality of performance and evaluation of communication partners are not definitive, and may result more from the characteristics of the studies such as the use of mainly students as subjects as well as design factors such as the use of limited amount of time allotted in the experiments.

**Use of e-mail.**

It is also argued that richness or leanness is not so much inherent in the medium used, but a property of the interaction of the medium, in this case e-mail, with the organisational context (Fang, 1998; Lee, 1994). Zack (1994) argues that when a group has a shared context based on group norms and shared knowledge, this can be represented through jargon and code words. As such, the communication will be infused with greater meaning than with a group with low shared context. Carlson and Zmud (1999) take this argument one step further, arguing that cohesive work groups who have used e-mail extensively over a period of time are more likely to use e-mail for socio-emotional purposes as they perceive e-mail as a rich channel.

Studies have shown a considerable amount of socio-emotional content in e-mail messages (Ku, 1996; Rice & Love, 1987; Steinfield, 1986a), regardless of the belief that e-mail can only be used for routine impersonal use. Steinfield (1986a, b) suggests that e-mail is used for two broad purposes: task related use, such as scheduling meetings and exchanging routine information, and socio-emotional use such as getting to know someone or to keep in touch with someone. These two broad categories were later broken down into four dimensions of use, routine use, complex use, socio-emotional use and bulletin board use (Ku, 1996). This measure was piloted on an academic sample and members of the telecommunication organisation for which it was eventually used. Though Ku's (1996) analyses supported a four factor solution, Minsky and Marin (1999) further adapted Ku's (1996) scale to better fit their operationalisation of individual e-mail use by dropping the items related to bulletin board use. No factor analysis was performed in Minsky and Marin's (1999)

study, to determine if their scale better measures e-mail use than Ku's (1996) scale. As it is intended to use Minsky and Marin's (1999) scale in this study, this highlights the following question.

*Research question 1: What are the underlying dimensions of the E-mail Use Scale?*

Hiltz and Turoff (1993) argue that e-mail messages are better thought out and organised and thus richer than natural conversations. It is believed that the presence of socio-emotional content in e-mail is the result of more experienced users adapting to the narrow 'bandwidth' of e-mail by developing the ability to infuse the missing nonverbal cues in written form (Hiltz & Turoff, 1993; Ku, 1996; Rice & Love, 1987). Carlson and Zmud (1999) argue that this will result from individuals gaining increased knowledge based experience in relation to the e-mail medium, the topic under discussion, the organisational context and their co-communicators. But as a result new and novice users will remain severely disadvantaged by the abbreviated and cryptic forms of messages that characterise e-mail 'speech' (Baron, 1998). Thus there is potential loss of information and the need for greater interpretative effort by the receiver (Mantovani, 1994; Sallis & Kassabova, 1997). Media experience is described as relating to the length of time that individuals have used the medium on a regular basis (Ku, 1996; Steinfield, 1986a). Electronic media use is also viewed to be predicted by social influence factors such as coworkers attitudes and use patterns, as well as organisation norms that explain how the medium should be evaluated and used (Fulk & Boyd, 1991). Minsky and Marin (1999) also argue that individuals with an intrinsic inclination for sciences would be more at ease with computer technology associated with using e-mail. As such they investigated as to whether there were differences between two colleges, the College of Basic Sciences and the College of Arts and Sciences, assuming to a certain extent that a predilection for science is signalled by college. Though they acknowledged that the members of the College of Arts and Sciences often used research methodology that was similar to those in natural sciences, they did find that 'college' was a significant predictor of e-mail usage. In support of this, Rice and Case (1983) found that though university administrators described e-mail as inappropriate for tasks such as bargaining or getting to know someone, computer center professionals did show a greater tendency to find e-mail an appropriate medium for such use. Collectively, this results in the following questions:

*Research question 2: What are the relationships between e-mail use and experience with e-mail?*

*Research question 3: Are there differences in e-mail usage between colleges?*

**Attitudes to e-mail.**

Ku (1996) and Hiltz and Turoff (1993) believe, though unsubstantiated, that experience and familiarity with e-mail will contribute towards positive attitudes towards using e-mail for a broad range of purposes. Lee (1994) argues that this results from the users adaptation and reinvention of the e-mail medium to suit their own communication needs. The concept of attitude has held the focus of social psychologists' attention as an attempt to help study, explain or predict behaviour (Ajzen, 1988; Franzoi, 1996). Despite this the definition of the term has proven to be problematic, with numerous definitions littering the literature, each differing dependent upon the influence of the theorist's background (Brief, 1998; Fishbein & Ajzen, 1975). Attitudes are generally argued to describe a state of readiness based on experience that can influence individuals' responses to all objects or situations to which that attitude is related (Allport, 1971). As such, attitudes are hypothetical characteristics that can be inferred from and be predictive of behaviour (Ajzen, 1988; Fishbein & Ajzen, 1975).

The current social psychological view of attitudes is to see them as a positive or negative evaluation of an object (Franzoi, 1996). This unidimensional viewpoint reflects a move to attempt to reconcile the many differing and often disparate definitions of attitudes. With the focus on the evaluative process, the unidimensional approach has moved from the more descriptive tri-component approach to attitudes. This approach views attitudes as being composed of three components, affective, cognitive and behavioural (Brief, 1998; Franzoi, 1996). The affective component explains how individuals feel about the attitude object, in this case email, including mood, emotion, and sympathetic nervous system activity experienced in relation to the object (Brief, 1998). The cognitive component defines individuals thought processes or beliefs about the attitude object. These beliefs can be accurate or completely false. Finally, the behavioural component is how individuals act and or intend to act toward that same attitude component (Brief, 1998; Franzoi, 1996).

As suggested by Brief (1998), an attitude construct is principally operationalised and measured in organisational studies by asking the individual about their attitudes toward some object. Items are developed so that the participant can score how they feel about each item on a Likert scale. Responses once summed, give an indication of either favourable or unfavourable attitudes toward an object (Brief, 1998), with the expression of an attitude existing on an evaluative continuum at any position from extremely positive to extremely negative and including the neutral point (Eagly & Chaiken, 1993). To develop an e-mail attitude scale, Minsky and Marin's (1999) Scale of General E-mail Use was adapted to contain 10 items that reflect the three attitudinal components. This leads to the following question:

*Research question 4: What are underlying dimensions of the Email Attitude Scale?*

Attitudes toward objects in the workplace are commonly measured by satisfaction scales, the most common example being the measurement of job satisfaction. Though satisfaction is typically viewed as the affective evaluation of an object, Weiss and Cropanzano (1996) argue that satisfaction tends to result from emotional experiences as well as more abstract beliefs about the object. However, research has demonstrated that all three components do not have to be present for an attitude to exist and can be formed as a result of any one of the three components (Eagly & Chaiken, 1993). For example, someone who has never come into contact with snakes may still have a negative attitude towards them as a result of reading or hearing about snakes and other peoples' reactions to snakes. As such, the attitude is formed on the basis of acquiring beliefs about the object. However, Eagly and Chaiken (1993) argue that although an attitude acquired through a cognitive route may elicit primarily cognitive responses, what will eventually result will be behavioural and affective responses.

The link between the route through which an attitude is acquired and the responses that are eventually elicited are relatively tenuous, with responses measured often reflecting a specific situation, individuals' personalities, expected consequences, habits or social norms (Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975) The resulting measurement issue, is that if an attitude has been primarily formed through one component, it is unlikely that the resulting responses measured from all three components will be weighted equally. Fishbein and Ajzen (1975) argue this one step

further. That is it is possible to rank order the three attitudinal components in terms of their strength of association with the attitude object. They further suggest that the position of a specific component in relation to the other two components will give an understanding of how much it contributes to the overall attitude toward the object. Collectively this provides the rationale behind considering all three components when measuring attitudes. However, the following question needs to be considered:

*Research question 5: What are the relationships between e-mail satisfaction, e-mail use and e-mail attitude?*

It is well recognised that attitudes do not necessarily predict actual behaviour (Brief, 1998; Franzoi, 1996), as most individuals discuss cognitive and affective components of their attitudes in general terms, which do not readily translate to specific actions (Ajzen & Fishbein, 1971). The other rationale behind the inconsistent relationship between attitudes and behaviours relates to the behavioural component of attitudes consisting of a predisposition to act in certain ways as opposed to actual intention to act in a specific way. As such, Ajzen and Fishbein (1971) argue that situational constraints such as the presence of others and perceived consequences of the behaviour can impact on the intended behaviour. In conjunction with this argument, D'Souza (1992) believes that within an university setting, e-mail is used for three purposes, teaching, administration and research. She believes however that research remains the primary reason for which e-mail is used. Komsky (1991) argues that e-mail is used for a fourth purpose, social. This reflects the view that communication is rarely used for a single purpose, and also that experienced users will maintain social contacts through e-mail (Finholt, 1997). Fulk (1993) also argues that media expertise variables such as years of experience with computers and e-mail should facilitate a positive assessment of and increasing use of e-mail by virtue of increasing mastery of e-mail. Collectively, these arguments result in the following question:

*Research question 6: What are the relationships between e-mail attitude, number of e-mails sent per day, experience with computers, experience with e-mail, and specific purposes that e-mail is used for?*

Ku (1996) and Steinfield (1986a) both argued that age and tenure will impact on the use of and attitudes towards e-mail. Age has been found to be inversely related to e-mail use, which is described to result from older personnel having had less exposure and thus experience with using e-mail (Sproull & Kiesler, 1991; Steinfield, 1986a). In a similar manner, it is argued that if e-mail is part of the way communication occurs in an organisation, newcomers will quickly adapt to using it for a variety of purposes (Ku, 1996). Conversely those who have been with an organisation for a longer period of time are more likely to have established other ways of communicating through more traditional communication media (Ku, 1996; Steinfield, 1986b). It could be argued that this would not necessarily hold true in a university setting, as universities were amongst the early adaptors and users of e-mail (Baron, 1998). This leads to the following question:

*Research question 7: What are the relationships between age and tenure and e-mail use and e-mail attitude?*

# Chapter 3: Organisational Commitment

This section explores the concept of organisational commitment, with a particular emphasis on the definitional and measurement problems that have resulted in the conception of organisational commitment as a multidimensional construct. Though there has been little research involving the concept of e-mail in relation to organisational commitment this section will go on to explore the links between e-mail attitude, e-mail use and organisational commitment from both a theoretical and research based perspective.

**Organisational commitment.**

Organisational commitment is viewed to be a central concept in the study of employee organisational relationships (Grover & Crooker, 1995). This has resulted from the links demonstrated between organisational commitment and behavioural outcomes such as turnover and performance (Cohen & Lowenberg, 1990; Mathieu & Zajac, 1990; Mowday, Porter, & Steers 1982). In the early literature, the concept of organisational commitment had proven to be problematic, with little consensus as to an appropriate definition. Within the various definitions, there lies a common link - that of organisational commitment being seen to be individuals' attachment to their employing organisation. The main difference between the definitions is in terms of how that attachment develops (Mathieu & Zajac, 1990). Definitional problems have in turn led to measurement difficulties, with a plethora of scales being developed representative of each of the definitions, as well as conceptual overlaps between organisational commitment and related constructs such as work ethic endorsement and job involvement (Morrow, 1993). This resulted in a call to clarify both the definition and measurement of organisational commitment (c.f. Meyer & Allen, 1984; Reichers, 1985), along with an acknowledgment that it was unlikely that any single perspective would be accepted as correct (Meyer, Allen, & Gellatly, 1990). In the following literature review, the most prominent of the early definitions of organisational commitment will be reviewed, culminating with what has become

the most common multi-dimensional conceptualisation of organizational commitment namely Allen and Meyer's (1990) three component model.

**Attitudinal commitment.**

One of the major approaches to studying organisational commitment has been to view it in terms of attitudinal attachment of individuals to their organisation. This direction has predominantly been developed by Porter et al. (1974), as a unidimensional construct to represent what they viewed as individuals' global evaluation of the linkage between themselves and their employing organisation. They view organisational commitment in terms of the strength of the individual's attachment with and involvement in the organisation. This can be viewed as comprising of three factors: "(*a*) a strong belief in and acceptance of the organization's goals and values; (*b*) a willingness to exert considerable effort on behalf of the organization; (*c*) a definite desire to maintain organizational membership" (Porter et al., 1974, p. 604).

Despite other researchers seeing these factors as definitional evidence of multdimensionality (Angle & Lawson, 1993; Bateman & Strasser, 1984), Mowday et al. (1982) hold that organisational commitment is a unidimensional construct. Along with the development of a definition of organisational commitment, Porter et al. (1974) also constructed a fifteen item measure - the Organizational Commitment Questionnaire (OCQ). A nine item version of this scale has also been frequently used. This shorter scale differs from the original by the exclusion of the six negatively worded items. The fifteen item measure has demonstrated an average internal reliability of .88 over 128 samples and the nine item scale .86 over thirteen samples (Mathieu & Zajac, 1990; Morrow, 1993). Based on a review of the research surrounding the OCQ, Morrow (1993) explains that there is strong evidence of unidimensionality of the scale, as demonstrated through factor analyses.

Attitudinal commitment as defined and operationalised by Porter et al. (1974) has been one of the most extensively used and researched approaches to organisational commitment because of what are viewed as robust statistics (Morrow, 1993). Yet it is also one of the most criticised (Mathieu & Zajac, 1990; Morrow, 1993; Reichers, 1985). From a measurement perspective, the OCQ is criticised for including items that are very similar in terminology to 'intention to quit' items, which have been shown in themselves to be highly predictive of actual turnover (Morrow, 1993; Reichers, 1985).

Definitionally and statistically, it is described that organizational commitment has implications for individuals' decisions to stay with their organisation. In other words, the greater the commitment, the less likely it is that they will leave (Meyer & Allen, 1997; Morrow, 1993; Porter et al., 1974). Reichers (1985) argues that it is possible that the presence of such items in the OCQ could account for some of the consistent relationships that have been found between organizational commitment and turnover, thus confounding the relationship. Though it is suggested that removing the items probably will not effect the scale statistically, definitionally the construct changes, as desire to remain with the organisation is firmly embedded within Porter et al.'s (1974) approach to organisational commitment.

**Calculative commitment.**

The other major approach to commitment, calculative commitment, was based on Becker's (1960) side-bet theory that proposed that individuals would be committed to a course of action as a result of an accumulation of 'side-bets' that individuals make. Side bets are described as the actions that link individuals to a specific course of action as a result of the belief that something would be forfeited if she or he ended that same course of action (Becker, 1960). In terms of commitment to an organisation, a side bet is an investment of something that has value to individuals (for example time, effort or money) that they would loose, or would become worthless if they were to leave their employing organisation (Hrebiniak & Allutto, 1972). Thus commitment results as a function of both the costs and rewards associated with organisational membership, and is seen to typically increase as tenure and age increases (Reichers, 1985).

The scale developed to measure Becker's (1960) side bet theory sought to demonstrate that commitment increased as the number of side bets increased (Meyer & Allen, 1984). The most commonly used scale to measure calculative commitment is that devised by Hrebiniak and Allutto (1972). This scale requires participants to indicate the likelihood that they would leave their organisation after being given various inducements to do so. Mathieu and Zajac's (1990) review of organisational commitment research, reports an average internal reliability of .88 over fifteen studies. Morrow's (1993) review describes that factor analysis has also demonstrated the unidimensionality of this scale. With such statistics, along with the consistent positive correlations with age and tenure, Hrebiniak and Allutto's (1972) calculative commitment was viewed as an appropriate measure of

Becker's (1960) side bet theory (Cohen & Lowenberg, 1990; Mathieu and Zajac, 1990; Morrow, 1993).

Meyer and Allen (1984) argued that rather than older employees seeing themselves committed as a result of side bets, the results may be indicative of an increased emotional attachment to the organisation. An examination of the wording of the Calculative Commitment Scale, led Meyer and Allen (1984) to describe the items as being loaded with affective terms. To test their beliefs, they developed continuance and affective commitment scales, with affective commitment, being viewed and operationalised as very similar to Porter et al.'s (1974) definition of overall organisational commitment. The main distinction between Meyer and Allen's (1984) Continuance Commitment Scale and Hrebiniak and Allutto's (1972) Calculative Commitment Scale was the belief that in addition to perceived costs in leaving the organisation, continuance commitment includes assessments by individuals regarding perceived lack of alternatives outside of their employing organisation (Meyer & Allen, 1984). Their results demonstrated that Hrebiniak and Allutto's (1972) scale was more highly correlated with either the OCQ or the Affective Commitment Scale than the Continuance Commitment Scale. In addition, age and tenure, theorised to be highly predictive of calculative commitment, were found to be as strongly related to affective commitment and the OCQ as they were to calculative commitment. Interestingly both age and tenure were not significantly correlated with continuance commitment (Meyer & Allen, 1984). In an examination of the correlations between calculative commitment and variables theoretically expected to provide evidence of discriminant validity, Morrow (1993) found the results problematic, with variables such as job satisfaction being more strongly correlated than would be acceptable. Together these results suggest that Hrebiniak and Allutto's (1972) scale is not an appropriate measure of Becker's (1960) side bet theory.

**Meyer and Allen's (1990) three-component model of organisational commitment.**

The growing acceptance within the literature that organisational commitment can take different forms (Meyer & Allen, 1984; Morrow, 1993; Reichers, 1985) has also given credence to the belief that organisational commitment is better operationalised as a complex, multi-faceted construct. In an attempt to integrate the various alternative conceptualisations, Meyer and Allen (1984) and

Allen and Meyer (1990) drew on the work of other organizational commitment theorists to develop a conceptualisation and a measure of organisational commitment. As mentioned previously, Meyer and Allen (1984) originally hypothesised organisational commitment as comprising of two components, affective and continuance commitment. After an extensive search of the literature surrounding organisational commitment, Allen and Meyer (1990) added a third component, normative commitment, to their theoretical viewpoint. They argued that within the literature, these three broad themes encompassed the different approaches to organisational commitment. The link between the three was an individual's psychological attachment to an organisation that develops as a natural consequence of interrelationships between the organization and the employee. The three components are seen to have one similar consequence, a diminished likelihood of individuals leaving the organisation. Meyer and Allen (1997) argued that what differed were the antecedents of each component, as well as consequences other than intention to stay.

Affective commitment is described as being individuals' emotional attachment, identification with and involvement in their organization. Individuals who are affectively committed are theorised to stay with the organisation because they want to (Allen & Meyer, 1996; Jaros, 1997). Affective commitment is theorised to result from work and job characteristics, such as task autonomy, task significance, task identity and skill variety, that the employee views as rewarding or fulfilling (Meyer & Allen, 1997). This conceptualisation is described by Meyer and Allen (1984) as very similar to Porter et al.'s (1974) view of attitudinal organisational commitment, and therefore was intended as an alternative to the Organizational Commitment Questionnaire (OCQ). In common with the OCQ, the Affective Commitment Scale (ACS) has also been criticised for containing an 'intention to leave item' (Morrow, 1993).

Continuance commitment results from individuals' perceptions that the social and economic costs of leaving the organization exceed the costs of staying and therefore they stay because they have to stay (Allen & Meyer, 1996; Jaros, 1997). Continuance commitment is described as developing as a function of employee investments such as time, effort, and financial contributions, the presence of social support and the presence or absence of viable alternatives available to the employee (Ko, Price & Mueller, 1997; Meyer & Allen, 1997). The Continuance Commitment Scale (CCS) developed to measure Meyer and Allen's (1984) operationalisation of Becker's (1960) side bet theory has been found to consist of two sub-dimensions when factor analysed, one assessing high

personal sacrifice associated with leaving and the other awareness of the lack of job alternatives (McGee & Ford, 1987; Meyer & Allen, 1991). This has not been found consistently across samples and it is argued that when the CCS factors into two subscales, these are consistently highly correlated. Neither have the two subscales been found to have different relations with the theorised antecedents or outcomes of the CCS, and it is therefore argued that they should be treated as an unidimensional construct (Hackett, Bycio, & Hausdorf, 1994; Ko et al., 1997).

Finally, normative commitment is explained as moral beliefs and feeling of obligations to the organization. Therefore, individuals stay because they feel they ought to stay (Ko et al, 1997; Jaros, 1997). Normative commitment can be viewed as developing prior to involvement with the current organization as a result of both familial and cultural expectations concerning work. It can be enhanced after joining the organization through socialisation and individuals' beliefs that the present organization is providing the employee with more than she or he can easily reciprocate (Meyer & Allen, 1997; Morrow, 1993). The Normative Commitment Scale (NCS) has been found to have many correlates in common with the ACS, albeit weaker, for example job satisfaction and career commitment (Hackett et al., 1994). Yet the NCS is found to be distinguishable from both the ACS and the NCS in factor analytic studies (Allen & Meyer, 1996). In conjunction with these findings, the NCS and the ACS also tend to correlate very highly with each other. Allen and Meyer (1996) suggests that this may result from the impossibility of feeling strong obligations towards an organisation without also developing some positive feelings toward it, even if as a means to resolve cognitive dissonance.

Longitudinal studies of the three components have indicated test-retest reliabilities ranging from .48 to .94 (ACS), .48 to .72 (CCS), and .61 to .73 (NCS) (Blau, Paul, & St. John, 1993; Meyer & Allen, 1991; Meyer, Allen, & Smith, 1993; Vandenberg & Self, 1993). The duration between administrations of tests ranged from seven weeks to eleven months and all but one of the studies collected data from individuals new to the organisation (Vandenberg & Self, 1993). As organisational commitment is a concept that is believed to develop in conjunction with length of time with the organisation, Allen and Meyer (1996) suggest that these results are consistent with the theory as they all increased at second and third administrations of the measure.

In terms of measuring organisational commitment, though the ACS is viewed to be interchangeable with the OCQ, it can also be argued that by only measuring affective/attitudinal

commitment, ignores other reasons for why people remain with an organisation. For example lack of other alternatives available. Allen and Meyer's (1990) three component conceptualisation of organisational commitment provides a more complete view of an employee's relationship with their employing organisation, and it is therefore recommended that all three components be used simultaneously (Jaros, 1997).

**Hypothesised links between e-mail use, e-mail attitude and organisational commitment.**

Sproull and Kiesler (1991) argue that the more individuals use e-mail, the more committed they will be because of greater involvement in the organisation that results from having more interactions with a greater number of people and subgroups. It is also argued that using e-mail can integrate new workers into communication channels and organisational culture and thus increase organisational commitment, though an initial period of physical proximity may be required to build trust, acceptance, and consensus (Wellman, 1997). Little research has explored this belief. One study exploring the links between e-mail use and organisational commitment, found that using e-mail was predictive of commitment with shift workers who were routinely separated from mainstream work and decision making in the organisation (Huff, Sproull, & Kiesler, 1989). In this instance, organisational commitment was measured using Porter et al.'s (1974) Organisational Commitment Questionnaire. E-mail use was measured by asking respondents the number of e-mails they sent and received per day as well as the purposes that e-mail was used for (for example, to schedule work, to talk about work with another person or a group of people). Huff et al., (1989) also found that amount of e-mail sent was predictive of commitment, with number of e-mails received being unrelated to organisational commitment. They theorised that this resulted from the belief that sending e-mails gave individuals a feeling that they were able to participate more actively in the life of the organisation, rather than being passive recipients. Kraut and Attewell (1997) also believe that e-mail as a consequence of increasing individuals' knowledge about the organisation will similarly increase commitment to the organisation. They found that e-mail use was predictive of increased commitment, even after controlling for potential confounds such as tenure and status. Scales that were used to measure the constructs were an organisational commitment scale designed by the researchers in relation to the specific organisation, and e-mail use was measured in terms of number of e-mails sent

and received per day. Unlike Huff et al. (1989), Kraut and Attewell (1997) found no differences between central and peripheral workers when looking at the relationship between e-mail and organisational commitment.

The process of socialisation to an organisation is an important part of learning about the organisation in regards to expected roles, behaviours and social knowledge (Campbell, 1996). If e-mail is viewed by the user to be inappropriate to the communication of interpersonal information, it is possible that this will impact on individuals' commitment to their employing organisation. In a similar light, if individuals evaluate e-mail positively, that is a positive attitude toward e-mail, they are more likely to experience positive affective reactions in conjunction with it (Eagly & Chaiken, 1993). Ku (1996) also argues that information exchange is essential to organisational process and if e-mail facilitates information exchange, the use of e-mail should be directly related to organisational commitment. Collectively this leads to the following question:

*Research question 8: What are the relationships between e-mail use, e-mail attitude and the facets of organisational commitment?*

# Chapter 4: Communication and workplace relationships

**Communication.**

Communication is the means by which individuals define and evolve their culture, social structure and world views (Anderson & Martin, 1995; Stohl, 1995). This reflects the assumption that humans are essentially social creatures and that communication is required to socialise (Wrightson, 1974). As such, communication is a key attribute of any organisation and its' functioning. With the advent of computer technology that has altered the communication environment in organisations, Hiemstra (1986) argued that we had no way of knowing how important the loss of such things as the handshake or informal chats around the water cooler would be. A decade later, Locke (1998) and Hallowell (1999) both suggest that computer-related technology has ensured that people do not have to talk to each other when going about their daily business, with the results ranging from misinterpretation of messages, to feelings of loneliness and actual isolation of individuals. This next section will focus on the theoretical impact that satisfaction with organisational communication has on the relationship between e-mail attitude and organisational commitment. Following this, the impact of the final independent variable of this thesis, satisfaction with work relationships, will be explored.

Successful organisations are dependent upon good communication systems to share accurate task related information, explanations of organisational policies, the provision of feedback, which as a result increase competitiveness and improve performance (Glauser, 1984; Putti et al., 1990). Much of intra-organisational communication has been reliant on physical proximity as conventionally people have attended meetings, interacted with those sharing the same space, or talked around the coffee machine/water cooler (Fritz, Narasimhan, & Rhee, 1998). Patterns of organisational communication have typically fallen into two channels, formal and informal. The formal channels are largely determined by organisational structure. Informal channels on the other hand are only partially determined by the formal structure, but serve to maintain social relationships and distribution of personal and task relevant information that is not provided via the formal system, (Neher, 1997). The informal channels are argued to be the primary way new information flows into

and through an organisation, which Sproull and Kiesler (1991) see as spontaneous and involving whoever is present at that given time.

The two channels are best viewed as complementary rather than as providing separate functions. As Rawlins (1992) argues, informal networks in organisations tend to be systems that enable the making of decisions, the concealment or transmission of information, and can thus generally enhance or hinder other functions that are related to workplace behaviours. Fritz et al. (1998) and McGrath and Hollingshead (1994) explain that social or non task related interaction between organisational members is an important aspect of communication, as it is the social interactions that help develop common grounds for communication by increasing the effectiveness of communication and enhancing the ability of individuals to work together. Research that has investigated organisational communication in relationship to e-mail has done so from the perspective of information flow through organisations. Overall there is a suggestion that the increasing use of e-mail has resulted in decreased verbal communication and other traditional means of communication (Corich, 1998; Stirton, 1995), despite an early belief that e-mail would create new communication links through out the organisation (Steinfield, 1986b). When using self report studies, overall organisational communication has been reported to increase (Corich, 1998; Stirton, 1995), but with longitudinal field studies, organisational communication decreased (Sarbaugh-Thompson & Feldman, 1998). However, no available research that investigated the impact on individuals' perceptions of overall organisational communication.

**Communication satisfaction.**

A multitude of instruments have been developed to measure communication in organisations, the majority of which either measure narrow facets, such as communicator style or effectiveness of a group or individuals' communications, or are developed for use with specific organisations (Downs, DeWine, & Greenbaum, 1994). To measure satisfaction with organisational communication, which relates to the extent to which individuals are satisfied with the various aspects of communication in the organisation (Gregson, 1990), the communication subscale from Furnham's (1991) Organisational Climate Questionnaire was used. An organisation's climate is seen as individuals' perceptions and interpretations of the organisation as a result of their experience with the

organisation, it's structures, systems and behaviours (Gunter & Furnham, 1996). Neher (1997) argues that communication from the climate rubric defines perceptions that individuals have about the quality of communication they experience.

No studies to date have investigated the impact that satisfaction with overall organisational communication has on the relationship between a medium of communication, in this case email, and organisational commitment. Several studies have researched the relationship between communication and organisational commitment. Communication is believed to be predictive of organisational commitment in two ways - through the information individuals receive and in relation to their participation in the organisation's communication network (Allen, 1992; Huff et al., 1989; Putti et al., 1990). Informational cues about work provide a means for the individual to respond to their work environment as well as indicating ways for the individual to contribute to organisational goals (Allen, 1992; Putti et al., 1990). Participation in communication can provide the ability for the individual to make suggestions and to interact with colleagues, which in turn may lead individuals to feel effective in their relationship with the organisation and of having a sense of impact on organisational effectiveness (Hartman & Johnson, 1993). Satisfaction with communication has been found to be directly related to organisational commitment across three different samples, managerial (Putti et al., 1990), academic and managerial (Allen, 1992), and teachers, hospital and factory workers (Varona, 1996). In particular strongest relationships were found as a result of top management communication by way of communicating organisational policies and promoting a shared value system (Allen, 1992; Putti et al., 1990). All studies have used Porter et al.'s (1974) Organisational Commitment Questionnaire and it is possible that this relationship will differ between the different facets of Meyer and Allen's (1990) three component conceptualisation of organisational commitment.

*Research Question 9: What impact does satisfaction with organisational communication have on the relationship between e- mail attitude and the facets of organisational commitment?*

**Workplace relationships.**

In the wellbeing literature, it is acknowledged that the quality of individuals' lives are greatly affected by their involvement in or alienation from work (c.f. Haworth, 1997; McHenry, 1997).

Interpersonal contacts experienced in organisations provide important social as well as professional relationships, with quality of interpersonal communication dictating to a great extent success and satisfaction with the organisation (Fritz et al., 1998; Neher, 1997; Stohl, 1995).

E-mail communication, like any other form of communication is driven by the need to develop social relationships, based on the assumption that humans are social creatures (Stohl, 1995). The development of an interpersonal impression of another person is based on the information gained through paraverbal or nonverbal channels over the course of the interaction (Taha & Caldwell, 1993). Though this information takes longer to process via e-mail than by face-to-face, if given sufficient time interpersonal impressions will be formed (Hiltz & Turoff, 1993). As mentioned previously, it is impossible to remove from individuals the means by which they form impressions of others. This does not imply that e-mail can substitute for face-to-face, or similar forms of 'rich' communication, but rather that it can be seen to supplement such communication.

Though there are contradictory results which suggest that experimental findings demonstrated less socio-emotional e-mail content than in field studies (Bordia, 1997; Mantovani, 1994), Walther's (1992) suggestion that rather than these results being viewed as contradictory, instead it reflects experience and adaptation to the medium. Despite this, in comparison to face-to-face communication, e-mail messages are commonly described as impersonal, cold and unsociable (Hiltz & Turoff, 1993; Wallace, 1999), with communicators being seen as self absorbed and less likely to form impressions of the other as a distinct individual (Kiesler, 1986, Rice & Love, 1987). This can have both negative and positive connotations. The downside of the percieved 'coldness' of e-mail has resulted in research participants suggesting that it is an inappropriate medium to use for for highly personalised interactions such as getting to know someone, negotiating or resolving arguments (Rice & Case, 1983; Steinfield, 1986a). There is also the argument that e-mail has opened up informal communication to formal scrutiny. Zuboff (1988) argues that whereas an oral culture was largely tolerated because it was by nature intangible and invisible, in that it vanished when those party to the conversation hung up the telephone, left the water cooler or the lunch room, e-mail is tangible, concrete, storable and thus easily able to be accessed at a letter date and equally easily open to misinterpretation. This is reflected in the recent spate of high profile cases of terminations based on e-mail communication (c.f. Adams et al., 2000), as well as the fairly extensive discussions of who such communications belong to (Schrage, 2000).

Wellman (1997) argues that work groups have higher levels of communication than ever before, though this has been at the cost of face-to -face or telephone conversations. He believes that the increasing communication levels can be seen as due to the nature of e-mail in that it is easy to 'copy' or 'forward' messages. As such, e-mail is argued to be an ideal tool to use to build and maintain social relationships because of it's characteristics such as the promotion of informal speech, the minimal transmission and response time involved, as well as the ability to send and receive messages at the convenience of the communicator (Baron, 1998). Though the result may be the creation of tenuous contacts these in turn may become strengthened in the future should the need so arise (Wellman, 1997). Other positive aspects of e-mail's lower social presence relate to e-mail making it easier to contact strangers as there is less concern about intruding or interpersonal risk to the sender as e-mail provides a shield between participants, which can both facilitate and protect against personal revelation (Baron, 1998; Wellman, 1997). An increased number of social networks is also seen to result from the lack of social presence fostering new relationships between those with diverse social characteristics that might normally not be encountered or even be acceptable in person. Yet Hallowell (1999) believes that the very lack of social cues that are argued to increase social relationships have resulted in isolation and confusion at work because of misinterpretation of messages. Paradoxically, the use of e-mail can also be used to avoid those one works with, even if indirectly, by using breaks from work to keep in contact with others by email and thus reducing social involvement and interaction with one's work colleagues (Ku, 1996). Lack of routine interaction with colleagues has been found to result in generalised dissatisfaction with the organisation, and feelings of isolation (Fritz et al., 1998).

However, Taha and Caldwell (1993) argue that communication media can help to reduce harmful effects of social isolation among individuals because of the increase in the number of social contacts. Isolation is defined by Altman and Taylor (1973) as when individuals' level of actual contact is lower than their desired level of contact. The inverse results in invasion, where achieved contact exceeds desired contact. Altman and Taylor (1973) suggests that most individuals will try and achieve a balance between the two. It appears that the main flaw in Taha and Caldwell's (1993) argument is that in this definition there is a subtle distinction between physical and social isolation. Physical isolation relates to the number of contacts whereas social reflects the lack of satisfactory exchange of social and emotional information (Altman & Taylor, 1973). As such it is possible to be

socially isolated in a crowded setting. If the individual is unable to communicate via e-mail because of differences in language or culture, lack of shared experiences or experience with e-mail itself, it is possible for an individual to be socially isolated and thus unhappy with workplace relationships.

Sarbaugh-Thompson and Feldman (1998) found that use of e-mail has seen overall organisational communication decrease, as the increase in e-mail has not offset the decrease in other forms of communication such as telephone or face-to-face communication. Their research also highlighted that there was a consequent decrease in the perception of community and connectedness in the areas that they studied. They argue that this results from the loss of greetings and unplanned casual conversation that result from simple physical proximity, as e-mail has decreased the need for people to be co-present. Tourish and Hargie (2000) believe that organisations have become media rich with multiple methods of communication available to communicators, but interpersonally famished as mediums such as e-mail prevail as the predominant means of communication. They argue that not only will relationships and overall communication be damaged, but eventually organisational effectiveness will suffer as a result.

**Satisfaction with workplace relationships.**

Thus throughout the literature, there are conflicting views as to what impact the introduction of computer technology and the extensive use of e-mail as a communication medium has had on workplace relationships. To measure work relationship satisfaction, in this study two subscales, collegial social support and collegial task support, from Hill, Bahniuk, and Dobos' (1989) Mentoring and Communication Support Scale were selected. Collegial task support reflects reciprocal exchange of ideas, and relationships that focus on sharing and exchanging work assignments and ideas (Bahniuk, Dobos, & Hill, 1990). Collegial social support on the other hand portrays communication with colleagues as friends and relationships that focus on sharing and exchanging personal problems and confidences (Bahniuk et al., 1990; Downs, Hill, Bahniuk, & Rouner, 1994). Collectively, these scales are viewed to reflect interpersonal communication relationships that are developed outside of formal channels and dictated to some extent physical proximity, as well as support for work related tasks that tend to develop through more formal channels (Bahniuk, Hill, & Darus, 1996; Dobos, Bahniuk, & Hill, 1991).

Though these subscales have been used across several different populations, the underlying factor structure has proven to be problematic. The two subscales have remained separate in academic (Hill, Bahniuk & Dobos, 1989; Hill, Bahniuk, Dobos, & Rouner, 1989) and managerial samples (Bahniuk et al., 1990), but collapsed into one factor when used in a general population sample (Bahniuk et al., 1996). This leads to the following question:

*Research question 10: What are the underlying dimensions of the Satisfaction with Work Relationship Scale?*

No available research has investigated the perceived impact that satisfaction with work relationships has on the relationship between e-mail attitude and organisational commitment. Several studies have investigated links between work relationship satisfaction and organisational commitment, with the following results. Satisfaction with work relationships implies that individuals have established and maintained direct and or indirect communication contacts with others in the organisation. As such, social integration has been found to be an antecedent of organisational commitment especially in relation to having a strong desire to maintain membership with the organisation, with participation in informal cliques found to have the strongest positive relationship (Buchanan, 1974; Hartman and Johnson, 1989). Similarly, Anderson and Martin (1995) found that employees satisfied with their co-workers perceived their organisations as committed to their welfare and rights and even as having enhanced product quality. Collectively this reflects the belief that if individuals like their jobs, feel good about the place in which they work and value their experiences at work, close relationships are likely to arise (Stohl, 1995). Such individuals as also likely to be personally motivated to be involved in and committed to the organisation because of the social prestige and enhanced personal esteem that the association provides (McHenry, 1997; Rawlins, 1992).

*Research Question 11: What impact does satisfaction with workplace relationships have on the relationship between e-mail attitude and the facets of organisational commitment?*

**Summary of Research Questions.**

**1:** What are the underlying dimensions of the E-mail Use Scale?

**2:** What are the relationships between e-mail use and experience with e-mail?

**3:** Are there differences in e-mail usage between colleges?

**4:** What are the underlying dimensions of the E-mail Attitude Scale?

**5:** What are the relationships between e-mail satisfaction and e-mail use and e-mail attitude?

**6:** What are the relationships between e-mail attitude, number of e-mails sent per day, experience with computers, experience with e-mail, and specific purposes that e-mail is used for?

**7:** What are the relationships between age and tenure, and e-mail use and e-mail attitude?

**8:** What are the relationships between e-mail use, e-mail attitude and the facets of organisational commitment?

**9:** What impact does satisfaction with organisational communication have on the relationship between e-mail attitude and the facets of organisational commitment?

**10:** What are the underlying dimensions of the Satisfaction with Work Relationship Scale?

**11:** What impact does satisfaction with workplace relationships have on the relationship between e-mail attitude and the facets of organisational commitment?

# Chapter 5: Methodology

**Introduction.**

As the purpose of this research is primarily exploratory, the use of a non-random sample was aimed at gaining as large as number of respondents as possible. A mail survey was chosen to attempt to maximise the use of time, effort and finances as a means to measure attitudes in a large population (Nunnally & Bernstein, 1994). Mail surveys have the advantage over other methods in that they provide the means by which to capture a large number and wide variety of potential respondents at low cost (Anastasi & Urbina, 1997). The survey methodology is also commonly recognised within the social services as an established means of collecting information from a large and dispersed group of people (Dyer, 1995).

**Participants.**

With approval of the Massey University Human Ethics Committee, all full time general and academic staff (N = 2253) from the Palmerston North and Albany campuses of Massey University, as present on the university's Human Resources and Payroll database at March 2000, were invited to participate in this parallel study investigating the impact of e-mail on workplace attitudes. Of these 575 were returned, giving a response rate of 26 percent. Six were discarded as unusable, due to incomplete data, leaving a response rate of 25.3 %.

*Demographic characteristics of the sample.*

Demographic frequencies and percentages are presented in Table 1. Of the 569 respondents, 43.8% were male, 56.2% female, with 15.3% under 30, 54.3% between the ages of 30 and 50, and 30.1% over 50. Of the demographics made available to the researcher, two demographics, campus and college, can be compared to the original population to determine if the response rate is representative. Although the response rate is somewhat low, proportional representations from the two campuses and five colleges were received, $X^2$ (1, N = 560) = 3.84, and $X^2$ (4, N = 511) = 9.49, $p > .05$ respectively, and is thus consistent with the makeup of the university.

It is important to note that the other demographic variables, that is the gender makeup, length of tenure, position held and age groups, of the target population could not be determined for anonymity reasons.

In terms of tenure, 8.9% of the respondents had worked for the university for less than 1 year, whilst the remainder of the respondents were reasonably evenly split, with 35.6% having been with the organisation for 1 to 5 years, 25.4% for 5 to 10 years, and 30.1% for more than 10 years.

There was an approximately even split of respondents between academic and general positions, with 86.2% of the academics currently teaching. Of these, the most common mode of teaching was internal and extramural combined (35.4%), followed closely by internal only (34.2%). The next most common mode of teaching was a combination of internal, extramural and block-mode (17.7%) followed by internal and block-mode (6.3%), block-mode only (2.5%), extramural and block-mode (2.1%), and extramural (1.7%).

**Table 1**
*Participant demographics*

| Variable | Frequency | % of total | Expected % | $X^2$ | *df* |
|---|---|---|---|---|---|
| **Gender (N=564)** | | | | | |
| male | 247 | 43.8 | | | |
| female | 317 | 56.2 | | | |
| **Age (N=561)** | | | | | |
| less than 30 | 86 | 15.3 | | | |
| 30 to 49 years | 306 | 54.3 | | | |
| 50 plus years | 169 | 30.1 | | | |
| **Campus (N=560)** | | | | | |
| Albany | 76 | 13.6 | 13.0 | 3.84 | 1 |
| Palmerston North | 484 | 86.4 | 87.0 | | |
| **College (N=511)** | | | | | |
| Humanities | 86 | 16.8 | 12.6 | 9.49 | 4 |
| Business | 81 | 15.9 | 22.0 | | |
| Sciences | 178 | 34.8 | 32.5 | | |
| Education | 64 | 12.5 | 12.6 | | |
| Other | 102 | 20.0 | 20.3 | | |
| **Number of years at Massey (N=562)** | | | | | |
| less than 1 | 50 | 8.9 | | | |
| 1 to 5 years | 200 | 35.6 | | | |
| 5 to 10 years | 143 | 25.4 | | | |
| 10 plus years | 169 | 30.1 | | | |
| **Position (N=546)** | | | | | |
| Academic | 272 | 49.8 | | | |
| General | 274 | 50.2 | | | |
| **% of Academic Staff teaching (N=276)** | | | | | |
| Teaching | 238 | 86.2 | | | |
| Not teaching | 38 | 13.8 | | | |
| **Mode of teaching (N=237)** | | | | | |
| Internal | 81 | 34.2 | | | |
| Extramural | 4 | 1.7 | | | |
| Blockmode | 6 | 2.5 | | | |
| Internal and extramural | 84 | 35.4 | | | |
| Extramural and blockmode | 5 | 2.1 | | | |
| Internal and blockmode | 15 | 6.3 | | | |
| Internal, extramural, and blockmode | 42 | 17.7 | | | |

Note: N's vary due to missing data

**Procedure.**

This research involves a parallel project investigating the study of the impact of e-mail on staff and their relationships to work. There are two parts to the research, one exploring the role self efficacy has on the relationship between e-mail and individual well-being, and the other studying the influence satisfaction with communication and work place relationships has on the relationship between e-mail attitude and organisational commitment. The focus of this thesis is the latter part of the parallel project. Both pieces of research were developed separately through the process of hypothesis generation, questionnaire development, ethics approval and subsequent data analyses and documentation of findings. The projects were combined only at the data collection point, in the form of a questionnaire containing both sets of scales.

The e-mail attitude scale to be used in the project had been developed using an American sample. To confirm it's applicability to a New Zealand sample, 10 university staff representative of the four colleges of the university (Business, Education, Humanities/Social Sciences and Sciences) and from both academic and administrative backgrounds were informally approached to ascertain their thoughts, feelings and behaviours in relation to e-mail use in the university. See Appendix A for the questions asked.

Prior to the research, the Massey University Human Ethics Committee approved the rationale, method and questionnaire that was to be used in the research. Approval for access to the participants was gained from the Principal of Massey University (Albany campus).

To alert staff to the research, a prompt (Appendix B) was placed in the fortnightly publication of Massey News, one week prior to the mailing out of the questionnaires. Attached to the questionnaires was an information sheet outlining the purpose of the study, the participants rights in completing the survey, in that responses were voluntary and that they could refuse to answer any particular questions (see Appendix C). The information sheet also outlined relevant contact details. The questionnaires were mailed out using the university's internal mail system to all full time general and academic staff from Albany and Palmerston North campuses. After the closing date for the research, a second prompt that served to thank the staff who had participated, was placed in the Massey News. Completed and uncompleted questionnaires were returned through the university's internal mail system to the researcher in a self addressed envelope.

**Measures.**

A copy of the questionnaire mailed to each staff member appears in Appendix D. The questionnaire was composed of seven sections, labelled alphabetically from A to G. Section A assessed e-mail usage, satisfaction and e-mail attitude. Section B evaluated respondents generalised and computer self efficacy. Section C investigated respondents levels of satisfaction with workplace relationships. Section D measured individual well-being and general life satisfaction. Section E was composed of scales measuring satisfaction of e-mail as a tool of communication and overall communication satisfaction. Section F assessed levels of organisational commitment and finally section G gathered relevant demographic information. Only the sections relevant to this thesis will be discussed in detail.

*E-mail Use and Opinions.*

To measure individual e-mail use, Minsky and Marin's (1999) adaptation of Ku's (1996) Scale of Social and Nonsocial Uses of Electronic Messaging Systems in Organisations was used. Ku (1996) created a four factor scale based on factor analysis. His solution explained 58 percent of the variance consisting of three factors with two items (complex use, socio-emotional use and bulletin board use) and one factor with four items (routine use). To create this solution, two items were dropped. Coefficient alphas for each of the subscales were .69 for routine use, .70 for complex use, .52 for socio-emotional use and .72 for bulletin board use. The sample used consisted of members of a telecommunications organisation. Minsky and Marin (1999) adapted this scale by dropping one factor (bulletin board use) and reinstating the two items that Ku (1996) had found problematic and dropped from the final scale. The sample in this instance, comprised of academics from two colleges. The Cronbach alpha was .89 for the entire scale (Minsky & Marin, 1999). In the present study, a five point Likert scale was used (1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always). No reverse scored items were used, and the higher the score, the greater the individual's use of e-mail.

This same instrument was also revised for the present study to measure satisfaction with email use. The revision involved rewording the instructions and changing the anchors on the response scales. Specifically respondents were asked to indicate how satisfied they were with using

e-mail for each of the activities (1 = very dissatisfied, 5 = very satisfied). No items were reverse scored, with higher scores reflecting greater satisfaction with e-mail use.

Satisfaction with e-mail as a communication medium was measured using four items in the questionnaire that questioned how satisfied the respondents were with e-mail as a tool of communication in each of the following areas: within their immediate work environment, within their college, within the university and with external sources. A five point Likert scale was used, anchored by strongly disagree at one end and strongly agree at the other. No reversed scored items were used, with higher scores indicating greater satisfaction with e-mail as a form of communication.

A single item was also used to question how satisfied the respondents were overall with e-mail as a means of communication. This was measured on a five point Likert scale ranging from 1 = very satisfied, to 5 = very dissatisfied, and was reversed scored.

Attitudes towards e-mail were measured by using an adaptation of Minsky and Marin's (1999) Scale of General E-mail Use which had originally been based on Ku's (1996) measure of electronic messaging system. Eight questions of Minsky and Marin's (1999) scale were omitted as being inappropriate after informally interviewing 10 university staff, as described previously. One item was also split into two, as the original question appeared to be asking two separate questions. The remaining eleven items were rephrased so to be able to be scored on a five point Likert scale ranging from 1 = strongly disagree and 5 = strongly agree. The eleven item scale was also worded to include the three attitudinal components: cognitions (for example 'I have had difficulty sending email'), feelings (for example 'I like using email'), and behaviours (for example 'I prefer using e-mail to the telephone'). Two items were reverse scored, with higher scores indicating a more positive attitude toward e-mail.

*Organizational Commitment.*

Organisational commitment was assessed using Meyer and Allen's (1993) revised Organisational Commitment Scale based on their three component model of organisational commitment. Each of the three components was measured by self assessment on a seven point Likert response scale, with verbal anchors ranging from disagree strongly to agree strongly. The Affective Commitment Scale (ACS) and the Normative Commitment Scale (NCS) were administered with six items and the Continuance Commitment Scale (CCS) with seven items. There are four

reverse scored items: one in the NCS and three in the ACS. Higher scores indicate greater commitment to the organisation.

The following statistics relate to the revised scales. Coefficient alphas representing internal consistency for these subscales range from .79 to .87 for ACS, .58 to .83 for CCS, and .74 to .83 for NCS (Irving et al., 1997; Ko et al., 1997; Meyer et al., 1993). These results are based on a Registered Nurse sample (Meyer et al., 1993), representatives across all positions in a research institute and an airline company (Ko et al., 1997), and from representatives across all occupations in a government agency (Irving et al., 1997). Four studies demonstrate test-retest reliabilities, with ranges of .48 to .94 (ACS), .48 to .72 (CCS), and .61 to .73 (NCS) (Blau et al., 1993; Meyer & Allen, 1991, Meyer et al., 1993; Vandenberg & Self, 1993).

Factor analysis suggests that the three measures of organisational commitment are distinguishable from each other (Hackett et al., 1994; Irving, Coleman, & Cooper, 1997). In terms of convergent and discriminant validity, there is strong empirical evidence for convergent validation (Hackett et al., 1994; Ko et al., 1997), and discriminant validation. As expected, the ACS was as strongly correlated with the OCQ, $r = .83$, $p < .05$ (Allen & Meyer, 1990). Though there are no similar measures to compare the NCS and the CCS to, NCS was as moderately correlated to distributive justice, $r = .48$, $p < .01$ (Ko et al., 1997). Similarly, CCS was also moderately correlated with local opportunity, $r = .41$, $p < .01$ (Ko et al., 1997).

*Communication Satisfaction.*

The communication subscale of Furnham's (1996) Organizational Climate Questionnaire was used to measure satisfaction with organisational communication. A five point Likert scale was used, ranging from 1 (strongly disagree) to five (strongly agree). There were no reversed scored items. Higher scores indicating greater satisfaction with overall organisational communication.

For the communication scale, coefficient alphas ranged between .85 to .89, when used with samples from public sector organisations (Gunter & Furnham, 1996) and employees from an airline (Furnham & Goodstein, 1997). Intercorrelations between the communication subscale and all other dimensions of the Organisational Climate Questionnaire range from between .19 to .50 (Furnham & Goodstein, 1997), suggesting that communication is distinct from the other climate dimensions.

There is also some evidence of content validity as the measure was developed through a process of questioning academics and other professionals in the area and piloted on an academic sample (Gunter & Furnham, 1996).

*Satisfaction with Work Relationships.*

Hill, Bahniuk, and Dobos' (1989) Mentoring and Communication Support Scale was used to assess satisfaction with work relationships. The two subscales, collegial social support and collegial task support, each contained 4 items scored on a five point Likert scale, anchored by strongly disagree (1) at one end and strongly agree (5) at the other. There are no reversed scored items. Higher scores indicate greater satisfaction with work relationships.

Internal reliabilities from three different samples, tenure track academics (Hill, Bahniuk & Dobos, 1989; Hill, Bahniuk, Dobos, & Rouner, 1989), managers and professionals (Bahniuk et al., 1990), and telephone respondents in a general population sample (Bahniuk et al., 1996), range from .75 to .89 for collegial task, and .75 to .88 for collegial social (Bahniuk et al., 1990; Dobos et al., 1991; Hill, Bahniuk & Dobos, 1989; Hill, Bahniuk, Dobos, & Rouner, 1989). When used as a single scale, the alpha was .82 (Bahniuk et al., 1996).

Construct validity is indicated by some stability of the factors across three different sample groups: tenure track academics (Hill, Bahniuk & Dobos, 1989; Hill, Bahniuk, Dobos, & Rouner, 1989), managers and professionals (Bahniuk et al., 1990), and telephone respondents in a general population sample (Bahniuk et al., 1996). In the academic and managerial samples, collegial support and collegial task remained two distinct factors, but with the general sample, they collapsed into one factor.

A single item to measure overall satisfaction with work relationships was also used. Responses to this item were measured on a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). In this instance, a single item was used as a measure of global satisfaction with work relationships based on the work of Wanous, Reichers, and Hudy (1997), who demonstrated that single item measures are acceptable means to determine overall job satisfaction.

*Demographics.*

Thirteen items eliciting demographic details, including personal information and information pertaining to individuals' jobs and computing skills were included in the questionnaire. Demographic items measured included gender, age, campus, college, position and tenure. These were kept to a minimum due to concerns about maintaining participants' anonymity.

**Data Analyses.**

As questionnaires were returned to the researchers they were processed and coded. Data was entered into an Excel data file and converted into a Statistical Package for Social Sciences (SPSS) data file. Analyses of the data were conducted using SPSS version 10. Prior to conducting any analyses, the data was checked for accuracy of input with 10% of the inputed questionnaires being randomly selected and checked for possible input errors. Nil errors were found. Minimum and maximum scores of all the variables were also checked, as any discrepancies would have highlighted the presence of idiosyncratic data entries. To clean up the data, the following procedures occurred: where only one or two variables were missing, these were substituted with averages taken from the sum of the remaining items (Tabachnick & Fidell, 1996). Scales with more than two missing variables per respondent were deleted from the data file.

The following statistics were performed: univariate statistical analyses including measures of central tendency (mean and standard deviations), and Pearson product-moment correlations to assess relationships between variables. To select correlations with highly significant relationships, the criteria of $p < .001$ was used. To obtain an estimate of internal reliability for each of the scales, Cronbach alphas were measured.

Factor analyses were performed on each of the e-mail use, e-mail attitude, e-mail satisfaction and satisfaction with work relationships scales using the principal components method and varimax rotation. Where appropriate, factor scores were used for the subsequent analyses.

Independent samples *t*-tests were conducted to evaluate whether there were differences between means in terms of various demographic variables on each of the facets of organisational commitment, email use and opinions, communication satisfaction and satisfaction with work

relationships. The criterion level in this instance was $p < .05$. Levene's test of homogeneity of variances was used to check for equivalence of variances between subsamples.

One way analyses of variance (one-way ANOVAs) were conducted to assess whether the group means on the dependent variable differed significantly from each other. Levene's test of homogeneity of variances was used to check for equivalence of variances between subsamples. If there were differences in the overall ANOVA, follow up tests, either Tukey's-b or Tamhane's T2 depending on equality of variance, were done to compare each pair of group means. The groups in this instance were college, tenure, and age. The dependent variables were each of the facets of organisational commitment, email use and attitude, communication satisfaction and satisfaction with work relationships.

Finally, in order to test the potential mediating or moderating effects of communication satisfaction and satisfaction with work relationships on the relationship between email attitude and organizational commitment, multiple regression analyses were used. In order to test for moderating effects, Baron and Kenny (1986) suggest that it is important that the moderator variable be uncorrelated with both the predictor variables and the dependent variables. As this was not the case in the present study, only regressions to test for mediation were performed. Thus a series of hierarchical regressions were performed to test the potential mediating effects of communication satisfaction and workplace relationship satisfaction on the relationship between e-mail attitude and organisational commitment.

# Chapter 6: Results

## Introduction.

The results of this study are structured in the following order to answer the research questions presented in Chapter Two. Firstly descriptive statistics were computed for each of the scales. Secondly, factor analyses were performed on each of the e-mail attitude, e-mail use, e-mail use satisfaction, e-mail mode satisfaction and work relationship scales. Thirdly, inferential statistics were computed for relevant scales in relation to key demographics.

## Descriptive statistics.

*Computing and e-mail use amongst respondents.*

Length of time that respondents reported using computers and e-mail varied between 1 year and 40 years, with an average of 12 years. Similarly, length of time respondents reported using e-mail varied between less than one year and 21 years, with an average of 6 years. The most common number of e-mails sent per day was 10, with respondents reporting sending between 0 and 100 e-mails per day. In terms of what e-mail was reported to be used for, the most common usage was for administrative purposes (median = 50), followed by an even split amongst research (median = 10), teaching (median = 10), and social purposes (median = 10).

Summary statistics for the variables and Cronbach alphas for the scales appear in Table 2. Respondents obtained mean scores at least one standard deviation higher than the mid-point of each of the e-mail use satisfaction, e-mail attitude, collegial satisfaction and e-mail mode satisfaction scales. No significant differences were found between the current sample and Minsky and Marin's (1999) sample in relation to overall e-mail usage scores, $X^2$ (1, N=693) = -.54, $p > .05$. High mean scores were also obtained for the satisfaction with work relationship satisfaction subscales, with respondents reporting higher mean scores in relation to the range (4-20) for collegial task support (M = 15.48) than for collegial social support (M = 13.97). Average scores, that is close to the midpoint of the range, were recorded for respondents on e-mail usage, communication satisfaction and all three facets of organisational commitment scales.

Measures of internal consistency ranged from satisfactory (.75) to moderately high (.86), above the minimum requirement of .70 satisfactory level identified by Nunnally and Bernstein (1994). Thus the measures used demonstrate acceptable internal consistency.

**Table 2**
*Descriptive Statistics*

| | | Range | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Variable** | **n** | **Min** | **Max** | **M** | **SD** | **Alpha[1]** | ***t*** | ***df*** |
| E-mail use Satisfaction | 483 | 9 | 45 | 33.88 | 5.34 | 0.86 | | |
| E-mail usage | | | | | | | -0.54 | 1 |
| Present study | 530 | 9 | 45 | 26.35 | 5.76 | 0.83 | | |
| Minsky & Marin (1999) | 163 | 9 | 45 | 26.70 | 7.54 | 0.89 | | |
| E-mail Attitude | 569 | 10 | 50 | 37.91 | 5.46 | 0.76 | | |
| Collegial Satisfaction | 524 | 1 | 5 | 3.93 | 0.86 | - | | |
| Collegial Task | 568 | 4 | 20 | 15.48 | 2.74 | 0.80 | | |
| Collegial Social | 567 | 4 | 20 | 13.97 | 2.79 | 0.77 | | |
| Affective Commitment | 558 | 6 | 42 | 22.20 | 7.21 | 0.76 | | |
| Normative Commitment | 559 | 6 | 42 | 18.87 | 7.56 | 0.82 | | |
| Continuance Commitment | 557 | 7 | 49 | 26.75 | 8.97 | 0.82 | | |
| E-mail mode Satisfaction | 506 | 5 | 25 | 18.93 | 5.16 | 0.75 | | |
| Communication Satisfaction | 560 | 12 | 60 | 38.01 | 7.19 | 0.85 | | |

Note: [1] For the variable collegial satisfaction, no alpha coefficient was computed, as this was a single measure item.

**Confirmatory Factor Analyses.**

Factor analyses were performed on each of the e-mail attitude, e-mail use, e-mail use satisfaction, e-mail mode satisfaction, and satisfaction with work relationship scales in order to uncover the underling dimensions as per research questions 1, 4 and 10. Where appropriate factor scores for the scales were computed and used for further statistical analyses.

*Factor analysis of the E-mail Attitude Scale.*

To discover the underlying dimensions of the E-mail Attitude Scale, a principal components analysis was run. To determine whether it was appropriate to continue with the analysis, the Kaiser-Meyer-Olkin measure of sampling adequacy was examined. In this case it was .78, close to the 'meritorious' as described by Hair, Anderson, Tatham, and Black (1995); thus a decision was made to continue. The initial principal components analysis found three factors which collectively explained 62% of the variance. As unrotated factor solutions often do not provide a meaningful pattern of

variable loadings, a varimax rotation was performed as a means to simplify the factor structure and provide a more parsimonious factor solution (Hair et al., 1995).

In this instance, explained variance dropped to 48.9%. One item, "I like using e-mail", also loaded across two of the three factors, so the analysis was re-run after dropping this item. The result had an increased explained variance to 50% after a varimax rotation was performed. All three factors had acceptable scree tests and eigenvalues of greater than one, thus demonstrating adequate extraction and number of factors (Tabachnick & Fidell, 1996). Though the amount of variance explained dropped to 50% from the initial principal components solution, this was an improvement on the initial rotated findings, with the varimax solution providing an interpretable structure more consistent with the theory than the unrotated solution.

Further to this it is suggested that items within each of the factors should be more strongly correlated with each other than with items in other factors (Eagly & Chaiken, 1994; Tabachnick & Fidell, 1996). Given that factors two and three only had two items loading on them, careful consideration was paid to these items. The factor analysis was also run again with an attempt to force two factors. A decision was made to keep a three factor solution as three factors explained 7.9% more variance than an equivalent two factor solution as well as providing a more parsimonious solution. Final loadings of the varimax rotation are presented in Table 3. These are grouped by size of loading to facilitate interpretation. Cronbach alphas for the three factors are as follows: factor 1, affective component .73, factor 2, cognitive component .68, and factor 3, behavioural component .78.

**Table 3**

*Loadings of the principal component analysis with varimax rotation for the E-mail Attitude Scale.*

| | *Varimax-rotated loadings* | | | |
|---|---|---|---|---|
| ***Item*** | ***Factor 1*** | ***Factor 2*** | ***Factor 3*** | ***Communality*** |
| E-mail helps me in my position | **0.702** | 0.049 | 0.062 | 0.50 |
| E-mail is an efficient method of communication | **0.599** | 0.174 | 0.359 | 0.52 |
| E-mail is a convenient method of communication | **0.589** | 0.144 | 0.370 | 0.51 |
| I have access to more information by using e-mail | **0.521** | 0.069 | 0.161 | 0.30 |
| Most of my e-mail is important | **0.476** | 0.033 | 0.063 | 0.23 |
| I have had difficulty sending e-mail messages | 0.044 | **0.997** | 0.067 | 0.99 |
| I have had difficulty editing e-mail messages | 0.145 | **0.628** | 0.03 | 0.42 |
| I prefer using e-mail to the telephone | 0.198 | 0.066 | **0.785** | 0.66 |
| I prefer using e-mail to face to face communication | 0.149 | 0.007 | **0.595** | 0.38 |
| % of variance | 29.17 | 13.74 | 7.90 | |

*Factor analysis of the E-mail Use Scale.*

E-mail use was found to have two factors after dropping one problematic item "to keep in touch with someone in another location". Once again a principal components analysis with varimax rotation was performed with the second run explaining an increased explained variance from 57% to 60%. The Kaiser-Meyer-Olkin measure of sampling adequacy in this instance was .81, above Hair et al.'s (1995) 'meritorious' rating, with scree tests and eigenvalues supporting the two factor solution. Table 4 presents the final factor loadings. The alphas were .78 for socio-emotional use (Factor 1) and .75 for task related use (Factor 2). In comparing this result to Ku's (1996), the factor labelled socio-emotional use, here consists of Ku's (1996) socio-emotional (alpha = .52) and complex use (alpha = .70) factors. The factor labelled here as task use, is a replication of Ku's routine use (alpha = .69). As this current solution appears to explain slightly more variance (60%) than Ku's work (57%), and has slightly improved alphas, for the current sample this seems to be a more appropriate solution.

**Table 4**

*Loadings of the principal component analysis with varimax rotation for the E-mail Use Scale*

| | Varimax-rotated loadings | | |
|---|---|---|---|
| *Item* | *Factor 1* | *Factor 2* | *Communality* |
| to resolve conflicts/disagreements | **0.844** | 0.114 | 0.73 |
| to negotiate | **0.778** | 0.227 | 0.66 |
| to get to know someone | **0.745** | 0.076 | 0.56 |
| to share opinions | **0.616** | 0.380 | 0.52 |
| to send notes that contain sociable or non-work related contents | **0.520** | 0.142 | 0.29 |
| to schedule meetings | 0.147 | **0.846** | 0.74 |
| to coordinate project activities | 0.211 | **0.809** | 0.70 |
| to exchange routine information with others | 0.159 | **0.732** | 0.56 |
| % of variance | 43.17 | 16.28 | |

When factor analysis was applied to the e-mail use satisfaction and e-mail mode satisfaction scales, only one factor for each scale was found. Results in Appendix E.

*Factor analysis of the Work Relationship Satisfaction Scale.*

Consistent with the beliefs of the authors (Hill, Bahniuk & Dobos, 1989) of the scale, a factor analysis was run to confirm two factors in the Work Relationship Satisfaction Scale. Once again a principal component analysis with a varimax rotation was run. One item "My colleagues and I frequently exchange constructive criticism", proved problematic across three different factor analyses where staff position was manipulated. The first factor analysis was run with all staff included, the second with general staff only, and the third with academic staff only. A close examination of the literature showed that this item had been problematic and had only fitted the researchers' proposed solution after multiple different permutations of factor analyses (c.f. Hill, Bahniuk, Dobos, & Rouner, 1989). It can also be argued that this item is more related to task than social issues at work. In addition, it was the least well embedded item in comparison to the other items (communality = 0.445) in the original principal components solution. Thus a decision was made to drop the item. Explained variance improved from 63% to 68%. The Kaiser-Meyer-Olkin measure of sampling adequacy in this instance was .81, with scree tests and eigenvalues supporting the two factor solution. Final factor loadings are presented in Table 5. Cronbach alphas for these subscales are as follows, .80 for collegial task and .83 for collegial social.

**Table 5**

*Loadings of the principal component analysis with varimax rotation for the Work Relationship Satisfaction Scale.*

| | *Varimax-rotated loadings* | | |
|---|---|---|---|
| *Item* | *Factor 1* | *Factor 2* | *Communality* |
| I work jointly on major projects or cases with my colleagues | **0.811** | 0.065 | 0.66 |
| My colleagues and I assist each other in accomplishing assigned tasks | **0.804** | 0.169 | 0.68 |
| I frequently exchange ideas with my colleagues | **0.782** | 0.257 | 0.68 |
| My colleagues and I frequently exchange compliments and positive work evaluations | **0.741** | 0.103 | 0.56 |
| My colleagues and I frequently listen to each other's personal problems | 0.132 | **0.888** | 0.81 |
| My colleagues and I share confidences with each other | 0.149 | **0.875** | 0.79 |
| My colleagues and I are friends as well as co-workers | 0.291 | **0.688** | 0.56 |
| % of variance | 49.53 | 17.98 | |

**Gender, staff category, and campus comparisons.**

Independent samples t-tests were conducted to evaluate whether there were any significant gender, staff category or campus differences in terms of each of the dependent variables. Results are reported in Table 6. The following significant differences resulted. Men obtained significantly higher mean scores on affective commitment (M = 22.97, SD = 6.76) than women (M = 21.63, SD = 7.53), $t(551) = 2.17$, $p < .05$. Conversely, women obtained significantly higher mean scores on collegial satisfaction (M = 4.01, SD = .87) than men (M = 3.82, SD = .84), $t(517) = -2.52$, $p < .05$. Similarly, women obtained significantly higher mean scores on collegial social support (M = .17, SD = .97) than men (M = -.21, SD = 1.00), $t(558) = -4.54$, $p < .001$.

In comparing mean scores of academic with general staff, academic staff obtained significantly higher scores on the behavioural component of e-mail attitude (M = .09, SD = .85) than general staff (M= -.08, SD = .81), $t(542) = 2.40$, $p < .05$. In a similar manner, academic staff also obtained significantly higher mean scores on using e-mail for task related purposes (M = .17, SD = .85) than general staff (M = -.14, SD = 1.08), $t(506) = 3.56$, $p < .001$. Conversely, general staff obtained significantly higher means on collegial social support (M = .15, SD = .94) than academic staff (M= -.15, SD = 1.05), $t(540) = -3.46$, $p < .001$. General staff also obtained significantly higher mean scores on overall communication satisfaction (M = 39.64, SD = 6.55) than academic staff (M = 36.69, SD = 7.22), $t(535) = -4.97$, $p < .001$. In a similar light, general staff also scored higher mean scores on affective commitment (M = 22.87, SD = 7.18), than academic staff (M = 21.61, SD = 7.26), $t(536) = -2.03$, $p < .05$.

Staff at Albany campus obtained significantly higher mean scores on collegial satisfaction (M = 4.14, SD = .67) than did staff at Palmerston North Campus (M = 3.90, SD = .88), $t(514) = 2.18$, $p < .05$. Similarly staff at Albany campus obtained higher scores on normative commitment (M= 20.17, SD = 8.21) than staff at Palmerston North campus (M = 18.56, SD = 7.43), $t(548) = 2.28$, $p < .05$. Conversely, staff at Palmerston North campus obtained significantly higher scores on continuance commitment (M = 27.04, SD = 8.88) than staff at Albany campus (M = 24.33, SD = 9.42), $t(546) = -2.41$, $p < .05$.

On all the other dependent variables, there were no significant differences between groups in terms of their mean scores.

**Table 6**

*T-test results*

| | Men (N = 247) | | Women (N = 317) | | | |
|---|---|---|---|---|---|---|
| **Variable** | **M** | **SD** | **M** | **SD** | ***t*** | **df** |
| E-mail use Satisfaction | 33.92 | 5.23 | 33.85 | 5.42 | 0.14 | 477 |
| Socio-emotional use | 0.04 | 0.98 | -0.30 | 1.02 | 0.78 | 522 |
| Task use | -0.02 | 0.98 | 0.04 | 0.99 | -0.63 | 522 |
| E-mail Attitude | | | | | | |
| Affective | 0.04 | 0.85 | -0.04 | 0.85 | 1.14 | 560 |
| Behavioural | -0.05 | 0.86 | 0.03 | 0.81 | -1.07 | 560 |
| Cognitive | -0.02 | 1.05 | 0.03 | 0.96 | -0.55 | 560 |
| Collegial Satisfaction | 3.82 | 0.84 | 4.01 | 0.87 | -2.50** | 517 |
| Collegial Task | 0.01 | 1.05 | -0.01 | 0.96 | 0.20 | 558 |
| Collegial Social | -0.21 | 1.00 | 0.17 | 0.97 | -4.54*** | 558 |
| Affective Commitment | 22.97 | 6.76 | 21.63 | 7.53 | 2.17* | 551 |
| Normative commitment | 19.23 | 7.18 | 18.65 | 7.86 | 0.89 | 552 |
| Continuance Commitment | 27.03 | 9.13 | 26.44 | 8.82 | 0.77 | 550 |
| E-mail mode Satisfaction | -0.07 | 1.09 | 0.05 | 0.92 | -1.33 | 499 |
| Communication Satisfaction | 37.93 | 7.27 | 38.14 | 7.11 | -0.35 | 553 |
| | **Academic (N = 272)** | | **General (N = 274)** | | | |
| E-mail use Satisfaction | 33.90 | 5.32 | 33.86 | 5.32 | 0.07 | 470 |
| Socio-emotional use | 0.07 | 1.02 | -0.03 | 0.98 | 1.08 | 506 |
| Task use | 0.17 | 0.85 | -0.14 | 1.08 | 3.56*** | 506 |
| E-mail Attitude | | | | | | |
| Affective | 0.05 | 0.82 | -0.04 | 0.89 | 1.16 | 542 |
| Behavioural | 0.09 | 0.85 | -0.08 | 0.81 | 2.40* | 542 |
| Cognitive | 0.02 | 1.01 | 0.01 | 0.97 | 0.08 | 542 |
| Collegial Satisfaction | 3.87 | 0.86 | 3.98 | 0.88 | -1.45 | 499 |
| Collegial Social | -0.15 | 1.05 | 0.15 | 0.94 | -3.46*** | 540 |
| Collegial Task | -0.09 | 1.00 | 0.08 | 1.00 | -1.96 | 540 |
| Affective Commitment | 21.61 | 7.26 | 22.87 | 7.18 | -2.03* | 536 |
| Normative Commitment | 18.33 | 7.54 | 19.51 | 7.59 | -1.82 | 536 |
| Continuance Commitment | 26.53 | 9.46 | 26.92 | 8.46 | -0.50 | 534 |
| E-mail mode Satisfaction | -0.02 | 0.99 | 0.05 | 0.99 | -0.78 | 481 |
| Communication Satisfaction | 36.69 | 7.22 | 39.64 | 6.55 | -4.97*** | 535 |
| | **Albany (N = 76)** | | **Palmerston North (N = 484)** | | | |
| E-mail use satisfaction | 33.49 | 4.81 | 34.03 | 5.42 | -0.78 | 474 |
| Socio-emotional use | -0.04 | 0.83 | -0.01 | 1.02 | -0.40 | 519 |
| Task use | 0.12 | 1.01 | -0.01 | 0.99 | 0.99 | 519 |
| E-mail Attitude | | | | | | |
| Affective | 0.06 | 0.81 | -0.01 | 0.86 | 0.63 | 556 |
| Behavioural | 0.07 | 0.83 | -0.01 | 0.83 | 0.81 | 556 |
| Cognitive | -0.06 | 1.07 | 0.03 | 0.98 | -0.69 | 556 |
| Collegial Satisfaction | 4.14 | 0.67 | 3.90 | 0.88 | 2.18* | 514 |
| Collegial Social | 0.19 | 0.96 | -0.03 | 1.01 | 1.73 | 554 |
| Collegial Task | -0.08 | 0.82 | 0.02 | 1.03 | -0.82 | 554 |
| Affective Commitment | 23.00 | 7.56 | 22.06 | 7.16 | 1.04 | 547 |
| Normative Commitment | 20.71 | 8.21 | 18.56 | 7.43 | 2.28* | 548 |
| Continuance Commitment | 24.33 | 9.42 | 27.04 | 8.88 | -2.41* | 546 |
| E-mail mode Satisfaction | 0.06 | 0.77 | -0.01 | 1.04 | 0.50 | 495 |
| Communication Satisfaction | 38.97 | 7.92 | 37.92 | 7.06 | 1.18 | 550 |

* $p < .05$, ** $p < .01$, *** $p < .001$

Note: N's vary for each scale when missing values are excluded pairwise.

**Comparisons among age groups and colleges.**

To test research question 7, regarding differences between the three age groups and five colleges in terms of the research variables, a series of one-way analyses of variances (ANOVAs) were conducted. The first set were used to evaluate whether there were significant differences in dependent variables of e-mail use satisfaction, collegial satisfaction, communication satisfaction, e-mail mode satisfaction, and the subscales of e-mail use, e-mail attitude, work relationship satisfaction and organisational commitment. The independent variables were the three age categories of less than 30, 30 to 50, and 50 plus. Follow-up tests were conducted to evaluate pairwise differences among the means. Where homogeneity of variance could not be assumed, Tamhane's T2 post hoc test was conducted. In all other instances, Tukey's-b post hoc test was used. The results of the first set of one-way ANOVAs are presented in Table 7.

One-way ANOVAs for age showed that respondents less than 30 years of age had significantly higher mean normative commitment scores (M = 20.48. SD = 7.26) than either the middle (M = 19.09, SD = 7.57) or older age groups (M = 17.65, SD = 7.53), F(2,548) = 4.27, p < .05. Similarly, younger respondents obtained significantly higher communication satisfaction scores (M = 40.55, SD = 5.07) than either the middle age group (M = 38.03, SD = 7.34) or the older age group (M = 36.90, SD = 7.44), $F(2,549) = 7.53$, $p < .001$. In a similar manner, the younger age group also scored significantly higher mean scores on socio-emotional use of e-mail (M = .37, SD = 1.01) than either the middle age group (M = .04, SD = 1.00) or the older age group (M = -.25, SD = .93), $F(2, 518) = 11.22$, $p < .001$. In terms of task related use of e-mail the older group (M = .07, SD = .97) and middle age group (M = .07, SD = 1.00) scored significantly higher scores than did the younger age group (M = -.25, SD = .96), $F(2,518) = 3.67$, $p < .05$. Finally, the younger (M = .12, SD = .86) and the middle age groups (M = .06, SD = .79) scored significantly higher on the affective component of e-mail attitude than did the older age group(M = -.16, SD = .92), $F(2,556) = 4.66$, $p < .01$. No other significant differences were found.

**Table 7**

*Results of ANOVA, independent variable age.*

| | ≤30 (A1) n =86 | | 30-40 (A2) n = 306 | | 50+ (A3) n = 169 | | ANOVA | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | *F* | *df* | Tukey's-b/Tamhane's T2 |
| E-mail use Satisfaction | 34.77 | 4.99 | 33.65 | 5.42 | 33.78 | 5.37 | 1.38 | 2, 474 | - |
| Socio-emotional use | 0.37 | 1.01 | 0.04 | 1.00 | -0.25 | 0.93 | 11.22*** | 2, 518 | A1>A2>A3 |
| Task use | -0.25 | 0.96 | 0.07 | 1.00 | 0.07 | 0.97 | 3.67* | 2, 518 | A1<A2=A3 |
| E-mail Attitude | | | | | | | | | |
| Affective | 0.12 | 0.86 | 0.06 | 0.79 | -0.16 | 0.92 | 4.66** | 2, 556 | A1=A2>A3 |
| Behavioural | 0.11 | 0.79 | 0.01 | 0.85 | -0.09 | 0.83 | 1.68 | 2, 556 | - |
| Cognitive | 0.14 | 1.01 | -0.03 | 0.97 | 0.01 | 1.05 | 0.97 | 2, 556 | - |
| Collegial Satisfaction | 4.05 | 0.76 | 3.91 | 0.92 | 3.93 | 0.80 | 0.88 | 2, 513 | - |
| Collegial Task | 0.03 | 0.79 | 0.02 | 0.99 | -0.04 | 1.11 | 0.24 | 2, 554 | - |
| Collegial Social | 0.12 | 0.98 | -0.02 | 0.96 | -0.02 | 1.08 | 0.67 | 2, 554 | - |
| Affective Commitment | 21.28 | 6.13 | 22.39 | 6.86 | 22.45 | 8.34 | 0.88 | 2, 548 | - |
| Normative Commitment | 20.48 | 7.26 | 19.09 | 7.57 | 17.65 | 7.53 | 4.27* | 2, 548 | A1>A3=A2 |
| Continuance Commitment | 25.77 | 6.87 | 26.34 | 8.96 | 27.71 | 9.82 | 1.76 | 2, 546 | - |
| E-mail mode Satisfaction | 0.07 | 0.69 | 0.02 | 0.89 | -0.09 | 0.92 | 1.03 | 2, 496 | - |
| Communication Satisfaction | 40.55 | 5.07 | 38.03 | 7.34 | 36.90 | 7.44 | 7.53*** | 2, 549 | A1>A2=A3 |

* $p < .05$, ** $p < .01$, *** $p < .001$

Note: N's vary for each scale when missing values are excluded pairwise.

The second set of ANOVAs were used to evaluate whether there were significant differences in dependent variables of e-mail use satisfaction, e-mail mode satisfaction, and the subscales of e-mail use and e-mail attitude. The independent variables were the four tenure categories of less than 1 year, 1 to 5 years, 5 to 10 years, and more than 10 years. Follow up tests were conducted as explained previously. Results are presented in Table 8.

One-way ANOVAs for tenure showed that respondents who had been with the organisation less than a year scored significantly lower mean scores on task related use of e-mail ($M = -.31$, $SD = .95$) than either the group who had worked at the university for 1 to 5 years ($M = -.03$, $SD = 1.04$) or those who had worked at the university for 5 to 10 years ($M = .01$, $SD = 1.00$), or those who had worked at the university for more than 10 years ($M = .15$, $SD = .92$), $F(3,548) = 2.78$, $p < .05$. In a similar manner respondents who had been with the organisation less than a year scored significantly higher mean scores on socio-emotional related use of e-mail ($M = .72$, $SD = 1.00$) than either the group who had worked at the university for 1 to 5 years ($M = .02$, $SD = 1.08$) or those who had worked at the university for 5 to 10 years ($M = -.08$, $SD = .87$), or those who had worked at the university for more than 10 years ($M = -.15$, $SD = .94$), $F(3,520) = 9.33$, $p < .001$. No other significant differences were found.

As per hypothesis 3, a series of one way ANOVAs were also performed to evaluate whether there were any differences between specific colleges and each of the dependent variables e-mail use satisfaction, e-mail mode satisfaction and the subscales of the e-mail use and e-mail attitude scales. No significant differences were found (results reported in Appendix F).

**Table 8**

*Results of ANOVA, independent variable tenure.*

| | ≤ than 1 year(T1) n = 50 | | 1- 5 years(T2) n = 200 | | 5- 10 years(T3) n = 143 | | 10+ years(T4) n = 169 | | ANOVA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | *F* | *df* | Tucky's-b/Tamhane's T2 |
| E-mail use Satisfaction | 33.52 | 5.27 | 33.65 | 5.81 | 34.33 | 4.55 | 33.93 | 5.49 | 0.47 | 3, 475 | - |
| Socio-emotional use | 0.72 | 1.00 | 0.02 | 1.08 | -0.08 | 0.87 | -0.15 | 0.94 | 9.33*** | 3, 520 | T1>T2=T3,T4 |
| Task use | -0.31 | 0.95 | -0.03 | 1.04 | 0.01 | 1.00 | 0.15 | 0.92 | 2.78* | 3, 520 | T1<T4=T2,T3 |
| E-mail attitude | | | | | | | | | | | |
| Affective | 0.20 | 0.79 | 0.03 | 0.84 | -0.03 | 0.80 | -0.06 | 0.89 | 1.39 | 3, 556 | - |
| Behavioural | 0.12 | 0.76 | -0.05 | 0.84 | 0.04 | 0.84 | -0.01 | 0.84 | 0.67 | 3, 556 | - |
| Cognitive | 0.03 | 1.03 | -0.02 | 1.04 | 0.01 | 0.96 | 0.02 | 0.98 | 0.04 | 3, 556 | - |
| E-mail mode Satisfaction | 0.08 | 0.62 | -0.03 | 0.97 | 0.12 | 0.80 | -0.12 | 0.90 | 1.82 | 3, 497 | - |

* $p < .05$, *** $p < .001$.

Note: N's vary for each scale when missing values are excluded pairwise.

**Relationships between the variables.**

Correlation coefficients among the e-mail use satisfaction, communication satisfaction, e-mail mode satisfaction, collegial satisfaction, the subscales of organisational commitment, e-mail use, work relationship satisfaction, e-mail attitude and appropriate demographics are reported in Table 9.

In relation to research question 2, as to what the relationships for this sample would be between e-mail use and experience with e-mail, using e-mail for socio-emotional purposes was weakly positively correlated with years using e-mail ($r$ =.09, $p$ < .05), and number of e-mails sent per day ($r$ =.14, $p$ < .01). Using e-mail for task related purposes, however, was positively correlated with number of years using computers ($r$ =.22, $p$ < .001), number of years using e-mail ($r$ =.28, $p$ < .001) and number of e-mails sent per day ($r$ =.34, $p$ < .001).

To explore research question 5, the relationship between e-mail satisfaction, e-mail use and e-mail attitude, the following correlations were found: E-mail use satisfaction was positively correlated with each of the components of e-mail attitude; affective ($r$ =.36, $p$ < .001), cognitive ($r$ =.22, $p$ < .001), and behavioural ($r$ =.25, $p$ < .001), as well as e-mail mode satisfaction ($r$ =.35, $p$ < .001), socio-emotional use ($r$ =.32, $p$ < .001), task related use ($r$ =.25, $p$ < .001) and number of e-mails sent per day ($r$ =.16, $p$ < .001).

E-mail mode satisfaction was positively correlated with affective component of e-mail attitude ($r$ =.42, $p$ < .001), and number of e-mails sent per day ($r$ =.24, $p$ < .001), and weakly positively correlated with the cognitive ($r$ =.12, $p$ < .01), and behavioural ($r$ =.16, $p$ < .001) components of e-mail attitude.

Using e-mail for socio-emotional purposes was positively correlated with the affective component of e-mail attitude ($r$ =.22, $p$ < .001), and behavioural component of e-mail attitude ($r$ =.27, $p$ < .001). Similarly, using e-mail for task related purposes was positively correlated with the affective ($r$ =.31, $p$ < .001) and behavioural ($r$ =.16, $p$ < .001) components of e-mail attitude. Both task and socio-emotional use of e-mail were uncorrelated with the cognitive component of e-mail attitude.

Research question 6 asked as to what the relationships between e-mail attitude, number of e-mails sent per day, computer experience, e-mail experience, and the specific purposes e-mail was used for would be. The following relationships were found. The affective component of e-mail attitude was positively correlated with number of e-mails sent per day ($r$ =.25, $p$ < .001), and weakly positively

related with years using computers ($r$ =.10, $p$ < .05), and years using e-mail ($r$ =.13, $p$ < .01). Affective e-mail attitude was also weakly negatively correlated with actual e-mail use for social purposes ($r$ = -.12, $p$ < .01). The behavioural component of e-mail attitude was positively correlated with number of e-mails sent per day ($r$ =.17, $p$ < .001), years using e-mail ($r$ =.12, $p$ < .01), and weakly positively related to years using computers ($r$ =.10, $p$ < .05). All other relationships were non-significant.

To test the research question as to what are the relationships between e-mail use, e-mail attitude and the facets of organisational commitment, the following relationships were found: the affective component of e-mail attitude was correlated with affective commitment ($r$ =.16, $p$ < .001) and weakly correlated with normative commitment ($r$ =.09, $p$ < .05). Relationships between actual use of e-mail and the facets of organisational commitment are as follows: affective commitment was positively correlated with administration ($r$ =.14, $p$ < .01) and negatively correlated to teaching ($r$ = -.11, $p$ < .01) and social ($r$ = -.09, $p$ < .05). Normative commitment was negatively correlated with both administration ($r$ = -.09, $p$ < .05) and to teaching ($r$ = -.14, $p$ < .01). No other significant correlations were found between the subscales of e-mail use, e-mail attitude and organisational commitment.

**Table 9**

*Pearson product-moment correlations of the scales*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. E-mail use satisfaction | | | | | | | | | | | | | | | | | | | | |
| 2. Communication satisfaction | .15 | | | | | | | | | | | | | | | | | | | |
| 3. Affective Commitment | .01 | .44 | | | | | | | | | | | | | | | | | | |
| 4. Continuance Commitment | .06 | -.06 | .12 | | | | | | | | | | | | | | | | | |
| 5. Normative Commitment | .03 | .39 | .62 | .18 | | | | | | | | | | | | | | | | |
| 6. Socio-emotional use | .32 | .04 | .01 | -.03 | .07 | | | | | | | | | | | | | | | |
| 7. Task use | .25 | -.01 | .07 | -.02 | -.02 | .01 | | | | | | | | | | | | | | |
| 8. Collegial task | .05 | .26 | .24 | -.04 | .11 | -.02 | .13 | | | | | | | | | | | | | |
| 9. Collegial social | .06 | .20 | .20 | .01 | .15 | .07 | -.06 | .01 | | | | | | | | | | | | |
| 10. Affective e-mail attitude | .36 | .21 | .16 | .04 | .09 | .22 | .31 | .18 | .02 | | | | | | | | | | | |
| 11. Cognitive e-mail attitude | .22 | .10 | .01 | .03 | -.04 | .01 | .06 | .07 | -.01 | .01 | | | | | | | | | | |
| 12. Behavioural e-mail attitude | .25 | -.05 | -.04 | -.01 | -.03 | .27 | .16 | -.07 | -.02 | .17 | .02 | | | | | | | | | |
| 13. E-mail mode satisfaction | .35 | .34 | .19 | .03 | .10 | .14 | .16 | .18 | .06 | .42 | .12 | .16 | | | | | | | | |
| 14. Collegial satisfaction | .01 | .32 | .24 | -.07 | .16 | -.06 | -.01 | .38 | .37 | .04 | .07 | -.01 | .16 | | | | | | | |
| 15. Years using computers | .01 | -.07 | .02 | .01 | -.03 | .01 | .22 | .04 | -.09 | .10 | .06 | .10 | -.01 | -.04 | | | | | | |
| 16. Years using e-mail | .07 | -.09 | .02 | -.05 | -.04 | .09 | .28 | .03 | -.11 | .13 | .06 | .12 | -.05 | -.08 | .60 | | | | | |
| 17. E-mails sent per day | .16 | .02 | .07 | -.13 | -.04 | .14 | .34 | .10 | .02 | .25 | .06 | .17 | .24 | .04 | .11 | .15 | | | | |
| 18. Research | .03 | -.11 | -.01 | -.07 | -.01 | .06 | .05 | -.06 | -.07 | .06 | -.05 | .02 | -.13 | -.09 | .06 | .13 | -.06 | | | |
| 19. Social | .04 | .01 | -.09 | .02 | .03 | .21 | -.26 | -.06 | .05 | -.12 | -.04 | .05 | -.07 | .06 | -.11 | -.07 | -.17 | -.08 | | |
| 20. Administration | -.03 | .18 | .14 | .05 | .09 | -.19 | .04 | .08 | .13 | .01 | .03 | -.07 | .16 | .08 | -.07 | -.12 | .12 | -.62 | -.39 | |
| 21. Teaching | -.01 | -.18 | -.11 | .01 | -.14 | .06 | .15 | -.01 | -.16 | .04 | .02 | .03 | -.05 | -.09 | .13 | .11 | .03 | -.02 | -.17 | -.54 |

Notes: (i) For absolute values $r > .09$, $p < .05$; $r > .11$, $p < .01$; $r > .15$, $p < .001$; 2-tailed tests of significance.

(ii) *N's vary between 448 to 562*

**E-mail attitude, organisational commitment and satisfaction.**

A series of six hierarchical multiple regression analyses were conducted to explore research questions 9 and 11; to assess whether the constructs communication satisfaction or workplace relationship satisfaction mediated the relationship between e-mail attitude and the facets of organisational commitment. In the first step of each multiple regression, the three components of e-mail attitude were used to predict the level of the dependent variables, which were each of the facets of organisational commitment. In the second step, either the three measures of workplace relationship satisfaction or the single measure of communication satisfaction were entered. Results of the multiple regressions are presented in Tables 10, 11, 12 and 13.

Baron and Kenny (1986) explained that if the result of entering the second set of variables, that is either workplace relationship satisfaction or communication satisfaction, is to simply reduce the significance of the attitude-commitment link, then the second set of variables can be considered partial mediators. However if the result is that the attitude-commitment link becomes non-significant, then the second step variables can be considered complete mediators.

Baron and Kenny (1986) suggest that to test for moderating relationships, ideally there should be no relationships between the potential moderator or either the predictor or outcome variables in order to provide a clearly interpretable result. However, in the present study, there were significant correlations between e-mail attitude, organisational commitment, workplace relationship satisfaction and communication satisfaction (Table 9), thus moderating effects were not tested for. The following pages (pp. 56-59) show the results of the regression analyses.

**Table 10**

*Results of hierarchical multiple regression of e-mail attitude, affective commitment and communication satisfaction.*

| **Dependent Variable: Affective Commitment (N = 551)** | | | | | Overall |
|---|---|---|---|---|---|
| Step One ( $R^2$ = .028) | B | SE B | ß | *t* | % of variance |
| Constant | 22.18 | 0.31 | | 72.65*** | |
| E-mail attitude | | | | | |
| Affective | 1.41 | 0.36 | .166 | 3.88*** | 2.7 |
| Behavioural | -0.55 | 0.38 | -.063 | -1.47 | 0.4 |
| Cognitive | 0.09 | 0.31 | .012 | 0.29 | 0.0 |
| Step Two ($R^2$ = .199) | | | | | |
| Constant | 5.23 | 1.59 | | 3.31*** | |
| E-mail attitude | | | | | |
| Affective | 0.58 | 0.34 | .069 | 1.71 | 0.5 |
| Behavioural | -0.21 | 0.34 | -.024 | -0.63 | 0.1 |
| Cognitive | -0.23 | 0.28 | -.032 | -0.83 | 0.1 |
| Communication Satisfaction | 0.44 | 0.04 | .427 | 10.78*** | 17.6 |

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

In the first step of the first regression, the affective component of e-mail attitude significantly predicted affective commitment (ß = .166, $p < .001$), accounting for 2.7% of the variance of affective commitment, $R^2$ = .028 $F(3, 547) = 5.27$, $p = .001$. In the second step, adding communication satisfaction increased the $R^2$ significantly to .199, $F(1, 546) = 116.12$, $p < .001$. The affective attitude component (ß = .069) no longer significantly predicted affective commitment scores, $t = 1.71$, $p = .087$. In this instance, communication satisfaction (ß = .427), significantly predicted affective commitment, $t = 10.78$, $p < .001$, accounting for 17.6% of the variance in affective commitment scores. Therefore, communication satisfaction had a complete mediating effect on the prediction of affective commitment by the affective component of e-mail attitude. Results presented in Table 10.

**Table 11**

*Results of hierarchical multiple regression of e-mail attitude, normative commitment and communication satisfaction.*

| **Dependent Variable: Normative Commitment (N = 551)** | | | | | Overall |
|---|---|---|---|---|---|
| Step One ( $R^2$ = .012) | B | SE B | ß | *t* | % of variance |
| Constant | 18.89 | 0.32 | | 58.96*** | |
| E-mail attitude | | | | | |
| Affective | 0.84 | 0.38 | .095 | 2.21* | 0.9 |
| Behavioural | -0.43 | 0.39 | -.047 | -1.10 | 0.2 |
| Cognitive | -0.37 | 0.32 | -.049 | -1.15 | 0.2 |
| Step Two ($R^2$ = .159) | | | | | |
| Constant | 2.61 | 1.69 | | 1.54* | |
| E-mail attitude | | | | | |
| Affective | 0.05 | 0.36 | .006 | 0.14 | 0.0 |
| Behavioural | -0.10 | 0.37 | -.011 | -0.28 | 0.0 |
| Cognitive | -0.67 | 0.30 | -.089 | -2.26* | 0.9 |
| Communication Satisfaction | 0.43 | 0.04 | 0.396 | 9.76*** | 14.9 |

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

In the second regression presented in Table 11, the affective attitude component (ß = .095, $p < .05$) predicted normative commitment in step one, accounting for 0.9% of the variance in normative commitment scores, $R^2 = .012$ $F(3, 547) = 2.26$, $p < .05$. In the second step, by adding communication satisfaction the $R^2$ increased significantly to .159, $F(1, 546) = 95.34$ $p < .001$. The affective attitude component (ß = .006) no longer significantly predicted normative commitment, $t = .14$, $p = .89$. However the cognitive component (ß = -.089) was significant, $t = -2.26$, $p < .05$, accounting for .9% of the variance of normative commitment scores. Communication satisfaction (ß = .396) also significantly predicted normative commitment scores, $t = 9.76$, $p < .001$, accounting for 14.9% of the variance in normative commitment scores. Therefore communication satisfaction had a significant complete mediating effect on the prediction of affective attitudes on normative commitment. The apparent masking effect that the affective component of e-mail attitude had on the predictive ability of cognitive component of e-mail attitude will be discussed later.

**Table 12**

*Results of hierarchical multiple regression of e-mail attitude, affective commitment and workplace relationship satisfaction variables.*

| **Dependent Variable: Affective Commitment (N = 512)** | | | | | Overall |
|---|---|---|---|---|---|
| Step One ( $R^2$ = .030) | B | SE B | ß | *t* | % of variance |
| Constant | 22.02 | 0.32 | | 69.38*** | |
| E-mail Attitude | | | | | |
| Affective | 1.45 | 0.38 | .168 | 3.79*** | 2.8 |
| Behavioural | -0.70 | 0.39 | -.079 | -1.78 | 0.6 |
| Cognitive | -0.06 | 0.32 | -.009 | -0.20 | 0.0 |
| Step Two ($R^2$ = .126) | | | | | |
| Constant | 18.81 | 1.68 | | 11.22*** | |
| E-mail attitude | | | | | |
| Affective | 1.02 | 0.37 | .118 | 2.74** | 1.5 |
| Behavioural | -0.38 | 0.38 | -.043 | -1.00 | 0.2 |
| Cognitive | -0.17 | 0.31 | -.023 | -0.56 | 0.1 |
| Collegial social | 1.06 | 0.33 | .146 | 3.22*** | 2.0 |
| Collegial task | 1.52 | 0.35 | .205 | 4.38*** | 3.7 |
| Collegial satisfaction | 0.82 | 0.42 | .097 | 1.97* | 0.8 |

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

In the first step of the third regression (Table 12), the affective commitment component of e-mail attitude predicted affective commitment (ß = .168, $p < .001$) which accounted for 2.8% of the variance in the affective commitment scores, $R^2$ = .030, $F(3, 508) = 5.26$, $p = .001$. In adding the work relationship satisfaction components in the second step, $R^2$ increased significantly to .126, $F(3, 505) = 18.47$, $p < .001$. The affective component of e-mail still significantly predicted affective commitment (ß = .118), $t = 2.74$, $p < .01$, but the amount of variance explained decreased from 2.8% to 1.5%. All three components of workplace relationship satisfaction significantly predicted affective commitment, collectively explaining 6.5% of the variance in affective commitment scores as follows: collegial task support (ß = .205) $t = 4.38$, $p < .001$, which accounted for 3.7% of the variance; collegial social support (ß = .146), $t = 3.22$, $p = .001$, accounting for a further 2.0%; and collegial satisfaction (ß = .097), $t = 1.97$, $p < .05$, which accounted for a further 0.8% of the overall explained variance. Therefore, overall workplace relationship satisfaction had a significant partial mediating effect on the prediction of affective commitment by the affective component of e-mail attitudes.

**Table 13**

*Results of hierarchical multiple regression of e-mail attitude, normative commitment and workplace relationship satisfaction variables.*

| **Dependent Variable: Normative Commitment (N = 512)** | | | | | Overall |
|---|---|---|---|---|---|
| Step One ($R^2$ = .018) | B | SE B | ß | *t* | % of variance |
| Constant | 18.68 | 0.33 | | 56.44*** | |
| E-mail Attitude | | | | | |
| Affective | 0.86 | 0.40 | .097 | 2.17* | 0.9 |
| Behavioural | -0.72 | 0.41 | -.078 | -1.75 | 0.6 |
| Cognitive | -0.56 | 0.34 | -.073 | -1.66 | 0.6 |
| Step Two ($R^2$ = .054) | | | | | |
| Constant | 15.99 | 1.81 | | 8.84*** | |
| E-mail attitude | | | | | |
| Affective | 0.65 | 0.40 | .072 | 1.61 | 0.5 |
| Behavioural | -0.53 | 0.41 | -.057 | -1.30 | 0.3 |
| Cognitive | -0.62 | 0.33 | -.081 | -1.86 | 0.7 |
| Collegial social | 0.80 | 0.35 | .106 | 2.25* | 1.0 |
| Collegial task | 0.68 | 0.37 | .088 | 1.81 | 0.6 |
| Collegial satisfaction | 0.69 | 0.45 | .079 | 1.53 | 0.5 |

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

In the fourth regression, (Table 13), the affective component of e-mail attitude predicted normative commitment (ß = .097, $p < .05$) accounting for 0.9% of the variance in normative commitment scores in step one, $R^2 = .018$, $F(3, 508) = 3.14$, $p < .05$. In the second step, the addition of the work relationship satisfaction components significantly increased $R^2$ to .054, $F(3, 505) = 6.37$, $p < .001$. The affective component of e-mail attitude no longer significantly predicted normative commitment (ß = .072), $t = 1.61$, $p > .05$. Only collegial social support (ß = .106), $t = 2.25$, $p < .05$, significantly predicted normative commitment, accounting for approximately 1% of the variance in normative commitment scores. Therefore, collegial social support had a significant complete mediating effect on the predication of normative commitment by the affective attitude component.

Neither of the hierarchical multiple regressions involving e-mail attitude, continuance commitment and either workplace relationship satisfaction or communication satisfaction were significant. Results are presented in Appendix G.

# Chapter 7: Discussion

The primary aim of this research was to investigate the relationship between e-mail attitude and organisational commitment, and the impact either satisfaction with work relationships or satisfaction with organisational communication had on that relationship. As this research is also exploratory in nature, there are a limited number of resources available in order for the researcher to be able to make comparisons.

The organisation being studied, Massey University, had been undergoing a repositioning exercise to ensure that the university was meeting the needs of it's students, with a particular emphasis on revising courses available ("Repositioning Update", 2000). The mail out of the questionnaires to staff and the subsequent closing date for the research coincided with the announcement that as many as 116 staff could be expected to be made redundant. The feeling of unease that was felt within the university, as would be expected, carried through into the returned questionnaires. For example one respondent questioned:

> *"Whose idea was this survey? Was it commissioned by the VC* [Vice-Chancellor] *or another AVC* [Assistant Vice-Chancellor] *committee?"* (respondent 54)

As a result of this, the variables studied and the relationships discovered, where appropriate, will be discussed in relation to the university's repositioning exercise. The following section explores each of the research questions and related findings and results, and then discusses limitations and suggested directions for future research.

**Purposes of e-mail use.**

It is expected that as the use of e-mail approaches universal access in an organisation, that users will tend to send a variety of messages to anyone within the organisation (Fang, 1998; Ku, 1996). Consistent with Steinfield's (1986a, b) original hypotheses, it was confirmed after analyses that the e-mail use scale consisted of two purposes - socio-emotional use and task-related use. In a

similar manner to Ku's (1996) original analysis of this scale, one item "to keep in touch with someone in another location" was dropped to create this result.

In this instance, socio-emotional use consisted of sending notes that contained sociable or nonwork related contents, sharing opinions, getting to know someone, to negotiate and to resolve conflicts or disagreements. Task related use, on the other hand, consisted of scheduling meetings, coordinating project activities and exchanging routine information with others. When comparing the results of the present study to Ku's (1996) original analyses, the factor labelled socio-emotional use here, encompassed two of Ku's (1996) factors; those he called socio-emotional use and complex use. The other factor from the present study, task related use, was a replication of Ku's (1996) routine use factor.

Ku (1996) suggests that though the introduction of a communication medium, such as e-mail, would typically be intended to ease the flow of task-related information throughout the organisation, there will always be a tendency for users to send messages with socio-emotional content. It follows that it would be expected for users to become more comfortable sending messages containing socio-emotional content.

Despite this, several respondents highlighted that e-mail was not an appropriate medium to use for many of the items that fell within the parameters of the socio-emotional use subscale. For example the item "to resolve conflicts/disagreements" drew the following comments:

*"wouldn't do it on e-mail - need to talk",* (respondent 27)

*"useless when I've tried"* (respondent 102)

and *"not appropriate medium for this."* (respondent 231).

This provides some support for the social influence theory that postulates that users will prefer to use forms of communication media, such as e-mail, for tasks that do not require interpersonal involvement, and will instead seek to use a form of media that provide greater social presence (Rice & Love, 1987; Steinfield, 1986b; Trevino et al., 1987). However, with the increasing number of communication options in organisations, the process that results in media choice and

usage is a complex one. Fang (1998) suggests that problems in usage can arise if individuals fail to recognise the others abilities and beliefs therefore considering social influences in relation to channel use. Therefore, if the other is unable or unwilling to use a media because of their abilities or because norms dictate that the media is inappropriate for certain purposes, this can result in dissatisfaction toward using e-mail as a medium for communication.

**Relationships between e-mail use and experience with e-mail.**

A number of researchers have documented their beliefs regarding the relationship between e-mail use and experience with computers and subsequently with e-mail. In particular, it is believed that those with greater experience with computers will be increasingly likely to use e-mail for a broad range of purposes (Baron, 1998; Carlson & Zmud, 1999; Mantovani, 1994). Experience in this instance, in common with previous research (c.f. Fulk, 1993; Rice & Love, 1987), is operationalised as number of years using both computers and e-mail and number of e-mails sent per day.

In the present study, direct relationships were found between task related use of e-mail and each of the following media experience variables: number of years using computers, number of years using e-mail, and number of e-mails sent per day. This is also consistent with Ku's (1996) findings that media experience was positively related to routine use. Interestingly, only number of years using e-mail and number of e-mails sent per day were found to have direct relationships with socio-emotional use, albeit weaker than those with task related use.

Collectively these results reflect Carlson & Zmud's (1999) beliefs that experience, as defined by this study, reflects use as opposed to knowledge building experiences which they believe are required to communicate more richly. As such, use of e-mail over a lengthy period of time for lean purposes is less likely to enhance relevant knowledge about e-mail, or in fact help the individual develop perceptions of e-mail as a potentially rich medium.

**Relationships between e-mail use and college.**

Previous research has highlighted differences in e-mail use based on measures of intrinsic inclination for science, typically measured by the field that individuals work in (Minsky & Marin, 1999;

Rice & Case, 1983). In the present research, no significant differences were found between the five colleges of Massey University in terms of either task-related use or socio-emotional use of e-mail. As computers and e-mail are ubiquitous in organisational life, this result was not surprising. Though there were no significant differences between this sample and Minsky and Marin's (1999) sample in terms of overall e-mail use, the lack of difference between colleges may reflect that New Zealanders have a tendency to be fast adaptors to new technology, such as the use of cellular phones (Braddell, 2000).

This result may also reflect that Massey University is a multi-campus university, geographically dispersed across the North Island of New Zealand. Though only two campuses, Albany and Palmerston North, were surveyed, it is possible that organisational norms dictate the use of e-mail to communicate with other campuses, especially as e-mail is viewed to be an excellent tool to maintain communications between geographically distanced communicators (Whittaker & Sidner, 1997). It is also unlikely that a college can be defined as a cohesive work group, a condition stipulated by Carlson and Zmud (1999) as being necessary for the presence of socio-emotional content in e-mail use. In this instance, the colleges at Massey University are made up from numerous schools or departments which are more likely to be representative of cohesive work groups, than the colleges they collectively form.

The difference in e-mail usage that did exist at university level was with academic staff in relation to general staff. In this sample, academic staff reported using e-mail for task related purposes significantly more often than general staff. This may reflect that academics rarely spend all their time in relation to university functions such as lecturing, but tend to pursue other commitments such as research with others outside of the university as well as often being consultants in their areas of expertise.

In a study of Business Studies academic staff at Massy University, Stirton (1995) found that research was the primary reason academics used e-mail, followed relatively evenly by social, administration and teaching. Interestingly, in the present sample, administrative purposes has superseded research as the predominate use of e-mail at Massey University. Though the difference may relate to the broader scope of this study, in that both academic and general staff across the entire university were surveyed, administrative purposes was by the far most common reason

reported for using e-mail. Each of the other functions, research, teaching and social, were reported to be used in equal proportions to each other.

This suggests that e-mail has become an accepted means by which to communicate administrative matters throughout the university. The implications of this may be far reaching. If, for example, staff elect not to read their incoming e-mail because of overload or time restrictions, then they may easily become distanced from the only medium by which the university uses to communicate it's goals and directions.

On the other hand, though there is the potential for greater use of e-mail in relation to teaching, this is probably restricted by the level of use that students are willing to make. As D'Souza (1992) and Stirton (1995) both point out, academics cannot fairly use a medium that all students may not have access to.

**E-mail attitude scale.**

As a hypothetical construct, attitudes are inaccessible to direct observation and must be inferred from measurable responses that reflect positive or negative evaluations of an attitude object (Ajzen, 1988). Consistent with the most popular classification system for attitudes (Ajzen, 1988; Franzoi, 1996), three underlying dimensions were found for the e-mail attitude scale.

The affective component of an attitude is described as incorporating general feelings towards e-mail (Brief, 1998). For example, items from the affective component of the scale such as "e-mail helps me in my position" and "e-mail is an efficient method of communication" are reflective of general feelings and emotions towards e-mail. The second component cognitive, represents thought processes, perceptions and information individuals have about the attitude object, e-mail (Eagly & Chaiken, 1993). Consistent with the theory, the two items that fell in this component reflect expressions of belief about e-mail. That is "I have had difficulty sending e-mail messages" and "I have had difficulty editing e-mail messages."

The final component of attitudes is behavioural, which represents how inclinations, intentions, commitments and actions towards the attitude object, e-mail, are expressed (Ajzen, 1988). In this instance the items "I prefer using e-mail to the telephone" and "I prefer using e-mail to

face to face communication" represent what individuals say they do or would do in appropriate situations.

Based on the belief that it is possible to rank order the three attitudinal components to gain an understanding of how much each component contributes to overall e-mail attitude (Fishbein & Ajzen, 1975), the following occurred when the components were rank ordered based on the proportion of overall explained variance individually contributed by each factor. It appears that the affective component is the strongest contributor, followed by cognitive and then behavioural. Thus it seems that in this study, e-mail attitude is explained primarily by feelings about e-mail in terms of it being an efficient and convenient means to communicate that assists individuals in their pursuit of information and in doing their jobs.

As this was an initial conception toward developing a scale to measure attitude towards e-mail, it is suggested that the scale be revised before use. In particular, two of the components, behavioural and cognitive, only contained two items each. Possible directions to follow come from comments noted by some of the respondents. For example, one respondent noted:

> *"It's just a tool"* (respondent 102)

Whilst another set of responses indicated the time saving potential of e-mail:

> *"One major impact for myself and many of my colleagues in science is that of saving time which is a huge benefit"* (respondent 349)

> *"If it wasn't for e-mail I'd spend more time on the telephone which is more time consuming (eg phone tag etc)".* (respondent 397)

**Relationships between e-mail satisfaction, e-mail use and e-mail attitude.**

Consistent with the belief that attitudes can be measured by satisfaction scales, e-mail use satisfaction was directly related to all three attitudinal components and to e-mail mode satisfaction. Similarly, e-mail mode satisfaction was also directly related to the three attitudinal components. The

strongest relationships were between the two satisfaction scales and affective attitudinal component, suggesting that satisfaction taps into the affective thoughts and feelings associated with an attitude object. This provides evidence of construct validity for the scales concerned. However, the relationships were only moderately strong, with none over .40, suggesting that to a great extent the scales were measuring different things, therefore removing any consideration that there may have been needless duplication of the constructs measured (Nunnally & Bernstein, 1994).

Alternatively, these results could be interpreted as the more satisfied individuals are with e-mail as a tool and the more satisfied they are with using e-mail, the more positive evaluations they have of e-mail. Along with this, both task-related use and socio-emotional use of e-mail were found to be significantly directly related to the affective and behavioural components of e-mail attitude. These results suggest that as using e-mail for either task or social purposes increases, so do positive feelings and preference towards using e-mail increase. Interestingly, no relationships were found between e-mail use for either task or social purposes with the cognitive component of e-mail attitudes. It was expected, that as task and socio-emotional use increased, so would have preferential thoughts about e-mail. In the light of the repositioning exercise, it may be that few would admit to difficulties with or a dislike towards a widely used communication medium.

The only other significant difference in terms of e-mail attitudinal components, is of the behavioural component in relation to position within the university. In this instance, academics reported higher behavioural attitudes towards e-mail than those in general positions. This suggest that academics prefer using e-mail over face-to-face or telephone conversations. This could be related to time pressures that academics often face as they juggle various roles, and is supportive of the previously discussed finding that academics reported using e-mail for task related purposes significantly more often than general staff.

**Relationships between e-mail attitude, media experience variables and actual use of e-mail.**

It can be argued that increasing familiarity with a medium should facilitate positive assessments towards that same medium. In this study, direct relationships were found between the affective attitudinal component and each of the following: the number of e-mails that respondents sent per day, number of years using computers, and number of years using e-mail. This suggests

that as experience with computers and e-mail increases, so did positive feelings that e-mail is effective and efficient.

Interestingly an inverse relationship was found between actual use of e-mail for social purposes and the affective component of e-mail attitude, suggesting that as social use of e-mail increases, positive feelings towards e-mail decrease. This may be explained by feelings of guilt towards using e-mail for social purposes whilst at work. Alternatively, in the light of repositioning and the possible tendency for survey respondents to 'fake good' it is possible that this result is reflective of impression management to provide what are perceived as socially desirable answers rather than actual use (Nunnally & Bernstein, 1994).

The behavioural component of e-mail attitude was also found to be directly related to number of e-mails that respondents sent per day, number of years using computers, and number of years using e-mail. Again this finding suggests that as experience with e-mail and computers increased, so did positive inclinations, intentions, commitments and actions towards e-mail.

The cognitive component of e-mail attitude was unrelated to experience with use of computers and e-mail. Neither were any links found between actual use of e-mail and the components of e-mail attitude, other than the one previously highlighted. This may reflect Contractor and Eisenberg's (1990) theorem, that perceptions of end behaviour in relation to a selected communication medium are based in part on the information they receive through that same medium. It follows that information received is restricted, based on the medium and in the case of e-mail, the lack of non verbal and paraverbal cues. What could then be argued, is that if individuals continually receive information that as a result of misinterpretation, appears incomplete or angers them, they will have negative attitudes towards and be less likely to use e-mail as an option to communicate.

Alternatively, this lack of significant relationships between actual use of e-mail and the e-mail attitude components may provide support for Carlson and Zmud's (1999) argument. They argue that it is too simplistic to believe that the more someone uses a communication system, the more they will attribute greater benefits to it. Instead it is likely that while individuals who use e-mail a lot tend to see it as a good way to communicate, as Rice and Case suggest (1983), at some point greater expertise does not necessarily improve attitudes towards e-mail.

**Relationships between age, tenure and e-mail use and e-mail attitude.**

Younger age groups have been found to be consistently related to high levels of use of e-mail for socio-emotional purposes in comparison to all other age groups (Ku, 1996; Steinfield, 1986a), but no age related significant differences tend to be documented in relation to the use of e-mail for task related purposes. In this research, in common with previous findings, the younger age group was found to report using e-mail for socio-emotional purposes significantly more than any other age group. These results are reflective of the beliefs that younger people are more likely to have had greater exposure to computing and thus more receptive to communicating via this technology (Ku, 1996). This in turn provides some support for Carlson and Zmud's (1999) belief that experience as previously operationalised, is less likely to provide an explanation for the use of e-mail for socio-emotional purposes, than does exposure and thus knowledge gained.

Conversely it is also argued that as a result of less exposure, older age groups have less experience with and are thus less receptive to using e-mail (Sproull & Kiesler, 1991; Steinfield, 1986b). However, in this piece of research this argument is unsupported with the finding that the middle and older age groups used e-mail for task-related purposes significantly more often than the younger age group. Despite this, the younger and middle age groups were found to have significantly higher affective attitudes towards e-mail than the older group. Collectively these results may reflect that the older age groups use e-mail out of necessity, as it is an expected means by which to communicate task-related information. This is supported by the finding that the most commonly reported use of e-mail was for administrative purposes and by the following comment in relation to accessing information about the university by one respondent:

*"this is the system now"* (respondent 247)

Collectively these results support the belief that though some may believe that it is inappropriate to use e-mail for purposes other than task-related ones, factors such as organisational norms and expectations impact on the choice of communication medium. In conjunction with this, it is argued that length of tenure will follow the same findings as age, as the two are commonly strongly correlated (Ku, 1996; Steinfield, 1986b). In particular it is suggested that increased tenure is typically associated with increased use of oral channels resulting from individuals learning their way around

the organisation and developing a network of contacts, thus they are less likely to use e-mail for social purposes (Steinfield 1986a).

In the present research, those who had been working at the university for less than one year reported significantly higher use of e-mail for socio-emotional purposes than for any of the other tenure groupings. In common with the age findings, those who had been at the organisation for less than one year, reported significantly lower levels of use of e-mail for task related purposes than any of the other tenure groups.

This can be explained by the belief that as tenure in the university increases so typically do administrative responsibilities. These result from both career moves, as well as increasing involvement in other aspects of university life such as committee membership. Whereas those who have been with the university for shorter periods of time are more likely to use email as a socialising mechanism, compared to those who have been with the university for longer and tend to already have well developed social networks.

**Relationships between e-mail use, e-mail attitude and organisational commitment.**

No other documented research exists that has investigated e-mail in relation to Meyer and Allen's (1990) three component conceptualisation of organisational commitment. The little research that was able to be found in the field has drawn links between e-mail use and Porter et al.'s (1974) scale of attitudinal commitment. In this study of the e-mail attitudinal components, only the affective component was found to have significant relationships with both affective and normative commitment, albeit relatively tenuous in the case of normative commitment.

Antecedents of affective commitment are theorised to be those that result from job and work characteristics that are viewed to be rewarding by the individual (Meyer & Allen, 1997). As such it can be argued that the relationship between the affective e-mail attitude component and affective commitment are as a result of e-mail being a characteristic of the individuals' work environment that involves positive feelings.

As normative commitment results from socialisation into the organisation (Allen & Meyer, 1996; Jaros, 1997), it is possible that the patterns that have emerged previously in relation to the use of e-mail as an acceptable means to communicate have provided the link between positive affect

toward e-mail and normative commitment. Interestingly there were no significant relationships between the subscales of e-mail usage and organisational commitment.

In terms of relationships between actual e-mail use and the facets of organisational commitment, direct relationships were found between normative and affective commitment and using e-mail for administration. Inverse relationships were found between using e-mail for teaching purposes and normative commitment, and between teaching and social related purposes and affective commitment. No relationships were found in relation to continuance commitment.

Collectively these results suggest that as emotional attachment to and involvement in the university increases, actual use of e-mail for teaching and social purposes decreases, whilst actual use of e-mail for administrative purposes increases. In a similar light, as feelings of moral beliefs and obligations toward the university increase, use of e-mail for actual teaching related purposes decreases whilst for administrative purposes, e-mail use increases. This may reflect that as individuals become increasingly attached to the university and socialised as to what is deemed acceptable, other means of communication take over for teaching related and social purposes, whilst most administrative matters are dealt with by e-mail.

**Underlying dimensions of the work relationship satisfaction scale.**

Relationships with work place colleagues are theorised to provide two important functions - friendship and task related support. The scale used to operationalise satisfaction with workplace relationships had been found to be problematic in the past, with the authors finding that in a general population (Bahniuk et al., 1996) a single factor solution resulted, whereas with managerial (Bahniuk et al., 1990) and academic populations (Hill, Bahniuk & Dobos, 1989; Hill, Bahniuk, Dobos, & Rouner, 1989) a two factor solution appeared. In this instance, the scale was found to have two separate subscales. This solution was found to be constant despite manipulating the population it was measured against.

The social support scale represents reciprocal relationships that are focused on sharing and exchanging personal problems and confidences. The task related support subscale portrays work relationships that emphasise the exchange of ideas, compliments, positive evaluations and on sharing workloads to achieve specific tasks.

**E-mail attitude, organisational commitment and satisfaction variables.**

*Communication satisfaction as a mediator.*

Multiple regression analysis suggested that overall satisfaction with communication in the university acts as a complete mediator on the attitude-affective commitment relationship, but only at the level of the affective attitudinal component. This suggests that individuals' feelings of emotional attachment and identification with the university are indirectly influenced by their feelings about e-mail as well as the sum of their beliefs and perceptions about the adequacy and timeliness of organisational communication. This is intuitively pleasing as it reflects that the more positively individuals view their work environment, the more likely they will be attached to the organisation, resulting from the belief that they have the means by which to respond to and contribute to their work environment and consequently the effectiveness of the organisation as a whole.

It is possible that this results from the belief that if work experiences communicate that the organisation is supportive of it's employees, treats them fairly and enhances their sense of personal importance and competence by appearing to value their contribution, the individual will have higher levels of affective organisational commitment (Meyer & Allen, 1997).

As receiving adequate amounts of information is related to increased organisational influence and uncertainty reduction (Bahniuk et al., 1990), it is possible in the light of repositioning, that individuals with high affective commitment are reliant on e-mail for information to reduce uncertainty, which then provides them with more control over their work environment. Minsky and Marin (1999) also suggest that mode of communication used by individuals becomes part of the individual's self image as a result of constant use and as a means by which to express their personality. In turn, affective organisational commitment can be seen to result from a lack of discrepancy between organisational and individual values and goals (Meyer & Allen, 1997). As such if individuals believe that using e-mail is efficient, and helps them with their jobs, they are more likely to have a positive view of the organisation that has become part of their self image as any discrepancies between how they view themselves and their organisation will potentially result in dissonance.

The relationship between affective attitude and normative commitment was also completely mediated by communication satisfaction. This suggests that levels of moral beliefs and feelings of obligations to the university are influenced by positive feelings towards e-mail as well as satisfaction

with overall organisational communication. Many of the work experiences that predict affective commitment, particularly those associated with supportiveness, are also positively related albeit less strongly with normative commitment, (Allen & Meyer, 1996). This was also found in this instance. Meyer and Allen (1997) believe that although the reason for such findings are often not clear, it may simply imply that some types of positive experiences influence feelings of emotional attachment and feelings of obligations at the same time. Indeed it is possible, that the mere fact that individuals' positive feelings toward e-mail and consequent feelings of satisfaction towards organisational communication, influences individuals' feelings of obligations toward the university as a result of involvement in organisational functioning, thus providing ongoing socialisation in the university setting.

In the attitude-normative commitment multiple regression, though communication satisfaction completely mediated the relationship between affective attitude and normative commitment, at the second step, the cognitive attitudinal component became significant. It is commonly assumed in attitude theory, that attitudes derive from a process of cognitive learning (Eagly & Chaiken, 1993). This is described as occurring when individuals gain information about the attitude object either through direct experience or indirect experience. Direct experience in the instance of e-mail, would be actual use of e-mail, whereas indirect experience would relate more to what individuals hear or read about e-mail from sources other than themselves (Ajzen, 1988; Fishbein & Ajzen, 1975). As such the individual then forms beliefs about the attitude object. However, evaluations tend to be expressed in emotional, that is affective terms, which are more immediate and tend not to be effected by thinking about the attributes of the attitude object (Eagly & Chaiken, 1993). This may account for why, in this instance, the initial relationship was predicted for by affective responses, but once mediated by communication satisfaction, the cognitive attitude component was important in the prediction of normative commitment.

*Satisfaction with workplace relationships as a mediator.*

In the case of the multiple regression analyses that used the workplace relationship satisfaction variables as a potential mediator, all three variables, collegial social, collegial task and overall satisfaction with work relationships acted as partial mediators at the level of affective attitude

component on affective commitment only. That is affective e-mail attitude indirectly influences affective organisational commitment through workplace relationship satisfaction. This suggests that feelings about e-mail, in terms of it's effectiveness, indirectly influences feelings of identification with and emotional attachment with the university through social and task related links with other organisational employees.

In a similar manner, the affective attitude normative commitment relationship was partially mediated by the collegial social aspect of workplace relationship satisfaction only. This suggests that moral beliefs and feelings of obligations towards the university are indirectly influenced by feelings toward and about e-mail, as well as reciprocal relationships towards others that are based on friendships that have resulted from an exchange of personal problems and confidences. Though it has been found that early socialisation to an organisation is the most strongly predictive of normative commitment (Allen & Meyer, 1990; Hackett et al., 1994; Ko et al., 1997), this result suggests that ongoing work relationships, possibly through the medium of e-mail, that focus on friendships do have some influence on individuals' feelings of obligations toward the university. This is especially important in the light of the following comment:

> *"But communication by e-mail damages these* [workplace relationships]" (respondent 102)

Although significant, the contribution of workplace relationship satisfaction variables in predicating commitment scores were small, especially in the normative commitment equation. Meyer and Allen (1997) suggest that even small increases in commitment scores should be viewed as important, as organisational commitment has been found to be strongly related to performance. Thus small changes in organisational commitment can be predictive of small changes in performance which in turn can have a significant impact on organisational effort to gain an increased competitive edge.

These results could also be explained by the belief that when organisations are composed of multiple subgroups, as in this instance, employees are more likely to develop commitment to one or more of these, even though the idea of 'nesting' suggests that membership and commitment to one group requires the individual to belong to the other (Lawler, 1992). In this instance commitment to

school or college requires the individual to belong to the university. Meyer and Allen (1997) also suggest that when one measures commitment to an organisation, what tends to be measured is commitment to 'top management'. Indeed, several respondents noted that attachment to colleagues was more important to them than the university, with the implication that they were more committed to their immediate work colleagues or departments than the university as a whole. For example:

> *"in responding to items like this it should be important to distinguish between loyalty to colleagues/department and loyalty to current management" ('the university')* (respondent 41)

> *"my immediate boss, not the university as a whole"* (respondent 152)

> *"I feel a loyalty to my colleges/institute but not to the university as a whole"* (respondent 455)

Taken a step further, these results and comments may suggest that university staff are more committed to their work per se rather than the organisation as a whole. Lincoln and Kalleberg (1990) believe that work committed employees may be orientated to an occupational specialty and less inclined to accept administrative or 'housekeeping' tasks, which though clearly are in the organisation's interests, take time away from the primary set of occupational or professional concerns. As such, Lincoln and Kalleberg (1990) argue that conflict between commitments will be commonplace in university settings where research orientated faculty resist committee assignments, programme development and even teaching duties so to conserve time for scholarly pursuits.

Another potential explanation of these results, derives from the repositioning climate that the university was enveloped in when the research was conducted. Though various synonyms have been used to describe this phenomenon, and consequently studied, the human relations emphasis focuses on the potential and actual impact that this change within the organisation has on the workers. The results describe feelings of resentment, resistance, perceptions of job insecurity, which in turn affect levels of work effort that individuals will invest in, as well as diminished loyalty and commitment to the organisation (Kets de Vries & Balazas, 1997; Sadri, 1996). As such, whilst there

are threats of redundancies, there tends to be withdrawal from one's work colleagues thus placing a psychological distance between each other to attempt to control the impact that redundancies will have on them (Mishra, Spreitzer, & Mishra, 1998). Survivors are often seen to suffer what has been aptly coined 'survivor syndrome', whereby survivors of redundancies suffer as much, if not more, anxiety and guilt and other emotional states as those made redundant (Sadri, 1996). Indeed one respondent noted:

> "*The 'repositioning' of Massey University at Turitea and the prospect of large scale redundancies has resulted in my immediate work environment, in damaged interpersonal relationships among some of my immediate colleagues and total hostility to upper levels of management....*" (respondent 94)

Not surprisingly, the multiple regressions involving continuance commitment were nonsignificant; that is, levels of continuance commitment were not predicted by e-mail attitude, or satisfaction with either workplace relationships or overall organisational communication. As the primary link with the organisation resulting from high continuance commitment is the individual staying because they have to, the individual is unlikely to have positive views of anything associated with the organisation, or as is more likely in this case with the lack of significance, the individuals are likely to be indifferent to and potentially isolate themselves from the organisation and it's actions.

**Limitations.**

To fully interpret the results of this study, several limitations need to be taken into account. One limitation of this study, is the problems inherent in using a self report survey. Peeters, Buunk and Schaufeli (1995) suggest that self-report measures may suffer from at least three potential sources of cognitive biases. Firstly the selection of representative interactions, as some pertinent interactions are likely to be more cognitively available than others. Secondly the recall of these interactions, whereby biases in recall can arise due to motivated distortions such as cognitive dissonance. Finally, the aggregation of multiple events where information may be combined from multiple interactions to create a single impression. These points may be especially pertinent in this

study, especially in the light of the timing of the study coinciding with the announcement of potential redundancies.

However, this was an exploratory study and as the aim was to investigate a number of variables with as large a number of the population as rapidly as possible, this was the most appropriate means by which to do so. It was also important to be able to provide confidentiality and anonymity to the potential respondents, which is one of the key attributes of a self report measure. This in itself is believed to decrease the likelihood of individuals responding in a socially desirable way (Anastasi & Urbina, 1997). However, as highlighted previously it is possible impression management was an issue in this instance.

The population surveyed are also well educated and with at least half the respondents being academic and by implication researchers, and as Minsky and Marin (1999) explain, it is possible that scales may be too transparent to them which in turn may distort the results. Indeed several respondents highlighted their attempts to understand what the underlying hypotheses of the study were:

> *"This questionnaire includes 2 disparate topics of research - staff emotional wellbeing - computer-related attitudes. Your purpose is not clear!"* (respondent 318)

> *"I do not consider most of these questions are related to the topic you are researching."* (respondent 559)

As with any piece of research, the non-respondents must be considered. Though the respondents were proportionally representative of the general makeup of the university, it is possible that they may systematically differ in terms of their responses to the variables, from those who did not respond. In a similar light, although missing data were dealt with in a consistent manner, it is possible that the subsequent results and analyses may have been affected especially if the missing values differed in a systematic way.

Furthermore, the present study is a cross-sectional correlational study, therefore the researcher is only able to test for strengths of associations of variables collected at one point in time and not able to posit causal relationships.

One other factor that may have impacted on the research was the length of the questionnaire. The sections at the end of the questionnaire had a lower response rate and based on the following comments by respondents, it is possible that the length in itself may have discouraged some from completing the questionnaire.

> *"Can I say that this is a rather long and complex survey which will not encourage people to complete it. Took me 2 attempts to finish it."* (respondent 558)

> *"I'm waiting for the version that takes 20 min* [minutes] *to complete rather than read!"* (respondent 560)

Finally, the study and it's findings can not be generalised to the corporate environment as this was a university-based piece of research. There should also be caution in generalising the findings to other tertiary teaching institutions based on the response rate and the unique circumstances surrounding the timing of the research.

**Recommendations for future research.**

The primary recommendation in regards to future research is that this study is repeated across other New Zealand samples, especially with a view to including ethnic differences as it is possible that the way e-mail is used and viewed may differ dependent on cultural expectations. It is also recommended that other demographics such as position held within the organisation are included, especially with the depth of research that shows that individuals with more senior positions in organisations are more reliant on oral communication (Ku, 1996; Steinfield, 1986a). As such it would be pertinent to discover if there are differences in the way e-mail is used and perceived. This in turn will impact on the use of e-mail and potentially the dissemination of information through out the organisation, especially as in this situation, e-mail is the predominant means by which to deal with administrative duties.

Further to this, in future research it is recommended that experience with e-mail is operationalised to include knowledge based experience as well as actual channel use (c.f. Carlson &

Zmud, 1999). This recommendation is highlighted as a result that the present sample did not appear to increase their use of e-mail for socio-emotional purposes based on experience with the channel, as would have been expected from the literature and previous studies (Baron, 1998; Carlson & Zmud, 1999; Mantovani, 1994). It is important to clarify if this is reflective of the way experience is operationalised in this study, or if it results from users' beliefs that e-mail is appropriate for more routine tasks and as suggested by respondents, is inappropriate for more complex communication.

As highlighted earlier, the e-mail attitude scale developed and trialed in this study requires revision prior to future use. Despite this, this study has provided construct validation and support for the continuing use of a tri-component model in investigating attitudes toward e-mail. From a more general perspective, though the current move in social psychology is towards defining attitudes unidimensionally, this appears to be based on simplification and ease of measurement (Ajzen, 1988; Eagly & Chaiken, 1993). However, when theory building, it is the researcher's belief that a tri-component model appears to result in greater depth of understanding.

Finally it is believed that the variables studied and the relationships discussed would be enriched by the use of qualitative methods. Such methods would provide depth and potentially uncover issues pertinent to the field. This is supported in this study by the richness added to the analyses and subsequent discussion, by the largely unsolicited comments on the questionnaires, some of which have been reported throughout the preceding sections.

# Chapter 8: Conclusion

The use of e-mail in the workplace is ubiquitous, with far reaching implications for organisations. Though the study of e-mail use has increased, little research has investigated the links between perceptions of and attitudes toward e-mail and wider organisational variables such as organisational commitment.

This present study looked at the use of e-mail and the relationships between e-mail attitude and organisational commitment. Mediating influences of satisfaction with work relationships and satisfaction with communication on the attitude-commitment relationships were also investigated.

It was expected that as use of and experience with e-mail increased within the organisation, communicators would use it for both task and socio-emotional purposes. Though there was some correlational support for this, it was particularly weak, with several respondents indicating that e-mail was often not an appropriate medium to use when dealing with complex interpersonal issues.

In terms of e-mail use in this study, what was demonstrated was the increasing use of e-mail for administrative purposes, in relation to previous studies of the same organisation (c.f. Stirton, 1995). This provides the suggestion that within this organisation e-mail is possibly fast approaching the point where it is the accepted means by which to communicate administrative issues.

As was expected, the e-mail attitude scale was found to have three underlying components, affective, cognitive and behavioural. Though this study also provided some construct validation, as outlined previously it is the researcher's belief that the scale requires revision prior to future use. The various relationships between the e-mail attitudinal components, media experience variables and actual reported use of e-mail, suggest that though in this study, respondents may see using e-mail as a good way to communicate, it seemed that beyond a certain point, greater expertise with the medium did not necessarily result in more positive attitudes towards e-mail. Indeed it seemed, that in part, e-mail was used out of necessity by certain groups, as it appears to be the accepted means by which to communicate certain types of information.

The regression equations demonstrated that the more positively individuals viewed e-mail, the more satisfied they were with overall communication and in turn the more committed they were to the organisation. With the uncertain climate that surrounded the university and it's staff at the time of

this study, it is possible that those who used e-mail to keep in touch with events, also believed that they had more control over their work environment. This relationship also potentially represents the lack of incongruence between individual and organisational goals and values.

When workplace satisfaction variables were entered into the equation, it was discovered that emotional attachment to the university was indirectly affected by positive feelings towards e-mail, as well as both friendship and task related support. Though the impact of mediation in this case was small, it can be argued that it is possible that commitment in this instance was affected by the repositioning that the university was undergoing. It is suggested in such a situation, that individuals will psychologically distance themselves, from both the organisation and their fellow colleagues (Mishra et al., 1998). By implication, this will result in lower levels of commitment, as well as decreased satisfaction with workplace relationships.

To conclude, this piece of research has demonstrated the relationships between e-mail attitude and organisational commitment are mediated in varying degrees by both satisfaction with overall organisational communication and satisfaction with workplace relationships. The exploratory nature of the research coupled with the changes the university was undergoing at the time of the research prevent any firm conclusions being made, but together provide interesting directions for future research.

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# Appendix A: Preliminary questionnaire.

- Do you feel e-mail is central to functioning in your role?

- How do you feel e-mail has impacted on your daily work activities?

- In your experience what are the advantages of using e-mail?

- In your experience what are the disadvantages of using e-mail?

- Have you received training and support in how and when to use e-mail?

- Comment on e-mail as a function for: admin, research, teaching and social functioning.

- Which other communication method do you believe e-mail has replaced?

# Appendix B: Prompt that appeared in Massey News

In the week commencing the 8th May 2000, Massey University staff Palmerston North & Albany) will be invited to participate in a research project conducted by 2 Albany masterate students investigating the attitudes towards e-mail and how ones computer based and generalised pinions of their capacities influence well-being and attitudes related to work. This research has been approved by the Human Ethics Committee (Albany). The closing date for this research is the 29th May 2000. Later in the year Massey News will publish an outline of research findings.

# Appendix C: Information Sheet

**Massey University**
COLLEGE OF HUMANITIES & SOCIAL SCIENCES

**School of Psychology**
Private Bag 102 904,
North Shore Mail Centre,
Auckland,
New Zealand
Telephone: 64 9 443 9863
Facsimile: 64 9 443 9732

# A study of the impact of e-mail on staff & their relationships to work.

## INFORMATION SHEET

Dear Massey University staff member,

You are invited to take part in a questionnaire which explores attitudes towards e-mail and how one's computer-based and generalised opinions of one's capabilities influence well-being and attitudes related to work.

This research is being carried out by masterate theses students based at Massey University (Albany), Evana Selak and Lynette Marchant. Evana and Lynette are under the supervision of Dr Hillary Bennett from the School of Psychology, Massey University (Albany).

All staff members regardless of discipline and position have been invited to participate in this research to obtain a more complete picture. All questionnaires are anonymous and confidential. You will not be required to give your name, any form of identification or code when completing the questionnaire, and you will not be able to be specifically identified by any information obtained by the questionnaire.

Participation in the research is voluntary, with participants having the right to:

- choose not to answer any question(s);
- withdraw from the study at any point until the questionnaire is returned to the researchers;
- contact the researchers for clarification of questions;
- be given access to summary findings upon conclusion of the study.

This research has approval from the Massey University Human Ethics Committee (Albany). If you have any ethical concerns please contact the chairperson of this committee, Mike O'Brien on 443-9799 extension 9768.

Key findings from this study will be fed back to the University and could be used to help develop appropriate interventions, for example, training opportunities or policy amendments. Key findings will also be fed back to the participants via the 'Massey News' publication. However, participants or interested parties will not be able to gain access to their individual profiles due to the anonymous nature of the research. It is intended that the findings be published in an appropriate academic journal in the future.

By choosing to take part in the research you will be asked to complete the following questionnaire, which consists of various scales and demographic questions, taking approximately 20 minutes to complete. Please send the completed questionnaire back to the researchers via Massey University's internal mail system in the addressed envelope provided by the **29th May 2000**.

If at any time you would like to know more information about the research or have any questions concerning the research, please feel free to contact Dr Hillary Bennett on 443-9799 extension 9864. If the nature of this research raises any personal issues that you would like to talk about an alternative contact is the health and counselling centre on 443-9799 Albany extension 9783 or Palmerston North extension 7543 who will be able to direct you towards further, more appropriate assistance.

# Appendix D: Questionnaire

# A study of the impact of e-mail on staff
# &
# their relationship to work

## Instructions

Thank you for participating in this voluntary study, please remember, you have the right to decline to answer any particular question.

The questionnaire is in 7 sections. It is estimated that the questionnaire will take approximately 20 minutes to complete. It is assumed that filling in the questionnaire implies consent. For the purpose of this study, e-mail is defined as communication sent between individuals, groups, or organisations using computer technology.

There are no right or wrong answers. Answer honestly and state your opinions as accurately as possible. Upon completion please return the questionnaire to the researchers in the addressed envelope provided via the **Massey University Internal Mail System**, by the **29th May 2000.**

If you withdraw from the study please feel free to return the uncompleted questionnaire to the researchers also in the envelope provided. As a participant you have the right to withdraw from this research at any point until the questionnaire is returned to the researchers.

This is an anonymous questionnaire and responses can not be traced. Please do not put your name on the questionnaire. All information will remain confidential.

**Thank you again for your time and participation.**

## Section A: E-mail usage & opinions

In the left hand column please indicate by using the following scale, how often you use your e-mail system for the listed activities:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Never | Seldom | Sometimes | Often | Always |

In the right hand column please indicate by using the following scale, how satisfied you are with your e-mail system for the listed activities:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Very dissatisfied | Dissatisfied | Neither dissatisfied nor satisfied | Satisfied | Very satisfied |

| USEAGE | | SATISFACTION |
|---|---|---|
| ___ | ... to exchange routine information with others | ___ |
| ___ | ... to schedule meetings | ___ |
| ___ | ... to coordinate project activities | ___ |
| ___ | ... to share opinions | ___ |
| ___ | ... to resolve conflicts/disagreements | ___ |
| ___ | ... to negotiate | ___ |
| ___ | ... to get to know someone | ___ |
| ___ | ... to keep in touch with someone in another location | ___ |
| ___ | ... to send notes that contain sociable or non-work related content | ___ |

Please respond to the following statements about your e-mail system:

| | Strongly Disagree | Disagree | Neither agree nor disagree | Agree | Strongly Agree |
|---|---|---|---|---|---|
| I like using e-mail. | 1 | 2 | 3 | 4 | 5 |
| E-mail is an efficient method of communication. | 1 | 2 | 3 | 4 | 5 |
| E-mail is a convenient method of communication. | 1 | 2 | 3 | 4 | 5 |
| I prefer using e-mail to the telephone. | 1 | 2 | 3 | 4 | 5 |
| I prefer using e-mail to face-to-face communication. | 1 | 2 | 3 | 4 | 5 |
| Most of my e-mail is important. | 1 | 2 | 3 | 4 | 5 |
| I have access to more information by using e-mail. | 1 | 2 | 3 | 4 | 5 |
| I have had difficulty sending e-mail messages. | 1 | 2 | 3 | 4 | 5 |
| I have had difficulty editing e-mail messages. | 1 | 2 | 3 | 4 | 5 |
| E-mail helps me in my position. | 1 | 2 | 3 | 4 | 5 |

## Section B: Personal capacity & mastery

Often in our jobs we are told about software packages and applications that are available to make work easier. For the following questions, imagine that you were given a new software package or application for some aspect of your work. It doesn't matter specifically what the software package or application does, only that it is intended to make your job easier and that you have never used it before.

The following questions ask you to indicate whether you could use this unfamiliar software package or application under a variety of conditions. For each of the conditions, please indicate whether you think you would be able to complete the job using the software package. Then, for each condition that you answered 'yes' to please rate your confidence about your first judgement, by circling a number from 1 to 10, where 1 indicates 'not at all confident', 5 indicates 'moderately confident', and 10 indicates 'totally confident'.

For example, consider the following sample item:

I COULD COMPLETE THE JOB USING THE SOFTWARE PACKAGE...

| | Not at all confident | | | | moderately confident | | | | | totally confident |
|---|---|---|---|---|---|---|---|---|---|---|
| ... if there was someone giving me step by step instructions. | (YES)...1 | 2 | 3 | 4 | (5) | 6 | 7 | 8 | 9 | 10 |
| | NO | | | | | | | | | |

The sample response shows that the individual felt he or she could complete the job using the software with step by step instructions (YES is circled), and was moderately confident that he or she could do the job (5 is circled).

I COULD COMPLETE THE JOB USING **THE SOFTWARE PACKAGE...**

| | Not at all confident | | | | moderately confident | | | | | totally confident |
|---|---|---|---|---|---|---|---|---|---|---|
| ... if there was no one around to tell me what to do as I go. | YES...1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | NO | | | | | | | | | |
| ... if I had never used a package like it before. | YES...1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | NO | | | | | | | | | |
| ... if I had only the software manuals for reference. | YES...1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | NO | | | | | | | | | |
| ... if I had seen someone else using it before trying it myself. | YES...1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | NO | | | | | | | | | |
| ... if I could call someone if I got stuck. | YES...1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | NO | | | | | | | | | |
| ... if someone else had helped me get started. | YES...1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | NO | | | | | | | | | |
| ... if I had a lot of time to complete the job for which the software was provided. | YES...1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | NO | | | | | | | | | |
| ...if I had just the built-in help facility for assistance. | YES...1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | NO | | | | | | | | | |
| ... if someone showed me how to do it first. | YES...1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

NO

... if I had used similar packages before this one to do the same job. YES...1 2 3 4 5 6 7 8 9 10

NO

**The following set of questions look similar to the previous set of questions but please note the change in context. For the following questions imagine that you were given a new e-mail application for some aspect of your work.**

I COULD COMPLETE THE JOB USING **THE E-MAIL APPLICATION...**

Not at all confident ... moderately confident ... totally confident

... if there was no one around to tell me what to do as I go. YES...1 2 3 4 5 6 7 8 9 10

NO

... if I had never used a package like it before. YES...1 2 3 4 5 6 7 8 9 10

NO

... if I had only the e-mail manuals for reference. YES...1 2 3 4 5 6 7 8 9 10

NO

... if I had seen someone else using it before trying it myself. YES...1 2 3 4 5 6 7 8 9 10

NO

... if I could call someone if I got stuck. YES...1 2 3 4 5 6 7 8 9 10

NO

... if someone else had helped me get started. YES...1 2 3 4 5 6 7 8 9 10

NO

... if I had a lot of time to complete the job for which the e-mail was provided. YES...1 2 3 4 5 6 7 8 9 10

NO

...if I had just the built-in help facility for assistance. YES...1 2 3 4 5 6 7 8 9 10

NO

... if someone showed me how to do it first. YES...1 2 3 4 5 6 7 8 9 10

NO

... if I had used similar packages before this one to do the same job. YES...1 2 3 4 5 6 7 8 9 10

NO

Please indicate the extent to which you agree with each of the following statements (please circle):

| 1 Very strongly disagree | 2 Strongly disagree | 3 Disagree | 4 Neither agree nor disagree | 5 Agree | 6 Strongly agree | 7 Very strongly agree |
|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| When I make plans, I am certain I can make them work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| One of my problems is that I can not get down to work when I should. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| If I can't do a job the first time, I keep trying until I can. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| When I set important goals for myself, I rarely achieve them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I give up on things before completing them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I avoid facing difficulties. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| If something looks too complicated, I will not even bother to try it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| When I have something unpleasant to do, I stick to it until I finish it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| When I decide to do something, I go right to work on it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| When trying to learn something new, I soon give up if I am not initially successful. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| When unexpected problems occur, I don't handle them well. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I avoid trying to learn new things when they look too difficult for me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Failure just makes me try harder. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I feel insecure about my ability to do things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I am a self-reliant person. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I give up easily. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I do not seem to be capable of dealing with most problems that come up in life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## Section C: Work Relationships.

Please respond to the statements in this section to reflect your views about your relationships with others at work:

| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |
|---|---|---|---|---|---|
| My colleagues and I are friends as well as co-workers. | 1 | 2 | 3 | 4 | 5 |
| My colleagues and I frequently listen to each other's personal problems. | 1 | 2 | 3 | 4 | 5 |
| My colleagues and I share confidences with each other. | 1 | 2 | 3 | 4 | 5 |
| My colleagues and I frequently exchange constructive criticism. | 1 | 2 | 3 | 4 | 5 |
| My colleagues and I assist each other in accomplishing assigned tasks. | 1 | 2 | 3 | 4 | 5 |
| My colleagues and I frequently exchange compliments and positive evaluations. | 1 | 2 | 3 | 4 | 5 |
| I work jointly on major projects or cases with my colleagues. | 1 | 2 | 3 | 4 | 5 |
| I frequently exchange ideas with my colleagues. | 1 | 2 | 3 | 4 | 5 |

In general how satisfied are you with the relationships you have with your colleagues? Please circle your response.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| **Very satisfied** | **Satisfied** | **Neither satisfied nor dissatisfied** | **Dissatisfied** | **Very dissatisfied** |

## Section D: Well-being

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way during ***the past few weeks.*** Use the following scale to record your answers.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| **very slightly or not at all** | **a little** | **moderately** | **quite a bit** | **extremely** |

| | | | |
|---|---|---|---|
| ___ interested | ___ irritable | ___ upset | ___ inspired |
| ___ distressed | ___ alert | ___ strong | ___ nervous |
| ___ excited | ___ ashamed | ___ guilty | ___ determined |
| ___ scared | ___ attentive | ___ hostile | ___ jittery |
| ___ enthusiastic | ___ active | ___ proud | ___ afraid |

How satisfied or dissatisfied are you with your life as a whole?
Circle the number which comes closest to how satisfied or dissatisfied you feel?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| **completely dissatisfied** | | | | | | **completely satisfied** |

The following questions are related to how your health has been in general, ***over the past few weeks.*** Please answer by simply underlining the response which you think most nearly applies to you.

**Have you recently**

| | | | | |
|---|---|---|---|---|
| been feeling perfectly well and in good health? | better than usual | same as usual | worse than usual | much worse than usual |
| been feeling in need of a good tonic? | not at all | no more than usual | rather more than usual | much more than usual |
| been feeling run down and out of sorts? | not at all | no more than usual | rather more than usual | much more than usual |
| felt that you are ill? | not at all | no more than usual | rather more than usual | much more than usual |
| been getting any pains in your head? | not at all | no more than usual | rather more than usual | much more than usual |
| been getting a feeling of tightness or pressure in your head? | not at all | no more than usual | rather more than usual | much more than usual |
| been having hot or cold spells? | not at all | no more than usual | rather more than usual | much more than usual |
| been managing to keep yourself busy and occupied? | more so than usual | same as usual | rather less than usual | much less than usual |
| been taking longer over the things you do? | quicker than usual | same as usual | longer than usual | much longer than usual |
| felt on the whole you were doing things well? | better than usual | about the same | less well than usual | much less well |
| been satisfied with the way you've carried out your tasks? | more satisfied | about the same as usual | less satisfied than usual | much less satisfied |
| felt that you are playing a useful part in things? | more so than usual | same as usual | less useful than usual | much less useful |
| felt capable of making decisions about things? | more so than usual | same as usual | less so than usual | much less capable |
| been able to enjoy your normal day-to-day activities? | more so than usual | same as usual | less so than usual | much less than usual |

## Section E: Communication.

Please indicate how satisfied you are with e-mail as a tool of communication in each of the following areas:

| | Strongly disagree | Disagree | Neither disagree nor agree | Agree | Strongly agree |
|---|---|---|---|---|---|
| communication within your immediate work environment | 1 | 2 | 3 | 4 | 5 |
| communication within your college | 1 | 2 | 3 | 4 | 5 |
| communication within this university | 1 | 2 | 3 | 4 | 5 |
| communication with external sources | 1 | 2 | 3 | 4 | 5 |

Overall, how satisfied are you with e-mail as a means of communication. Please circle your response.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| **Very satisfied** | **Satisfied** | **Neither satisfied nor dissatisfied** | **Dissatisfied** | **Very dissatisfied** |

The following are statements related to communication within the university. Please indicate how much you agree with each statement:

| | Strongly disagree | Disagree | Neither disagree nor agree | Agree | Strongly agree |
|---|---|---|---|---|---|
| I receive all the information I need to carry out my work. | 1 | 2 | 3 | 4 | 5 |
| People in this university do not spend too much time on unessentials. | 1 | 2 | 3 | 4 | 5 |
| I am kept adequately informed about significant issues in this university as a whole. | 1 | 2 | 3 | 4 | 5 |
| I am kept appropriately informed by the grapevine and other informal means. | 1 | 2 | 3 | 4 | 5 |
| My department works well with other departments. | 1 | 2 | 3 | 4 | 5 |
| My department receives all the information it needs to carry out its function well. | 1 | 2 | 3 | 4 | 5 |
| My department is kept adequately informed about significant issues in this university as a whole. | 1 | 2 | 3 | 4 | 5 |
| I understand clearly how I can contribute to the general goals of this university. | 1 | 2 | 3 | 4 | 5 |
| I have adequate opportunities to express my views in my department. | 1 | 2 | 3 | 4 | 5 |
| My colleagues are generally eager to discuss work matters with me. | 1 | 2 | 3 | 4 | 5 |
| In general communication is effective in this university. | 1 | 2 | 3 | 4 | 5 |
| I work effectively because other employees communicate regularly with me. | 1 | 2 | 3 | 4 | 5 |

## Section F: Organizational Commitment.

Please respond to the questions in this section, using the scale below to reflect your views.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Disagree strongly | Disagree moderately | Disagree slightly | Neither Disagree nor agree | Agree slightly | Agree moderately | Agree strongly |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| I would be very happy to spend the rest of my career in this university. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It would be very hard for me to leave this university right now, even if I wanted to. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I do not feel any obligation to remain with my current employer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I really feel as if this university's problems are my own. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Too much of my life would be disrupted if I decided I wanted to leave this university right now. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Even if it were to my advantage, I'd not feel it would be right to leave this university now. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I do not feel like "part of the family" at this university. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Right now, staying with this university is a matter of necessity as much as desire. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I would feel guilty if I left this university now. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I do not feel "emotionally attached" to this university. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I believe I have too few options to consider leaving this university. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| This university deserves my loyalty. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| This university has a great deal of personal meaning for me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| One of the negative consequences of leaving this university would be the scarcity of available alternatives. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I would not leave this university right now because I have a sense of obligation to the people in it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I do not feel a strong sense of belonging to this university. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| One of the major reasons I continue to work for this university is that leaving would require considerable personal sacrifice; another organisation may not match the overall benefits I have here. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I owe a great deal to this university. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| If I had not already put so much of myself into this university, I might consider working elsewhere. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## Section G: Demographic questions

*Please answer the following questions by ticking the appropriate box or indicating the appropriate numerical value.*

**Gender:** Male ☐ Female ☐

**Age:** ☐ less than 30 ☐ 30 to 49 ☐ 50 plus

**Campus:** Albany ☐ Palmerston North ☐

**College:** Humanities/Social Sciences ☐ Sciences ☐ Other ☐

Business ☐ Education ☐

**Position:** Academic staff ☐ General staff ☐

**If you responded 'academic' to the previous question:**

- are you currently teaching: yes ☐ no ☐
- and if so is it: internal ☐ extramural ☐ block mode ☐

**Number of years worked for this university:**
☐ less than 1 year ☐ 1 to 5 years ☐ 5 to 10 years ☐ more than 10 years

**Number of years as a computer user:** __ years

**Number of years as an e-mail user:** __ years

**Average number of e-mails sent per day:** __

**Please estimate out of 100% in total, how much of your e-mail time is spent in each of the following functions:**

___ Research

___ Social function

___ Administration

___ Teaching related functions
100%

**Estimated typing ability in words per minute:**
10 words ☐ 20 words ☐ 30 words ☐ 40 words ☐ 50 plus words ☐

**Method that your computer notifies you of mail:**
☐ Beeps ☐ Picture ☐ Doesn't notify me

# Appendix E: Principal Component Analysis for E-mail Satisfaction Scales.

**Table 14**

*Loadings of the principal component analysis for the E-mail Use Satisfaction Scale*

| *Item* | *Factor* | *Communality* |
|---|---|---|
| to coordinate project activities | 0.760 | 0.62 |
| to negotiate | 0.742 | 0.81 |
| to share opinions | 0.725 | 0.53 |
| to resolve conflicts/disagreements | 0.715 | 0.82 |
| to get to know someone | 0.685 | 0.68 |
| to schedule meetings | 0.675 | 0.57 |
| to exchange routine information with others | 0.662 | 0.68 |
| to keep in touch with someone in another location | 0.638 | 0.58 |
| to send notes that contain sociable or non-work related contents | 0.626 | 0.47 |
| % of variance | 64.01 | |

**Table 15**

*Loadings of the principal component analysis for the E-mail Mode Satisfaction Scale*

| *Item* | *Factor* | *Communality* |
|---|---|---|
| communication within your immediate work environment | 0.681 | 0.46 |
| communication within your college | 0.770 | 0.59 |
| communication within this university | 0.788 | 0.62 |
| communication with external sources | 0.636 | 0.41 |
| Overall how satisfied are you with e-mail as a means of communication. | 0.635 | 0.40 |
| % of variance | 49.71 | |

# Appendix F: ANOVA, independent variable college

**Table 16**

*Results of ANOVA, independent variable college*

| | Humanities/Social Sciences | | Business | | Sciences | | Education | | Other | | ANOVA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n =86 | | n = 81 | | n = 178 | | n = 64 | | n = 102 | | | | |
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | *F* | *df* | Tucky's-b/Tamhane's T2 |
| E-mail use satisfaction | 34.27 | 5.78 | 34.48 | 5.66 | 33.93 | 4.54 | 34.42 | 6.17 | 32.53 | 5.48 | 1.81 | 4, 431 | - |
| Socio-emotional use | 0.12 | 0.99 | 0.05 | 1.02 | 0.01 | 0.97 | -0.13 | 1.11 | 0.03 | 0.91 | 0.54 | 4, 471 | - |
| Task use | 0.05 | 0.81 | 0.03 | 0.96 | 0.11 | 0.97 | -0.09 | 0.97 | -0.11 | 1.09 | 0.99 | 4, 471 | - |
| E-mail Attitudes | | | | | | | | | | | | | |
| Affective | 0.04 | 0.88 | 0.05 | 0.86 | -0.02 | 0.85 | -0.03 | 0.84 | -0.02 | 0.88 | 0.16 | 4, 505 | - |
| Behavioural | 0.14 | 0.82 | 0.18 | 0.89 | 0.06 | 0.83 | -0.25 | 0.74 | -0.08 | 0.83 | 0.39 | 4, 505 | - |
| Cognitive | -0.03 | 0.96 | 0.01 | 1.15 | -0.08 | 1.01 | 0.23 | 0.96 | 0.02 | 0.96 | 1.16 | 4, 505 | - |
| E-mail mode Satisfaction | -0.01 | 0.86 | -0.08 | 0.89 | -0.14 | 0.90 | 0.25 | 0.86 | 0.07 | 0.87 | 2.37 | 4, 447 | - |

Note: N's vary for each scale when missing values are excluded pairwise.

# Appendix G: Multiple regression results

**Table 17**

*Results of hierarchical multiple regression of e-mail attitude, continuance commitment, communication satisfaction, and workplace relationship satisfaction variables.*

| **Dependent Variable: Continuance Commitment (N =550 )** | | | | | Overall |
|---|---|---|---|---|---|
| Step One ( $R^2$ = .004) | B | SEB | ß | *t* | % of variance |
| Constant | 26.75 | 0.38 | | 70.11*** | |
| E-mail attitude | | | | | |
| Affective | 0.54 | 0.46 | .051 | 1.18 | 0.3 |
| Behavioural | -0.31 | 0.47 | -.028 | -0.65 | 0.1 |
| Cognitive | 0.27 | 0.38 | .030 | 0.69 | 0.1 |
| Step Two ($R^2$ =.009 ) | | | | | |
| Constant | 30.41 | 2.18 | | 13.96*** | |
| E-mail attitude | | | | | |
| Affective | 0.72 | 0.47 | .068 | 1.54 | 0.4 |
| Behavioural | -0.38 | 0.47 | -.035 | -0.81 | 0.1 |
| Cognitive | 0.33 | 0.38 | .037 | 0.87 | 0.1 |
| Communication Satisfaction | -0.01 | 0.06 | -.075 | -1.70 | 0.5 |

| **Dependent Variable: Continuance Commitment (N =511 )** | | | | | Overall |
|---|---|---|---|---|---|
| Step One ($R^2$ = .002) | B | SEB | ß | *t* | % of variance |
| Constant | 26.63 | 0.40 | | 67.38*** | |
| E-mail attitude | | | | | |
| Affective | 0.37 | 0.48 | .035 | 0.77 | 0.1 |
| Behavioural | -0.26 | 0.49 | -.024 | -0.54 | 0.1 |
| Cognitive | 0.06 | 0.40 | .006 | 0.14 | 0.0 |
| Step Two ($R^2$ = .008) | | | | | |
| Constant | 29.78 | 2.19 | | 13.59*** | |
| E-mail attitude | | | | | |
| Affective | 0.44 | 0.49 | .042 | 0.91 | 0.2 |
| Behavioural | -0.34 | 0.49 | -.032 | -0.70 | 0.1 |
| Cognitive | 0.12 | 0.40 | .013 | 0.30 | 0.0 |
| Collegial social | 0.24 | 0.43 | .027 | 0.55 | 0.1 |
| Collegial task | -0.20 | 0.45 | -.022 | -0.45 | 0.0 |
| Collegial satisfaction | -0.80 | 0.55 | .077 | -1.47 | 0.4 |