UNIVERSITY OF KWAZULU-NATAL

The determinants of effective computer mediated communication between lecturers and students
at a tertiary education institution

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

CMC	Computer Mediated Communication
LMS	Learning Management Systems
POV	Perceived Outcome Value Theory
SCR	Successful CMC-Based Relationship
UKZN	University of KwaZulu-Natal
SD	Standard Deviation
eMail	Electronic Mail
KMO	Kaise-Meyer-Olkin
CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
E-Learning	Electronic Learning
ICT	Information and Communication Technologies
USA	United States Of America
COVID-19	Coronavirus Disease Of 2019
WHO	World Health Organisation
TAM	Technology Acceptance Model
TAM2	Technology Acceptance Model 2
UTAUT	Unified Theory Of Acceptance And Use Of Technology
DOI	Diffusion Of Innovation
IS	Information Systems
SPSS	Statistical Package for the Social Sciences
AMOS	Analysis of a Moment Structures
IM	Instant Messaging
BI	Behavioural Intention to use CMC

ABSTRACT

Computer Mediated Communication (CMC) is the transmission of data communication between individuals using two or more electronic devices. CMC provides digital platforms for one-on-one communication, conferencing and collaboration that is instantaneous. However, in the literature, there's a lack of research that focuses on the interaction between lecturers and students through CMC in South Africa. Hence, there is a need for this study to understand the factors that influence an effective interaction between lecturers and students through CMC, and propose adequate strategies to foster such kind of interaction. In this study, an effective CMC interaction is defined as the behavioural intention to use CMC between a lecturer and a student that is perceived as prompt, professional and supportive by both the students and lecturers. The afore-mentioned constructs have been used to develop a conceptual model that guided the current study to investigate the determinants of the behavioural intention to use CMC between lecturers and students at a tertiary education institution, from the student's perspective.

The study made use of quantitative methods as its fundamental research approach. The study's sample consisted of 276 students at the University of KwaZulu-Natal. These students were surveyed using a closed-ended online questionnaire. From a research nomenclature perspective, the study's theoretical constructs were identified as immediacy, professionalism and support which constitute the independent variables while intention to adopt/adoption of CMC has been labelled as the study's dependent variable. The study's main outcome revealed that the majority of students acknowledge the importance of immediacy, support, and professionalism in the facilitation of an effective CMC-based relationship. Empirically, the study confirmed a moderate, positive correlation between the constructs and students' intention to adopt CMC as a conduit to achieving excellence in their studies. Evaluation derived from a structured equation modelling derivative of the original conceptual model revealed that the construct of support had more of a mediating influence on students' intention to adopt a CMC-based learning approach. A concomitant outcome from the study was that a majority of the students preferred using CMC with academic staff than face-to-face communication, with a preference for technological platforms that support CMC based learning rather than general social media networking platforms. At the time that the study was conducted, the institution from which empirical data was collected had transformed to a remote/online learning approach that was necessitated by the Covid-19 pandemic. As a consequence, many of the study's respondents had a natural preference for the video conferencing tool that was currently employed at the institution.

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CHAPTER 1: INTRODUCTION TO THE STUDY

1.1 Introduction

In this section, the researcher introduces the study, the concept of Computer Mediated Communication (CMC) and the role that it plays based on Information and Communication Technology (ICT) infrastructure. This chapter further discusses the research problem that the study aims to investigate. The research problem section provides a discussion about the problems that are faced by students and lecturers in tertiary institutions, and it looks at the prospect of an ICT enabled intervention to enhance student learning. The research problem provides four research questions that the study aims to answer. This section further provides a preliminary literature review of the study. It should be noted that these research questions are informed by the conceptual framework that underpins this study.

1.2 Background of the study

The pervasive nature of Information and Communication Technologies (ICTs) has triggered the need for ICT-led interventions in the educational sector. Digital technologies vary from mobile technologies dispensed through mobile devices such as tablets, laptops, smartphones and audio players, to web-based platforms such as social media networking sites (Durodolu & Mojapelo, 2020; Meyer et al., 2016; Ntombela, 2017). These technologies, as well as the devices and apps that support them, make it easier to capture, generate, store, process, and share data (Taylor et al., 2011). CMC refers to human conversation or data transmission that takes place between two or more electronic devices. Web 2.0 has facilitated CMC collaboration by enabling multi-person discussions on Learning Management Systems (LMSs) and the real-time information flow within the CMC platforms, as shown in instant messaging on social networks.

Digital technology's use and application has expanded to include not only business and society, but also education. CMC is a simple and effective method of communication. CMC platforms provide instantaneous communication among large groups or forums, and between one-on-one conversations. However, in the literature studied, there's a lack of research that focuses on the interaction between lecturers and students through CMC in South Africa. Web 2.0 is the second generation of the World Wide Web, which represented a shift toward an increasingly collaborative, interactive, and dynamic web. Web 2.0 has revolutionized the rate and manner in which individuals connect, particularly when they are separated by a great distance. Through real-time information

flows and cooperation, Web 2.0 technologies improve CMC (Aydin, 2014). Thus, it is useful as CMC provides digital platforms for one-on-one communication, conferencing and collaboration that is instantaneous. The increasing use of digital technology in education, notably through CMC, is due to the increased internet penetration rate among users, which has made the technology (Internet) ubiquitous, enabling a wide distribution of diverse kinds of digital technology (Da Rocha and Lombard, 2013; Drewry et al., 2019). Findings by Owusu-Agyei et al., (2020) further highlights the impact of the exponential internet growth globally on the adoption of digital technology.

The study will converge to a synthesis phase where the researcher will leverage the quantitative data analysis to propose a list of factors that are pivotal in ensuring the success of a CMC based approach to teaching and learning at a tertiary education.

1.3 Research Problem

Computer Mediated Communication (CMC), is communication or transmission of data between individuals using two or more electronic devices. In education, CMC platforms facilitate learning relationships between the lecturer and student outside the classroom. Research findings show lecturers often complain that when connecting with students via CMC platforms, many students lack professionalism (Daigle, 2020; Maxwell, 2015; Da Rocha and Lombard, 2013; Bolkan and Holmgren, 2012). Similarly, Nasri et al. (2020), Merdian and Warrior (2015) and Young, Kelsey, and Lancaster (2011) opine that students complain about the lack of lecturers' immediacy and support when they communicate with them through CMC platforms. Hence, It is necessary to understand the factors that determine a successful lecturer-student interaction through CMC and propose adequate strategies to foster such kind of interaction. In this study an effective CMC interaction is defined as an interaction between a lecturer and a student that is perceived as prompt, professional and supportive by both the students and lecturers.

CMC can be carried out through various online-based platforms such e-mails, LMS (such as Edmodo and Moodle/Learn), social media network sites (such as Facebook and WhatsApp). Da Rocha and Lombard (2013), Bolkan and Holmgren (2012) and Maxwell (2015) and are amongst the authors who have identified that lecturers tend to complain about lack of professionalism when students engage with them through CMC platforms. Similarly, the research findings of Young et al. (2011) and Merdian and Warrior (2015) show that students protested the lack of lecturers'

immediacy and support in CMC platforms. These studies emphasized the necessity of immediacy, professionalism, and support on CMC platforms between lecturers and students. Hence this study investigates factors related to the three constructs (professionalism, immediacy and support) that may influence an effective CMC strategy between lecturers and students.

1.4 An Overview of the Study's Methodology

Methodology: In the current study, an exploratory research design was used. The empirical component of the research was limited to the University of KwaZulu-Natal's (UKZN) Faculty of Commerce. The study's methodology is centred on a quantitative approach that entailed the collection of survey based data from university students on their perceptions of CMC based learning. The main forms of data analysis for this phase of the study entailed the use of descriptive statistics such as frequency analysis, mean, mode and standard deviation. However, the data has been subjected to a test of validity and reliability. Furthermore, inferential statistics such as correlation and multiple regression analysis has been employed in this study. The Cronbach's Alpha test was used to ascertain the reliability of the study's data while factor analysis has been used to establish the study's construct validity.

1.5 Research Questions

The study's research questions have been framed in accordance with the study' conceptual model that was developed using the social constructs of immediacy, professionalism and support. As explained in Elangovan and Rajendran (2015) a conceptual model provides a context from which a researcher is able to elaborate details of the research process and explain the relationship between the study's main factors. Aligned to the dictates on research reporting by of Elangovan and Rajendran (2015), the current study's main research question and sub-questions are presented as: How does CMC enable a successful learning relationship between the student and lecturer at a tertiary educational institution?

a. What are the Computer-Mediated Communication platforms that students prefer to use when interacting with lecturers?

b. How does *immediacy* of response influence the prospects of using Computer-Mediated Communication for student-lecturer interaction?

c. How does *professionalism* influence lecture-student interaction over Computer Mediated platforms?

d. How does *support* influence the use of Computer Mediated Communication for lecture-student interaction?

1.6 Research Objectives

According to Barclay et al. (2018), the proliferation of technological platforms to support teaching and learning has had a substantial impact on the international educational terrain landscape. In order to leverage the potential benefits and enhancements offered by these technological platforms, there has to be a deeper understanding of the factors that impact the successful integration of the ICT-driven platforms into traditional learning environments. This understanding will provide better pedagogical support as well as to ensure that the financial and resource-driven investment into ICT-based infrastructure to support teaching and learning will yield a positive outcome. It is within this context that the main objective of the current study is to understand factors aligned to the use of CMC as a basis to establish a successful working relationship between a student and a lecturer. This objective has been operationalised via the study's conceptual model and listed as:

- Identify CMC platforms that students feel comfortable with using in their CMC interaction with lecturers for the purpose of teaching and learning at a university
- Determine the influence of immediacy of response as a factor that contributes to the successful use of CMC between a student and lecturer for the purpose of teaching and learning at a university
- To establish the role that professionalism plays in the context of a CMC interaction between a student and lecturer for the purpose of teaching and learning at a university
- To establish the role that support plays in the context of a CMC collaboration between a student and lecturer for the purpose of teaching and learning at a university

1.7 Rationale and Significance of study

Significance of the study

This study will provide insights on the factors that need to be considered in lecturer-student interaction through CMC. The knowledge of such factors will help devise adequate interventions to improve CMC between lecturers and students. According to Walther (2011), present models and ideas on CMC and interpersonal relations via CMC are lacking. The researcher's conceptual model will also serve as a current model for future study on the application of CMC in formal education. Furthermore, this study helps students and lecturers understand what they expect from one another in terms of immediacy, support, and professionalism while communicating via CMC.

The literature studied showed that these three constructs have an influence on the attitude of the receiver and that of the sender in all CMC platforms (Bolkan & Holmgren, 2012; Maxwell, 2015; Da Rocha & Lombard, 2013; Young et al., 2011).

With the emergence of the COVID-19 pandemic, the educational system worldwide was affected which resulted in widespread closure of institutions in almost all countries and educational institution had to find ways for contactless learning and as a result e-Learning grew (Umar Buba et al., 2020; Idris & Idris, 2021). Because of the growing usage of CMC, students and lecturers need to be better equipped on ways to ensure successful and effective CMC. Literature reviewed highlighted that students need to be provided with guidelines on honoring the rules of business etiquette, these guidelines include teaching students about professional CMC expectation when it comes to tone, clarity and timeliness (Kelley & Autman, 2014). Similarly, with the video conferencing adoption surge tertiary institutions need be cognisant of the need and impact of the remediation to bridge the socio-economic divide through providing access to computers and the internet.

Rationale for the study

Technology is constantly evolving, and due to that a gap exists in the current or modern theories pertaining to the use of CMC platforms in formal education set up (Walther, 2011). In 2013, a South African based study highlighted the lack of research on studies that investigate the relationship between CMC platforms and higher education, although the use of digital technology in education is growing rapidly (Da Rocha and Lombard, 2013). When lecturers and students can speak at any time of day, Merdian and Warrior (2015) and Bolkan and Holmgren (2012) discovered that CMC can successfully improve student-lecturer communication.

CMC research is currently being done outside of Africa. Conducting research on the relationship between CMC platforms and higher education will provide insights that will allow for the gap that exists in academic research, caused by a general dearth of current research that is focused on the subject both internationally and locally, to be filled. This research will help students and lecturers understand the factors that influence the behavioural intention to use CMC and resourceful responses provided through the use of CMC (Aydin, 2014). Literature reviewed in South Africa has questioned the feasibility of e-Learning in the South African context (Mpungose, 2020). The use of technology in education enables better student engagement through its collaborative nature.

However, it also ensures that the students are better prepared for life after university. Being technology savvy is an integral part of the future with the exponential growth of technology. Furthermore, Mpungose & Khoza (2020) highlight the importance of the student-centred approach afforded through e-learning that implements the connectedness for effective e-learning. Therefore, students need to be provided an opportunity to express their views for lecturers to have insights on the needs & expectations of students for the factors that influence the behavioural intention to use CMC.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides insights of tertiary education historically and where it is today. This will be done through discussing previous literature that speaks to the issues, highlights and strides that have been made in education through the introduction of Computer Mediated Communication in the industry. The adoption of technology tends to be defined differently per country mostly due to different socio-economic levels, so the researcher aims to shine a light on the research that is available in the South African context as well, which is where this study was conducted.

2.2 Review of Literature

In order to provide a proper context for the study, a pre-cursor discussion of the South African telecommunications infrastructure as well as the socio-economic oriented challenges associated with teaching and learning in South Africa is provided. This discussion converges to the focal point of the literature review which is computer mediated collaboration (CMC) as a platform to enable/enhance teaching and learning in South Africa.

2.2.1 South African Telecommunications Infrastructure

South Africa is one of Africa's two largest economy alongside Nigeria, as a result, one of the continent's most favourable market for the service's industry with a very rapid growth in computing infrastructure (Shobande and Asongu 2021; Evert and Erasmus, 2014). South Africa's telecommunications market is dominated by Telkom. The telecommunications market in South Africa is possibly the largest in Africa, despite its tiny size in global terms. The technology used in the South African telecommunications network is quite advanced, with practically all of the high-end communications services expected in mature countries, being available in South Africa (Cogburn & Adeya, 2001). Telecommunications is one of the post-modern era's marvels of invention, characterized by the telecommunication environment's ability to evolve at an ever-increasing rate, from both a technological and a market standpoint. South Africans are able to access a sophisticated range of communication services such as video conferencing, ISDN (integrated services digital network), WAP (wireless applications protocol), and GSM (global standard for mobile communications) (Cogburn & Adeya, 2001). South Africa is investing extensively in its information and communications infrastructure, both public and commercial, to

improve its ability to harness the digital economy. South Africa rates quite high on metrics of ICT spending when compared to several other countries. However, in the South African market, service providers encounter numerous challenges. Due to the existing socio-economic disparity, the service provider's networks should provide for high-income clients who require services such as high-speed broadband, as well as low-income consumers who merely require phone service and as a result, linked service providers reduce their network investment in order to obtain the appropriate return (Evert & Erasmus, 2014).

2.2.2 ICT Adoption

At both the national and global levels, economic realities have always conditioned and been conditioned by a wide range of social, political, technological, and cultural influences. The 'digital divide' is a term used to describe the disparity between individuals, communities, corporations, and countries who have access to information and communication technologies (ICTs) and those who do not. With uneven access to ICTs, South Africa's digital divide stretches across the country. Access to these information and communication technologies has been skewed greatly along racial lines within the country. Because the apartheid administration predominantly published data for white households (Cogburn & Adeya, 2001; Jonathan & Cyrill, 2018). Through various means, the Republic of South Africa has endeavoured to achieve a number of goals connected to the digital economy and the creation of a knowledge society through policy tools.

It is crucial to evaluate the overall impact of the Bantu education system on the Black native majority, particularly in less developed rural areas, in order to provide an accurate picture of the contemporary discourse throughout society. Many people who were left behind during apartheid are unable to escape the poverty trap (Mpungose, 2020). Bantu education focused on basic skills and training for black people who were not expected to gain status in their adult years (Schmidt, 2017). However, for it to progress and affect the lives of the poor, new educational goals must be established. Professionals in the information and communication technology (ICT) industry must also continue to educate the public about the fourth industrial revolution and the need to learn the core skills in the field. Due to the confinement imposed by the Coronavirus, it appears that full use of ICTs in methodological adaptation has been mandated, and its adoption has been accelerated, as a test of organizational agility, and has fostered a process of transformation to a digitalised university through the use of online processes with new pedagogical models and learning environments. ICTs have been part of the higher education, however, now they need to broaden to

the learning as well. In most schools and higher education institutions around the world, distance learning has become the primary method of instruction (Leiba, 2021). To sustain educational norms and continuity, the COVID-19 pandemic necessitated an immediate and widespread adoption of all teachers and classes to remote learning.

2.2.3 Socio-economic Challenges of Learning

Academic issues faced by students at higher education institutions are among the many debates taking place around the world today. In South Africa, it is widely acknowledged that students enrolling in previously disadvantaged universities come from provinces with socioeconomically disadvantaged development, poor matriculation exam achievement, high poverty levels, and poor infrastructure (Tanga & Luggya, 2020). Government intervention has taken the form of a variety of policies and frameworks aimed at redressing historical imbalances and enhancing educational access and quality (Mpungose, 2020). Despite policies aimed at redressing the impacts of apartheid, which denied black people access to high-quality education, disparity and unfairness of outcomes exist in South African higher education (Gore, 2020). Higher education policy employs the term 'historically disadvantaged' in interventions aimed at reducing inequality, but the desired outcomes have yet to be realized, as higher education institutions, particularly universities, appear to struggle to create conducive environments for all students to succeed. South African universities had the most problems in the years 2015-2016 and in a century of higher education, there have been intense and violent student protests. Most commentators credit the widespread campus protests to two factors: historically white universities' alienating environments, which sparked the #RMF (RhodesMustFall) movement, and the unfair cost of higher education, which sparked a movement known as #FeesMustFall (Jonathan & Cyrill, 2018).

2.2.4 Computer Mediated Communication

The traditional mode of learning in classrooms does not foster interaction between lecturers and students. Some students may be too afraid in the classroom to establish face-to-face communication. In addition, lecturers have a limited time in which they must ensure the prescribed course material is delivered. Thus, this minimises the interaction between lecturers and students (Sun & Wu, 2016). CMC is increasingly seen as a communication medium of choice between lecturers and students, outside the classroom environment. For instance, students may seek clarity of concepts taught in class from their lecturers through CMC. Apart from participatory motives,

students can hardly avoid CMC because face-to-face consultations are not always possible with lecturers due to various constraints including travelling costs and time factor (Atamian & DeMoville, 1998). In other circumstances, students may use CMC, such as email, to avoid coming to campus out of feeling embarrassed. Students can use CMC to avoid potentially awkward face-to-face meetings with instructors by using a private platform (Bolkan & Holmgren, 2012). CMC not only provides a secure messaging platform for shy introverted students, but it also allows the sender to carefully draft messages while maintaining complete control over space and time, meaning one can initiate communication from anywhere and at any time (Babni, 2018; Mpungose, 2020a; Taylor et al., 2011). However, CMC is frequently devoid of visual and audible signals (Young et al., 2011). With the exception of CMC platforms such as Zoom and other forms of audio enabled video calling platforms, which nonetheless are currently hardly used by students and lecturers to communicate.

Su and Wu (2016) state that, in CMC, there are three sorts of interactions from an educational standpoint. Student-student, student-lecturer and student-content are the three types of student relationships. All three interaction forms can be found in places like online discussion forums, traditional brick and mortar classrooms, and social networking sites. A lecturer is deemed to have established lecturer-student interaction when he or she posts educational materials in a discussion forum platform. Students might choose to engage in student-content interaction by building knowledge analytically and objectively depending on the educational material provided by interacting with it. Students can then use the online forum discussion to offer their questions, views, or opinions (this is known as the self-oriented method) (Martin & Bolliger, 2018; Saliés & Shepherd, 2016). However, the students who are not in self-oriented mode interact with the content indirectly, developing knowledge through the interaction process. In essence, students demonstrate student-student interaction when they respond to questions and opinions that are posted on the online forum discussion. Young et al. (2011) stated that the perceptions formed through the first communication attempt through CMC determines whether the communicator will continue with the interaction and develop a relationship. This shows that people form judgments about their communication interactions in order to predict possible outcomes. However, in order for online contact to be effective, opportunities for student-student and lecturer-student interaction are required (U. Buba et al., 2020; Dixson, 2012; Earon, 2020)

By interacting with their students more, lecturers can understand students' feelings better which has a positive influence on the students' performance (Aydin, 2014; Martin and Bolliger, 2018; Tanga and Luggya, 2020). In addition, such interaction is an opportunity to provide or clarify instructional materials that may result in an increase in the communication flow. Similarly, the manner in which lecturers and students communicate has the ability to positively influence pupils through emotional learning and understanding the different types of students (Baskaran et al., 2015; Bolkan & Holmgren, 2012). Affective learning (feeling, attitude) describes the emotional learning and it is one of the three types of learning, the other two being cognitive learning (thinking, knowledge) and psychomotor learning (physical, kinaesthetic). Findings by Baskaran et al. (2015), revealed that psychomotor learning was the most commonly used learning process. These three learning domains are well-known as the three learning domains of Bloom's Taxanomy 1956 (Anderson et al., 2001). Warren and Lessner (2014) also make the point that the more empathic lecturers are with their students in their verbal and physical interactions, the more likely the lecturer-student connection will result in the desired academic and behavioural outcomes. This is consistent with Bloom's Taxanomy's affective learning objectives, sensitivity, beliefs, which include active attention, and internalisation of values.

Research findings by Young et al. (2011), showed that sycophantic, excuse making, relational, functional, and participative approaches were the five major reasons students gave for connecting with lecturers. The goal of a relational motive is to develop or construct a personal relationship with the lecturer. Students believe that CMC contact between lecturers and students is most successful when instructors are candid and approachable (Maxwell, 2015). The functional motivation is to make ideas or share thoughts about course content and resources. The purpose of making excuses is to provide justifications for why tasks are late, incomplete, or not submitted at all. The sycophantic motivation is to make a positive impression on the lecturer about themselves. The way students engage with their lecturer has the potential to have a significant impact on how lecturers react to them (Bolkan & Holmgren, 2012). The participatory motive is to show that you are interested in a class or a course. Due to a lack of time and possibilities, the interaction between lecturer-student is limited in the traditional brick and mortar classroom. As a result, CMC could be utilized to encourage participation. Using CMC in education spreads the responsibility to engage on all parties involved. A number of excuses previously used for not interacting are catered for. Students are able to engage with the content and the lecturer at their own pace, in group discussions or in private, free from distractions and with less potential for embarrassment as you

are not able to see the reactions of the other participants unless video enabled CMC is used.. Similarly, lecture's still need to make the content available as well make the time to address confusion experienced by the students. This further highlights studies to get perspective of CMC in. education from both lectuers and studends as technology in education evolves.

2.2.5 CMC Platforms

Several research on students' preferred style of communication have yielded conflicting results. A study by Taylor et al. (2011) in the USA (Pennsylvania) reveals that students had a preference to using face-to-face communication over email communication. However, another USA-based (Philadelphia) study by Maxwell (2015) revealed that students had a preference to using email communication over all other forms of communication. Immediacy, email etiquette and politeness are some of the factors that informed the choice of email communication over other alternatives. Particularly, students' decisions to interact with the lecturer outside the classroom were influenced by the lecturer's verbal and nonverbal immediacy cues. Giving feedback using students' names and answer tone are examples of verbal immediacy cues. The time it takes to react and professional address (writing/textual etiquette) are nonverbal immediacy cues. Furthermore, Young et al. (2011) and Merdian and Warrior (2015) stated that students believe it is critical for lecturers to make it clear that the time spent with them is an investment in their success. According to Bolkan and Holmgren (2012) lecturers are likely to respond to students' emails that display a reasonable degree of politeness and email etiquette. Gender is also a factor that influences the choice of mode of communication, males preferring face-to-face communication as they tend to be more direct in speech than females. Females on the other hand prefer CMC as they are more communal and sensitive (Merdian & Warrior, 2015).

Tokarieva et al 2021 stated that students collaborate more on class discussions facilitated through CMC platforms than in a face-to-face settings. University students are termed 'digital natives' by Mpungose and Khosa (2021) as they grew up in the age of technology and feel comfortable using technology. CMC platforms provides the functionality that crosses the divide between speech and text, and video conferencing further provides visuals that bridge the gap from face-to-face communication to digital communication through introducing the body language component which is not found in texts (Idris & Idris, 2021; Maxwell, 2015). Saliés and Shepherd (2016) and Buhai and LeancĂ (2016), stated that CMC platforms include LMSs like Moodle/Learn and Edmodo, which save all content from group conversations, private messaging, and uploaded course content. With the successful authentication into the system with their account login

credentials, the stored content is accessible. The embedded collaboration function, the online forum discussion, and the users' ability to publish course material with a direct link to the material are all unique LMS features. However , Da Rocha and Lombard (2013), propose that LMS are unreliable and have been chastised for downtime. Another disadvantage of using LMS is that they do not enable instant communication, requiring students to log in on a frequent basis to check for new information.

It was highlighted by Aydin (2014) that, generally, the research that investigates the use of social networks in formal education is scarce. Social networking platforms which enable CMC like Facebook have 100% uptime, however LMS often have downtime. According to the research studied, lecturers and students do not prefer to use social media as an instructional platform. Social media is one of the CMC platforms that has mixed reviews on its use for education. This is due to the lack of personal privacy and professionalism that lecturers and students perceive in the usage of social media networking platforms, as users in these platforms are required to create personal profiles where they can share personal posts, and even be able to upload images that are personal (Da Rocha & Lombard, 2013; Giannikas, 2020). Venter (2019) highlighted that almost 25% of Facebook users share highly personal and sensitive information, partly due to the lack of nonverbal cues where you cannot see the receiver's reaction which makes some Facebook users more open to sharing personal information. Teclehaimanot and Hickman (2011), found that male students perceived the interactions with lecturers on Facebook to be more appropriate than the female students. Furthermore, these studies found that interacting on Facebook helped people cope with the problems of adjusting to a new society. The study found that lecturers and students that participated in the study were unaware of Facebook's ability to create private groups for a specific topic that did not involve the disclosure of a person's personal profile (Da Rocha & Lombard, 2013). Lecturers and students, on the other hand, are optimistic about the potential benefits of Facebook in formal education. Social media networking sites when compared to LMSs are more effective as students become interactive when they are familiar with the platform they are using, Facebook and Twitter being the most used social media networking sites in tertiary education (Giannikas, 2020; Mpungose, 2020a).

The usage of instant messengers as a supplement to emails by users can help to improve the social network and, as a result, the communication flow and, as a result, groups performance (Martin & Bolliger, 2018). However, in instant messaging tools users can ignore incoming communications

without fear of offending the sender because the application's availability signal can indicate that the receiver is available however the sender has no way of knowing whether the recipient is actually close to the app. Instant messengers require a portion of the institution to be willing to make use of it to be successful, and they are viewed as a more informal CMC platform that allows users to avoid formal phone calls. Because the ability to transmit key ideas and concepts effectively through IM is debated, use of IM may diminish with urgent jobs and be replaced with face-to-face contact or video conferencing (Honlinger, 2018). This study will provide insights into the CMC platform preference for tertiary students in South Africa during the Covid-19 pandemic. There might be an evident shift driven by the pressure on the education industry.

2.2.6 Emoticons

People frequently rely on nonverbal behaviors to properly express emotion in face-to-face conversations (Togans et al., 2021). In text-based CMC this poses a challenge as there is no nonverbal communication. More effort is required in order to express emotion. Emoticons were introduced to bridge the the gap between face-to-face communication and CMC by providing users of CMC with 'nonverbal' symbols (Gesselman and Garcia, 2019). For messages that a meant to be emotional, where the sender's feelings are made evident, nonverbal communication is very significant. However, the best way to express emotion and attitude is through face-to-face conversation (Venter, 2019).

CMC lacks body language, tone and facial expressions. Which can lead to misunderstanding or even conflict. Literature reviewed argues that the primary reason for emoticons is to substitute for nonverbal cues (Togans et al., 2021). However, the use of emoticons does not always guarantee easier computer mediated communication. As the receiver could be left confused with the use of emoticons since people can have different interpretations of the same emoticon. However, it is still possible for the receiver to understand the message with more certainty if the message is aligned to the emoticon (Venter, 2019). This could be why Togans et al (2021) argues that there is no one definition for the use of emoticons on CMC platforms because digital messaging is not consistent across cultures. Similarly, different age groups interact with digital messaging differently because of their varying levels of being digitally savvy. Therefore, research that is specific to the varying significant criteria such as age, culture and industry on the use of CMC is important. Carr (2020), states that technology is evolving and increasingly, there are multi-sensory CMC platforms that make the challenges of nonverbal cues a thing of the past. Multi-sensory CMC definitely

introduces additional cues to just text, however, there are few CMC platforms in education that would be compatible with this functionality.

2.2.7 Tertiary Education Institutions and Societal Responsibility

As society evolves and competitive pressures increase, corporations and institutions will be required to manage diverse demands such as strategic changes, innovative changes, and dynamic economic conditions, posing enormous challenges to both the private sector and tertiary education institutions. Access to tertiary education is becoming increasingly important for success in a globalized world where people must demonstrate their ability to learn and adapt, and low-skilled professions are being increasingly mechanized. Fair access to tertiary education, which is the underpinning of a prosperous system, is reliant on fair access to the labour market (Chaunda & Eunice, 2019). For all aspiring students of tertiary education, tertiary selection is a critical decision that influences their dedication, motivation to study, and career possibilities. This competition has put significant pressure on tertiary education's essential activities, such as teaching and learning. It can substantially impact how and what students learn, as well as how teaching, learning, and knowledge are evaluated (Suslenco & Doncean, 2021). The demand for access to tertiary education is increasing as competition for current and the growing numbers of jobs require tertiary level skills (Lauder & Mayhew, 2020). Tertiary education institutions must identify the assets that will set them apart and ensure their long-term viability (Julia, 2017). In many parts of the world, demand for tertiary education has outpaced supply, particularly in emerging countries where the gross enrolment ratio is still fairly low (Council, 2012).

Tertiary education institutions are transformational leaders because they are places where an academic climate prevails, combined with a set of values that aid in the development and establishment of competences and abilities that ensure graduates' competitiveness. Due to an increase in competitiveness, tertiary education institutions have been pushed to seek out areas of competitive advantage in order to recruit students from across national and international borders (Mishra & Gupta, 2021). Access to tertiary education is critical for socioeconomic progress and the development of a highly skilled and adaptable workforce. The evidence and knowledge of socioeconomic and ethnic disparities in university access are extensively documented (White & Lee, 2020). Students joining the tertiary institution are frequently thrown into a residence system, where they are often presented for the first time with people who are vastly different from those

they know at home (Sutherland, 2013). However research findings by Dumford et al. (2019) suggest that convincing students to stay on campus is beneficial as students feel a sense of belonging, which has a positive effect on the students wellbeing and academic performance. In addition to that, there is extensive evidence focusing on the substantive literature which shows that students' choice of course and institution is influenced by their proximity to a university (White & Lee, 2020).

2.2.8 Academic Performance

In tertiary education institutions, the most pressing question is how to increase students' academic performance. The literature studied highlights that most universities around the world, particularly in Africa, are putting in place methods to help students enhance their academic performance (Tanga & Luggya, 2020). According to research, having students compete in small groups is far more effective than having them work alone, and students' motivation is intrinsic rather than extrinsic when they work in small groups (Tanga & Luggya, 2020). This suggests that students should participate in group work or peer instruction, in which they assist one another by challenging their peers' ideas through discussion. It is believed that learning flourishes in a collaborative learning setting when students socialize by having content-related dialogues among themselves (Hrastinski, 2009). One of the important abilities of most CMC platforms is the collaboration opportunities it provides, meaning that with e-Learning the opportunity for collaboration is not missed. Collaborative learning is a method of teaching and learning in which a group of students interacts collectively to solve a problem or accomplish a task. Previous research has shown that E-learning has several advantages for students since it is student-centered, adaptable, and may promote student engagement by providing tools that are both asynchronous and synchronous including e-mail, forums, chats, and video conferences (Coman et al., 2020). E-Learning enables control over the time spent on learning, the time saved as a result of no traveling being required and control over content (Beyrouti, 2017). Because it is a web-based system, no additional tools are necessary, and once the content is posted, users can access it at any time. Students' perceptions of e-Learning may have changed this paradigm shift, and their perceptions may differ from those obtained in research before the pandemic. However, there are still challenges with e-learning that students face such as a decrease in motivation, health issues from looking at the screen for hours, emotional health issues from isolating, and feelings of frustration, which are mainly challenges that the lecturers can help to eradicate. When compared to full-time higher education, distance tertiary education graduation rates are low — generally less than 20% compared to full-time UK rates of around 80%– a phenomenon known as the 'distance education

deficit' (Inkelaar & Simpson, 2015). This suggests that the personal human support or interactions influence the success rate. Tertiary education institutions that sent their students motivational emails regularly saw a decrease in the number of non-completion of the course by the students (Inkelaar & Simpson, 2015). There is little indication that performance-based funding is linked to better student outcomes, according to studies (Zerquera & Ziskin, 2020). The outcomes of this study should assist in highlighting the impact that a successful student-lecturer relationship can have in alleviating challenges experienced in e-learning such as feelings of frustration and lack of motivation.

2.2.9 Factors Influencing the Successful use of CMC

Aydin (2014) states that lecturers' roles as assessors are what creates the lack of interaction between lectures and students because it is not often that lecturers' take on roles of counselors, participants, prompters or investigators. Furthermore, literature shows that students checked other resources before emailing their lecturers, because students were too embarrassed to contact lectures half the time (Merdian & Warrior, 2015). Lecturer approachability is key to the students' adoption level of CMC for improved learning outcome. Providing multiple platforms for interacting with students to create one's social presence as a lecture is an integral component (Dixson (2012); Merdian & Warrior (2015). Similarly, Su and Wu (2016) and Bolkan and Holmgren (2012) explain that, increasing the opportunities for lecturer-student interaction provides the opportunity for the lecturers to also clearly grasp the students' learning state, in doing that, the lecturer has the ability to provide appropriate and timely assistance. Research findings by Warren and Lessner (2014) and Salies and Shepherd (2016) show that when lecturers demonstrate empathy towards their students through verbal and physical exchanges, there is an increased possibility that the lecturer-student interaction will yield the intended academic and behavioural outcomes. Similarly, Bolkan and Holmgren (2012) state that politeness does, in fact, influence lecturers' levels of affect toward students. The use of emoticons in CMC strengthens the affective relation between the lecturer and student which would be under construction (Salies & Shepherd, 2016). Creating a sense of a 'shared' alignment when communicating with students by using inclusive, plural pronouns such as 'we' , as a lecturer makes the student feel supported (Maxwell, 2015). However, Bolkan and Holmgren (2012) state that one's culture can influence the perception of politeness. This suggests that lecturers are more motivated to communicate with students that they have a tertiary positive affect towards. For students that are shy, through CMC lecturers are more approachable as the psychological barrier is eliminated (Merdian & Warrior, 2015; Warren and Lessner, 2014).

2.2.10 The Impact of Covid-19 on Online Learning

The World Health Organization (WHO) declared COVID-19 as a global pandemic on 11th March 2020 (Adnan & Anwar, 2020). Certainly, due to the crisis caused by the corona virus COVID-19, a lot of educational institutions had to make emergency provisions to continue teaching and learning while social distancing among many other affected industries (Motala and Menon, 2020; Adnan and Anwar, 2020; Nuere and de Miguel, 2020). The educational system worldwide was affected which resulted in widespread closure of institutions in almost all the countries and educational institutions had to find ways for contactless learning and as a result we saw e-Learning grow(Umar Buba et al., 2020; Idris & Idris, 2021). A paradigm shift was required of the education industry. In South Africa, further threats to education as a public good as a result of the social-economic divide in our society, many universities were not able to set up effective online learning immediately because of the lack of infrastructure such as internet facilities (Motala and Menon, 2020; Adnan and Anwar, 2020). In the South African context, the feasibility of e-Learning is limited by the digital divide as there is lack of access to computers and the internet for some. This is however being remedied by the process that has been implemented by universities to provide students with free laptops and Wi-Fi (Mpungose, 2020). Nuere and de Miguel (2020) and Khatak and Wadhwa (2020) state that the willingness of teachers to be innovative regardless of the lack of necessary tools, is part of the solution to effective online learning. The affordances and opportunities provided by CMC during COVID-19 is not to just be seen as an emergency remedy but rather as a catalyst that called attention to the need for educational change towards inclusive, flexible and enriched educational strategies (Dube and Scott (2017); Rapanta and Botturi (2020); Nuere and de Miguel (2020)). Nuere and De Miguel (2020) stated that online learning does not suffer as a result of the lockdown and isolation. However, arguably there are some factors that are affecting work productivity negatively, such as the uncertainty brought by the pandemic (Christian et al., 2020). Furthermore, universities need to provide good technology for all employees along with e-services to channel all ICT challenges faced to ensure that the process of online learning and social distancing is   facilitated through ease of use and a positive perception for both employees and students (Motala & Menon, 2020).

2.2.11 E-Learning

Professional networking, personal networking, academic collaboration, collaborative research are all possible through CMC platforms including online social networking platforms, e-mail, and instant messaging tools. There is a rapidly growing population of enthusiastic adult learners, knowledge acceleration, and the pervasiveness of CMC. Higher education institutions are currently

witnessing a transformation from traditional face-to-face content delivery and learning, to an entirely online content delivery (Baldelli et al., 2018). Having access to ICTs does not always imply having access to technical resources for education as there still are a slew of economic, administrative, and technical hurdles to overcome.

Face to face communication entails two or more individuals conversing in person, with the ability to give and receive instant feedback, which is not always the case with computer-mediated communication. Online communication is less stressful compared to face-to-person contact (Babni, 2018). Synchronous technologies, such as Google Meet, Zoom, and other platforms that allow students to speak in real time, are one of the tools that have been developed for online learning in recent years. Video conferencing is the one tool that provides an interaction that closely resembles face-to-face communication (Meyer et al., 2016). Through the adoption of online learning during COVID-19, there have been multiple emerging determinants of effective CMC from various studies around online presence. Nuere and de Miguel (2020) stated the situation is still strange and quite different, and that online technology in education has an impact on stress. Furthermore, Christian et al. (2020) breaks down presence required from the teachers during online learning into three groups, namely cognitive presence, social presence and facilitatory presence, similarly to Anderson and Dron (2011). E-Learning has become the reality for educational institutions during this time. The aim of e-Learning is to integrate technology with educational courses through multiple delivery methods, which includes classroom based, web-based, and video conferencing (Earon, 2020; Mpungose, 2020). E-Learning provides the ability to reach a greater audience and has been found to be much more cost effective for teaching a large number of people (Umar Buba et al., 2020; Earon, 2020; Idris & Idris, 2021). Special needs students are afforded the opportunity to attend courses without the need to travel to a specific physical location (Umar Buba et al., 2020; Earon, 2020). Alternatively, face-to-face learning takes place within a specified time and location (Mpungose, 2020). CMC increases the reflective time for the students and allows them the freedom of time to formulate the response. Educational institutions are now able to provide an immersive online learning experience that includes video chats, virtual reality, and augmented reality. This development is a result of efforts to get around distance limits and attendance numbers. In face-to-face lessons, male dominance was typical, but gender inequalities in contributions vanished online (Tolmie & Boyle, 2000). Despite a low percentage of active contributors, huge groups can achieve this by drawing contributions from a vast number of members adopting engagement strategies (Martin & Bolliger, 2018).

E-Learning is also described as a system used for teaching, or a network where information is sent through electronic resources to a large audience regardless of location and time (Coman et al., 2020). Initially when the transition to e-Learning was first discussed the main issue was not whether online teaching and learning methods could provide high-quality education, but rather how schools would be able to implement online teaching and learning in large numbers (Leiba, 2021). More so without having any training, with limited pedagogical and technological expertise and resources, and with no preparation, most teachers had to transition from face-to-face teaching to remote teaching in a very short time. The wide range of CMC platforms that have become available globally were on of the main facilitators of e-Learning, as we see e-Learning being conducted through video conferencing platforms, social media networks, LMSs and more commonly emails. This was echoed by Coman et al., (2020) "…Eight principles that stand at the core of effective online teaching, such as: encouraging contact between students and faculty, collaborative learning, quick feedback, active learning, task time—encouraging students to allocate more time for completing tasks, high-expectations—the teacher should communicate their expectations in order to encourage and motivate students, diversified learning, and technology application" .

Video conferencing provides the ability to facilitate e-Learning for educational institutions. When video conferencing attendees can see each other through turning on their device cameras, they are able to see each other and this enables for immediate feedback through facial expressions which makes this CMC more effective (Idris & Idris, 2021). However, it was found that there are increased opportunities for distractions and technical issues with virtual classes (Pal et al., 2021). When video conferencing attendees can see each other through turning on their device cameras, they are able to see each other and this enables for immediate feedback through facial expressions which makes this CMC more effective (Idris & Idris, 2021). The literature reviewed stated that with video conferencing there will be an increased number of people completing their advanced degrees (Earon, 2020). Video conferencing platforms such as Zoom also provides video conferencing and messaging capabilities that are hassle free and promotes quick adoption.

Even though e-Learning is still at its early stages in South Africa, the necessary ICT infrastructure is available. The country has world standard internet available. The youth is technology savvy. Shining a light on the possibilities of e-learning in South Africa will assist accelerate the conversation and evolve education in the country. High-quality education results in a high-quality workforce. Therefore, this study will indirectly impact the economy of the country entirely.

2.3 The Study's Conceptual Framework

A discussion of the main constructs used for the study's conceptual framework is provided in the current section.

2.3.1 Introduction

In the proposed research, a conceptual framework will be used. The major focus will be on three constructs identified from the literature review. These three constructs are immediacy, professionalism and support. This conceptual model will guide the researcher to identify factors that enable a successful CMC based interaction between lecturers and students. From a research nomenclature perspective, the study's main theoretical constructs identified as immediacy, professionalism and support constitute the independent variables while success has been labelled as the study's dependent variable.

2.3.2 Technology Acceptance Theoretical Model

Taherdoost (2018) and Dwivedi et al. (2019) provide a comprehensive overview of technology adoption theoretical models. This discussion is centred on the more prominent models that have been used to explain human acceptance and adoption of technology. These models include the Technology Adoption Model (TAM) by Davis (1993) and its variants (such as TAM 2) as well as the Unified Theory and Use of Technology (UTAUT) by Venkatesh et al. (2003) and its variants (such as UTAUT 2) as well as the Diffusion of Innovation Theory (Rogers, 1995). As Taherdoost (2018) and Coman et al. (2020) explain, the focal point of these models is to provide a cognitive and behavioural explanation for technology acceptance that is strongly aligned to the concepts of ease of use and expected performance. However, as Scherer et al. (2019) and Masrom (2007) explain that while technology acceptance theory has been widely validated in an educational context, there are numerous cases of inconsistencies and possible controversies when it comes to the use of technology adoption theory. The theory as an exclusive theoretical source from which to understand human behaviour of technology acceptance in an educational context. In a study by Park (2009) to understand student's behavioural intention to use e-learning tools, TAM was used as the underpinning theoretical model. However, the empirical phase of the study revealed that while ease of use and performance expectancy did contribute towards students' intention to use e-learning tools, there were other variables that played a more significant role. These variables were discovered through a process of factor analysis and structural equation modelling. In the study by Park (2009), variables such as perceived efficacy and social norms were unearthed and gravitated

the theoretical underpinning for the study towards Bandura's Social Motivation Theory. This kind of exploratory research into technology adoption and e-learning is also provided in Roca et al. (2006). Here, numerous additional constructs such as information and system quality as well as cognitive absorption, interpersonal experience added to enabling a better understanding of students' intention to use e-learning platforms.

The purpose of the preceding discussion is to explain that technology adoption theory provides a generic platform from which to understand human acceptance and adoption of technology. However, in the specialised domain of teaching and learning Mezirow (1981) advocates the use of theory that reflects the reality of practice. It is within this context that the current study makes a deviation from generic technology adoption constructs and opts for a conceptual model based on research activity in the domain of computer mediated collaboration (CMC) at tertiary education level. In this study only the 'behavioural intention to use' construct was borrowed from the UTAUT model as the theoretical underpinning for the study towards the CMC Adoption Model

2.3.3 The Determinants of Effective CMC

This research examines CMC factors as the determinants for effective use of CMC; two reasons explain this research focus. First, CMC users all over the world often communicate through CMC for personal reasons which makes the communication very informal; when communicating with lectures however, the dynamics change as messages won't have as many emoticons and won't be as informal. Second, effective CMC strategies by the lecturers influence perceived student value. As a result, through an assessment of current CMC experience with lecturers in higher educational institutions, this study focuses on identifying significant precursors of perceived student value. The framework presented in Figure 2.1 identifies key factors that influence effective CMC in tertiary educational institutions. The core variable is effective CMC, and several determining variables of perceived student value are included. Based on a survey of conceptual work, a collection of propositions has been established. As already mentioned earlier, technology is constantly evolving and so are the peoples' behaviours and attitudes towards its use and application of it. What sets the model established in this study apart from its predecessors is the inclusion of factors that are only relevant to tertiary institutions and the advent of effective CMC.

2.3.4 Literature Review Underpinning the Study's Conceptual Model

Some CMC studies such as Maxwell (2015) and Warren and Lessner (2014), used a conceptual framework. Walther (2011) argues against the use of old frameworks and theories in the context of new and evolving technology. One of the arguments is, "whether and how new technologies affect the utility of theories that were developed in the context of somewhat older technological contexts" (Walther, 2017, p. 470). He believes that as technology advances, so do people's attitudes and behaviours regarding its usage. Regardless of his arguments, some theories might still be applicable. Bolkan and Holmgren (2012), employed the politeness theory in conjunction with the rhetorical/relational aim theory in a quantitative study in the United States, whereas Young et al. (2011) used the Perceived Outcome Value Theory (POV). Bolkan and Holmgren (2012), found that using politeness strategies when making special requests of lecturers does influence the lecturer's levels of affect towards the students. Furthermore, lecturers having a higher positive affect towards students, results in increased motivation to work with the students and a higher perception of the students' competence and potential. Young et al. (2011), used the POV because the focus of this research was on email communication, because emails are often the first ever communication students receive from lecturers, they therefore serve as the foundation of the students perceived outcome value of creating the student-lecturer relationship. Findings of this research highlighted the importance of emails in fostering a student-lecturer relationship via CMC, as well as the fact that students' perceptions of the closeness and affinity portrayed in their instructor's e-mail communication may better predict whether they value developing a student-lecturer relationship. Similarly, Anderson and Dron (2011) investigated the taxonomy of learning, teaching, and assessing using a more current paradigm, the Community of Inquiry Model. In the taxonomy of learning, teaching, and assessing, the Community of Inquiry Model examines teaching presence, cognitive presence, selecting content, social presence, and supporting discourse in the academic research. A common theme that emerged from previous research of factors that influenced successful/positive CMC were frequency of communication, immediacy, intimacy of communication and professionalism.

The researcher will employ a conceptual model as the guiding framework for the current study (see Figure 2.1). The model is based on three primary constructs that were discussed in depth in the literature study. Immediacy (verbal and nonverbal immediacy), professionalism, and support are the three constructs. Providing feedback, making use of students' names in comments, and response tone are all examples of verbal immediacy (Taylor et al., 2011; Young et al., 2011). Nonverbal immediacy cues include the time taken to respond to the students CMC and professional

address (Sun & Wu, 2016). When video conferencing attendees can see each other through turning on their device cameras, they are able to see each other and this enables for immediate feedback through facial expressions which makes that CMC engagement more effective(Idris & Idris, 2021). When using CMC in the absence of video, replying promptly, writing in a friendly tone, and providing a secure psychological environment are all important because they are perceived as closeness to the students, encouraging students to engage more and perceive the interactions as valuable(Conaway et al., 2005). Immediate behaviors are a key variable for inducing a liking among communicators (Kelley & Autman, 2014).

Professionalism encompasses the sender's shown textual etiquette, the sender's expected receiver's attitude, and the sender's perceived consequence (Teclehaimanot & Hickman, 2011; Bolkan and Holmgren, 2012; Aydin, 2014). For effective delivery in video conferencing, having the presenter introduce themselves, set meeting rules, set an agenda and have a clear outline of educational content to be delivered is essential(Idris & Idris, 2021). Furthermore, a misunderstanding of these set rules can provoke conflict in the case where participants with different expectations attempt to interact (Connor, 2003). Idris & Idris, 2021, highlighted that users of video conferencing tools for e-Learning must demonstrate professionalism and uphold etiquette with regards to attire, background and location. Students need to be provided with guidelines on honoring the rules of business etiquette, these guidelines include teaching students about professional CMC expectation when it comes to tone, clarity & timeliness (Kelley & Autman, 2014).

Social cues, approachability, emotional availability, and plural pronoun (we, us) usage are all examples of support. Warren and Lessner (2014) emphasized that the more empathy teachers show in their verbal and physical contacts with students, the more likely their interactions will result in the desired academic and behavioural outcomes. Bolkan and Holmgren (2012) found that the use of politeness strategies on CMC, does in fact, increase the receiver's levels of affect towards the sender. The lack of interaction between lecturers and students may indicate that lecturers do not take on roles as organizers, prompters, counsellors (Aydin, 2014).The presence of these constructs influences the behavioural intention to use CMC between lecturer and student. The variables used to measure each construct were validated using Confirmatory/ Exploratory Factor Analysis once the data has been collected.

Each of these can positively influence perceived student value in a tertiary educational institution. Strong perceived immediacy, for example, can be advantageous. However, if the immediacy is poor, it can be expensive and reduce the CMC's effectiveness with lecturers. The student will not be motivated to use CMC. Furthermore, this study aims to highlight the role that the lecturers need to play over and above the superiority role that the lecturer-student relationship has afforded them, such as encouraging the use of CMC, showing empathy and demonstrating immediacy. Literature reviewed has highlighted the importance of the people factor in a tertiary institution for the students, as there has been evidence suggesting a decrease in motivation, health issues from looking at the screen for hours where as a remediation sending motivational emails regularly saw a decrease in the number of non-completion of the course by the students (Inkelaar & Simpson, 2015).

2.3.5 Conclusion of the Conceptual Framework Discussion

The aim of this section was to provide information about the conceptual framework which explain the relationship between the dependent and independent variables that is expected to exist and will be explored in this study. The independent variables which play the role of being determinants for successful CMC are immediacy, professionalism and support. The dependent variable is the user's behavioural intention to use CMC. This chapter also provided reviewed literature about factors that previous studies had indicated having an influence on the success of a CMC relationship in education institutions, the corporate sector and for personal use. The principal focus of this section was on the conceptual framework used and a breakdown of its different constructs. The following chapter provides the research methodology used and a breakdown of its advantages and disadvantages.
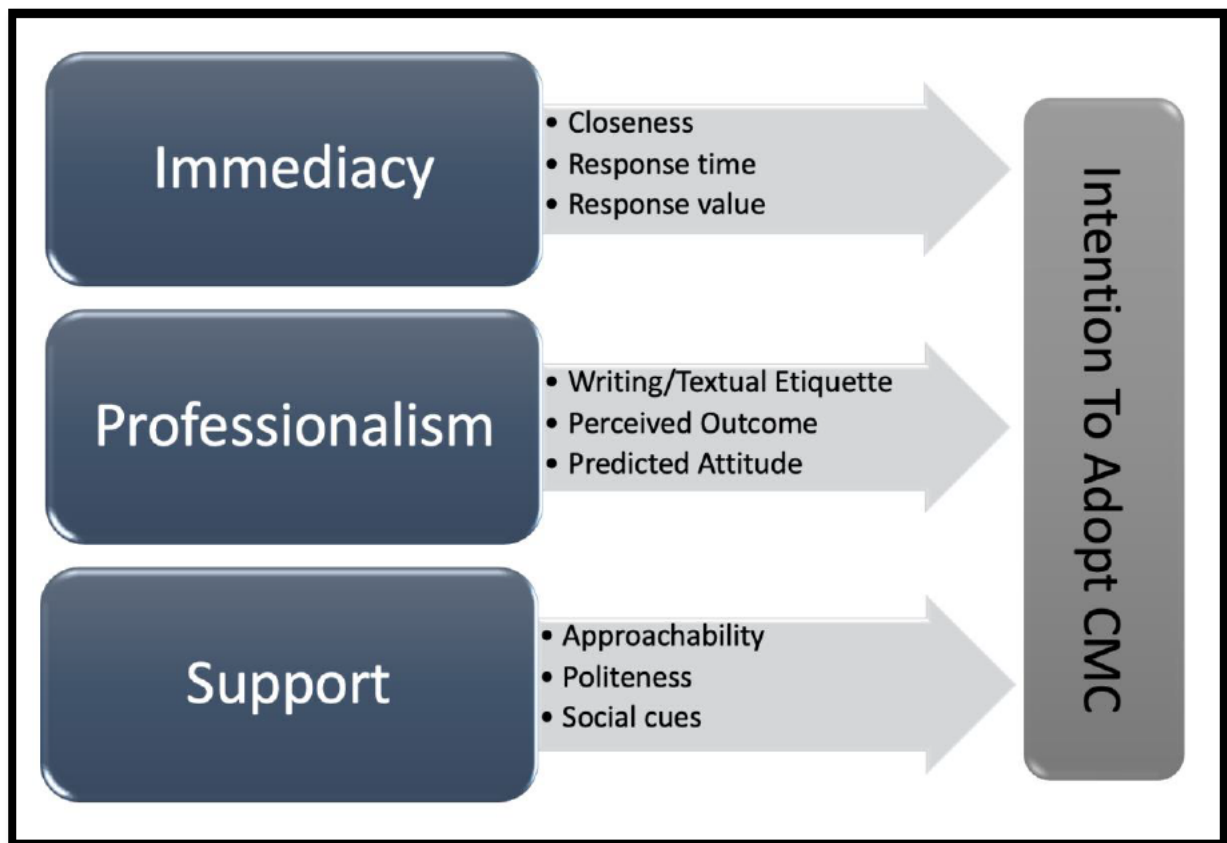
Figure 2.1: CMC Adoption Model

Figure 2.1 visually depicts the conceptual model developed by the researcher, to evaluate the factors that influence the Behavioural intention to use CMC in a tertiary educational institution. The factors that were identified as potentially having a significant influence on the behavioural intention to use CMC are *immediacy, professionalism and support*. A brief list of attributes have been highlighted against each of the three independent variables. These posit that an effective CMC interaction is defined as the behavioural intention to use CMC between a lecturer and a student that is perceived as prompt, professional and supportive by both the students and lecturers. Findings from this study will provide an understanding of these factors that influence an effective interaction between lecturers and students through CMC, and allow for the proposal of adequate strategies to foster such kind of interaction.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The first section of this chapter discusses research design. The study takes place in a tertiary education institutes and as such the target population and ethical considerations specific to this context is the focus area of the discussion. Furthermore, the research instrument and the process used to choose the sample size is discussed. The different tests that the study aimed to do in order to answer the research questions which denotes the data analysis is also discussed. This chapter ends with a discussion of limitations that were experienced and a conclusion.

3.2 Research design

A research design is a strategy for collecting data in an empirical study (Bhattacherjee, 2012). An exploratory research design will be used in this study. Because there are no contemporary theories or frameworks on the relationship between CMC and education, a conceptual model is employed as a framework (Walther, 2011). In an exploratory research approach, the study aims to discover and analyse the constructs of the proposed conceptual framework. The underpinning of any research, the essential values of research, is referred to as research philosophy (Haq, 2015). The researcher is guided by philosophy in making the best decisions possible concerning the method, strategy, data gathering techniques, and processes for answering the research questions. Epistemology, ontology, and axiology are the three basic assumptions of philosophy (Batra & Menz, 2015). Epistemology is concerned with the researcher's assumption of valid knowledge and how he or she acquires it (Batra & Menz, 2015). Ontology refers to assumptions about the nature of reality (Saunders et al., 2019). Axiology seeks to determine the influence of ethics and values. These three assumptions are guided by the five major philosophies which are realism, positivism, pragmatism, interpretivism and postmodernism (Saunders et al., 2009). This study used the positivism paradigm as its research method.

3.2.1 Realism

"Realism focuses on explaining what we see and experience, in terms of the underlying structures of reality that shape the observable events" (Saunders et al., 2019). Realism is a part of epistemology that shares many characteristics with positivism, such as the use of a scientific process in the development of a study. The researcher attempts to minimise biases and errors while

remaining objective, and further makes use of historical knowledge through a variety of methods (Batra & Menz, 2015). Realism is value-laden.

3.2.2 Positivism

"Positivism relates to the philosophical stance of the natural scientist and entails working with an observable social reality to produce law-like generalisations" (Saunders et al., 2019). The positivist paradigm should be performed without the researcher's influence, and the results should be repeatable by someone else in a similar setting. Positivism makes quantitative methods such surveys, and experiments which means the researcher is detached from what is being researched (Batra & Menz, 2015; Haq, 2015). Positivism generally applies the scientific method to study human actions. The researcher is objective and makes deductions from the facts and observations.

3.2.3 Pragmatism

"Pragmatism asserts that concepts are only relevant where they support action" (Saunders et al., 2019). Pragmatist research begins with a problem and attempts to provide practical solutions that can be applied in the future. This philosophy is both subjective and objective, reality and value-laden and it uses a variety of methods to find the practical solutions to the problem (Saunders et al., 2019). Pragmatists recognize that there are numerous ways to interpret the social world and that various methods can be used to interpret the world; however, this does not imply that pragmatists utilize all methods; rather, pragmatists use the most appropriate and correct method to the situation.

3.2.4 Interpretivism

Interpretivism is concerned with interpreting people and their various circumstances in order to comprehend them in the context of their social lives (Saunders et al., 2019). Interpretivism is concerned with interpreting people and their various circumstances in order to comprehend them in the context of their social lives. Interpretivism focuses on multiple meanings, narratives and the researchers are not detached from the study as it seeks to gain an understanding of reality in general which introduces the element of objectivity (Batra & Menz, 2015).

3.2.5 Postmodernism

"Emphasises the role of language and of power relations, seeking to question accepted ways of thinking and give voice to alternative marginalised views" (Saunders et al., 2019). Postmodernism is quite complex as it focuses on the oppressed by analysing power relations to find meanings. Postmodernism uses various methods, however it is generally qualitative as it is a philosophy that requires in-depth investigations in nature (Saunders et al., 2019).

3.3 Research Approaches

There are three approaches to research. These three types of research approaches are qualitative research, quantitative research, and mixed method research.

3.3.1 Qualitative Approach

Qualitative research approach is used for an in-depth analysis of a phenomenon. The qualitative method aims to understand and explain the phenomena through using a small sample size. The research instrument in this method applies probing questions that seek to find greater explanation that may be unique to the respondent through the use of data instruments such as open-ended questions, in-depth interviews and observations (Creswell, 2013; Haq, 2015). Qualitative studies value trustworthiness of the data and the research findings. This nature of the data instrument is quite dynamic and it is called semi-structured. Qualitative methods result in large amounts of raw data that may be in audio, video or textual format which require thematic analysis that can be time consuming and tedious (Batra & Menz, 2015; Daniel, 2016). The researcher is expected to make use of descriptive write ups of the findings that can be subject to judgement. The lack of descriptive statistical analysis and statistical inferences can make it difficult to simplify the findings.

3.3.2 Quantitative Approach

The quantitative research approach on the other hand, is used for an objective analysis of the data. The quantitative method makes use of large sample sizes that are meticulously estimated based on the target population. This allows the researcher to make generalizations about the study's findings for a greater population (Haq, 2015). The research instrument in this method applies closed-ended questions which provide limited insights. However, the data is analysed with ease through concise use of statistics on statistical software platforms. The data collection techniques used for

quantitative research includes surveys and online questionnaires. This approach does save time, however it does lack in-depth insights (Batra & Menz, 2015).

3.3.3 Mixed Methods Approach

The mixed method approach entails a combination of the qualitative and quantitative approach to broaden the understanding of the researched topic (Creswell, 2013). Triangulation of the data is achieved during the analysis phase where the researcher attempts to identify patterns from the qualitative and quantitative phases of the study that provide a measure of corroboration between the different research paradigms. This approach does take longer to collect and analyse the data. However, the quality of the data is stronger which allowed for better generalisation of the study findings.

3.3.4 Approach adopted for this study

For the purpose of the current study, the quantitative approach was employed. This is because quantitative research is used when the researcher aims to determine a relationship between variables as means to contradict or verify assumptions or the literature reviewed (Haq, 2015). The present study tests the influence of immediacy, support and professionalism on the behavioural intention to use CMC of users. The use of statistical data analysis will enable the researcher to make inferences that will provide insights on the research questions and objectives.

3.4 Research Techniques & Procedures

The research technique that is used in a study is a crucial component and there are multiple factors that must be considered before deciding on a research technique. These factors include research budget, literacy of participants, sample size, access to potential participants and age group of participants(Mathers et al., 2007). Upon evaluation of all possible factors that affect this study, the researcher used a survey strategy to collect data, as the survey strategy is also mostly used when the research uses a deductive approach.

The questionnaire (Appendix J) was administered online, which allowed the researcher to remain within restrictions as this study was conducted during the COVID-19 pandemic (Rapanta et al., 2020). Since this was a quantitative research study, the online research questionnaire used mostly closed-ended questions as the means to collect data. The research questionnaire had two pages.

The first page includes a detailed consent form that aims to provide the user with all the information they may want to know prior to partaking in the survey. The researcher explains the topic and the confidentiality of any information received from the participant. Before the participant is allowed to proceed to the following page, they are required to duly sign and date. The next page has been broken down into six sections and these sections are demographic data about the participant and information about the school they are registered under within the tertiary institution; participant's preferred CMC platform to communicate with lecturers; participant's motivation for using CMC. Lastly the three constructs of the conceptual framework which are demonstrated immediacy, demonstrated professionalism and demonstrated support are also outlined. The online questionnaire consisted of simple questions that enabled the respondents to have a clear understanding of what was required. All the sections in the questionnaire preceded with detailed instructions on how to supply answers to the questions. There were five sections that used a five-point Likert Scale. The Five-Point Likert scale is code within ratings from 1 to 5, with *5 = "Strongly Agree"* and 1 = *"Strongly Disagree"*. The respondents had to select the degree to which they agree or disagree with the provided statements. One of the questions was open ended, this is because under the participants preferred CMC platform to communicate with lecturers, the researcher provided the participants with an option to provide a preferred CMC platform that was not mentioned in the online questionnaire.

Questionnaire - Section A

This section of the research questionnaire is about the demographic information about the participant. This section has three questions and the questions that were asked in this section included participants demographic information such as age, gender and UKZN school.

Questionnaire - Section B

Section B is about determining the participant's preferred CMC platform for communicating with their lecturers. A list of CMC platforms was collated for the participants to indicate their preferred CMC platform from a list that included eMail, Zoom, Moodle/Learn, Google Meet, Edmodo, MS Teams and Facebook.

Questionnaire - Section C

This section served a dual purpose. The first was to establish reasons for the adoption of the CMC platform and the second was to establish whether students have an intention to adopt the CMC platform. From an empirical perspective, this section of the questionnaire represented the dependent variable in the study which was a student's adoption/intention to adopt the CMC platform for teaching and learning.

The questions in this section were informed by a knowledge of factors that influenced the adoption/intention to adopt the CMC platform as highlighted in the study's literature review. The first question enquires whether the participants use CMC more than face-to-face communication or not and whether the participants preferred to use CMC. The second question aimed to investigate the convenience of using the CMC platform. The third question focuses on the role that the human behavioural characteristic that introversion or shyness plays in the adoption/intended preference for CMC in a classroom environment. The final question looks at the viability of the CMC platform as a tool to enhance/enable/sustain an academic relationship with the lecturer.

Questionnaire - Section D

This section is focused on the Demonstrated Immediacy Construct, it consists of 4 questions/questionnaire items. It asks about questions that are about verbal and non-verbal Immediacy. These questions are aimed at determining if the lecturers demonstrate immediacy to the student when using CMC and whether students are more motivated to use CMC with their lecturer if there is a demonstrated immediacy by the lecturer.

Questionnaire - Section E

This section is focused on the Demonstrated Professionalism Construct and it consists of 7 questions/questionnaire items. The section aimed to establish the role that the details of the interaction between student and lecturer on a CMC platform plays in terms of its influence on adoption behaviour. The details of this interaction focus on aspects such as the writing/textual etiquette between the sender and receiver, the sender's perception of the receiver's attitude towards the interaction and the outcome of the interaction from the perspective of value obtained or the quality of the engagement. The afore-mentioned criteria of professionalism manifests in the writing etiquette in terms of style and tone. If this is perceived to be positive, then it is theorised that the participants will want to sustain the use of the CMC platform. This section also establishes whether students make an effort to emulate their lecturers in terms of the writing/textual etiquette on the CMC platform. This section also seeks to establish whether students have a higher level of motivation to use CMC if a lecturer makes an effort to uphold ethical behaviour while also maintaining a measure of personalisation by adopting simple tactics such as referring to the student by his/her first name. The final part of this section touches on the shortcoming of not being able to use body language as a form of expression and whether this impacts on the level of professionalism that is perceived to be displayed by the participants in the CMC platform.

Questionnaire Section F

This section is focused on the Demonstrated Support Construct, it consists of 5 questions/questionnaire items. It seeks to enquire about the support perceived by the student that is demonstrated by the lecturers. Questions focus on social cues, the lecturer's approachability, the lecturer's emotional availability and plural pronoun usage (we, us) that enables the presentation of a personalised/invidualised platform for CMC. The objective was to establish whether a supportive environment is created. The construct of support represents the effort made by the lecturer to encourage the use of the CMC platform and to use this platform to add a human touch that obviates the physical distance between the student and lecturer. This section seeks to establish whether these measures (classified as support) provide adequate motivation for students to adopt the CMC platform as a preferred mode of communication/engagement with the lecturer.

3.5 Questionnaire Design and Development

Pre-existing questionnaires are accessible depending on the nature of study, alternatively the researcher can design and develop a questionnaire that meets the requirements of the study as well as provide data in the format that will allow for the research questions to best be answered (Jarque & Bera, 1987). The researcher designed the questionnaire from conceptualisation, ensuring that there is a clear and logical order in which the questions are presented. The online questionnaire was reviewed and tested by the researcher and the supervisor. Errors and updates were implemented before data collection could commence.

This study took place in KwaZulu-Natal, at the UKZN campus in Pietermaritzburg and the UKZN campus in Westville. The university consists of the College of Humanities; College of Agriculture, Engineering and Science; College of Health Sciences; College of Law and Management Studies. This study focuses primarily on the College of Law and Management Studies which is found at both the Pietermaritzburg campus and Westville campus.

3.6 Target Population

The sample frame from which the study's sample was drawn is referred to as the target population. All students in the College of Law and Management Studies at the University of KwaZulu- Natal's Pietermaritzburg and Westville campuses were targeted. The participants were chosen using a non-probability sampling method for the purpose of this study. Purposive sampling was carried out, which allowed for students who have used CMC for collaboration with lectures in the College of

Law and Management Studies to be selected. An online questionnaire was distributed to students from various levels of study in the different schools.

3.7 Sampling Discussion

For this quantitative study, the sample size was 380 and this was calculated using Morgan's table Krejcie & Morgan (1970), 190 participants were from the Westville campus and 190 participants were from the Pietermaritzburg campus.

3.8 Data Collection Procedures

Questionnaires can be administered in a few different ways, such as telephonically, website, emails and post. This study used an online website called SurveyMonkey which allowed the researcher to design the questionnaire, collect the data and analyse the results on the site or alternatively export the data for analysis on a separate tool. For this study the researcher used the SPSS and SPSS AMOS for statistical data analysis. During the data collection phase, the participants were provided with a URL link to open where they were then presented with a short explanation of the research purpose and objectives. Furthermore, in this short explanation that included a consent form, the participants were also advised that participation was voluntary. Thereafter, the participant could proceed with the self-administered, structured questionnaire. The participant had to begin by filling in his/ her demographic information, questions about the UKZN School they are studying under and the campus they are registered to. The second section consisted of questions about the CMC platforms they prefer to use for communication with their lecturers. The third section was focused on the motivation behind using CMC as a communication tool with lecturers. The last three sections consisted of questions that were guided by the Conceptual framework, the participant had to choose an answer by ticking the box that describes their understanding towards that given statement.

3.9. Data quality control

3.9.1 Validity

The questionnaire was aligned to constructs from the study's conceptual framework, which ensured the validity of the quantitative findings. Confirmatory Factor Analysis was used to check that the data collected corresponded to the constructs of the study's conceptual model.

3.9.2 Reliability

The Cronbach's Alpha test was performed to test the reliability of the quantitative data collected.

3.10 Planned Data Analysis

Quantitative data was analysed using descriptive statistics such as frequency analysis, mean, mode and standard deviation. Furthermore, inferential statistics such as correlation and multiple regression analysis was also employed in this study. For quantitative data analysis, the Spearman's Correlation was used, which is a non-parametric version of Pearson product-moment correlation. The Spearman's correlation measures the strength of relationship between two variables of interest. To evaluate the construct's validity the confirmatory factor analysis was used in the instrument and Cronbach's alpha was used to measure the reliability of the data. In order to obtain a collective/aggregated view of the data, the researcher calculated a mean response which was subjected to a One Sample t-test to determine whether the mean response was significantly ($p<0.05$) different from a neutral response. The Wilcoxon-one sample signed rank test was used to determine if this difference is greater/less than the neutral response at the 95% confidence level. The SPSS software package was used to expedite this analysis. A bivariate correlation analysis was also to be conducted to enable the researcher to identify any other significant patterns in the quantitative data that will assist in providing an informed underpinning to the triangulation phase of the study. The Kaiser-Meyer-Olkin (KMO) and Bartlett's test was also conducted to test sampling adequacy. The KMO and Bartlett's test measures the collected data adequacy. Furthermore, the test provides means to also assess the suitability of the participants data for factor analysis(Williams, 2010). A KMO of 0.50 and Bartlett's test that is significant ($p<.05$) is considered suitable for factor analysis. However, an ideal KMO is 0.8 and above.

Table 3. 1: Data Analysis Methods

Objective	Data Analysis Methods
Sampling adequacy	Kaiser-Meyer-Olkin (KMO) and Bartlett's
Reliability Test	Cronbach Alpha
Normality Test	Kolmogorov – Smirnov and Shapiro-Wilk Normality
Descriptive Statistics	Mean, Standard Deviation, Wilcoxon-one sample SR, Data Trend
Objective Testing	Pearson's Correlation, Multiple Regression Analysis
Validity Test	Structural Equation Modelling

3.11 Ethical Considerations

Prior to data collection, an ethical clearance application was submitted to the University of KwaZulu-Natal's College of Law and Management research office, to ensure that this research adheres to the University's research ethics requirements. The purpose of the research was clearly explained to the potential participants. The researcher emphasized that participation in the research is voluntary and that the participants had the right to withdraw from the study at any time. In addition, participants were requested to sign a consent letter to signify their willingness to participate in the study. The confidentiality and anonymity of the participants was maintained as per signed agreement.

3.12 Limitation of the Study's Scope

The main limitation of the study is the confinement of the study's empirical phase to the Faculty of Commerce. However, this is a tactical decision taken by the researcher based on knowledge of the use of CMC technology in this Faculty and by the assumption that the Faculty of Commerce is a microcosm of the University in general from a teaching and learning perspective. The study's outcome is not generalisable to the University community. However, it provides a frame of reference for discourse on the successful implementation of a CMC based approach to teaching and learning at a university.

3.13 Conclusion

The purpose of this chapter was to provide details on the research technique, which explains how data was gathered and analysed. The sample size and sampling procedure, as well as the research concept and target population, were all explicitly established. This chapter also provided detailed information about data instrument development, data collection procedures followed and descriptive statistical analysis were also defined. This chapter also discussed the method of dealing with reliability and validity. This chapter focused mostly on the research methodology employed and an analysis of its benefits and drawbacks. The following chapter provides elaborate details of the data analysis with visual presentation which provides easy interpretation of quantitative data.

CHAPTER 4: DATA ANALYSIS AND DISCUSSION

4.1 Introduction

Chapter 4 is used to present the findings from the data collection process described in the previous chapter. As a quick source of reference to contextualise the current chapter, the study's research methodology consisted of a conceptual theoretical of model that was aligned to a data collection instrument. This entailed the use of an online questionnaire that was administered to students of two campuses at the UKZN within the Faculty of Law and Management Studies, in the province of KwaZulu-Natal. The presentation of the results starts with a process called data screening, then the researcher tests the reliability of the data collection instrument using a Cronbach alpha testing procedure. The statistical analysis has a strong focus on ensuring the reliability and validity of the study's data. This was deemed as an important component of the study's evolution because of the use of a conceptual theoretical framework that is subjected to statistical scrutiny via the use of confirmatory factor analysis and structural equation modelling. The answering of the study's main research question and sub-questions was facilitated by the use of correlation and regression analysis. There is also a liberal use of graphs to present an aggregated view of the study's data. In closing the chapter, the discussion of the findings is contextualised according to reviewed literature on the topic of CMC adoption at a tertiary education institution.

4.2 Data Screening

The collected data was transferred to Statistical Package for Social Science (SPSS version 27). The individual response data was first checked for completeness and all the questionnaires returned were complete. Therefore, they were marked as inconclusive and they were removed. The valid survey responses was exported from the online data collection tool that was used for the study, Survey Monkey, in Microsoft Excel file format. The Likert scale data from the questionnaires were coded from 1 to 5, with *5 = "Strongly Agree"* and *1 = "Strongly Disagree".* It should also be noted that the questionnaire items were positively worded in terms of CMC usage for learning, so a higher numerical value represented a positive response to the question. The data was then checked for missing values and it was observed that there were no missing values. The researcher further checked for cases of non-responses and it can be reported that all the required questionnaire responses were fully answered. The data was then considered clean and ready to be analysed.

4.3 Reliability Test

Cronbach's alpha is the test that was used to measure the reliability of the data. In statistics, the term reliability refers to a metric for measuring the consistency or dependability of the variables employed in a research instrument, not their accuracy (Bhattacherjee, 2012). According to Sekaran and Bougie (2016), the Cronbach Alpha test provides a researcher with an indication of the level of consistency that the questionnaire items provide in measuring the construct under investigation in the context of the study's data. A general rule in this regard is that a Cronbach Alpha value that is greater than 0.6 provides an indication that the questionnaire items are reliable in measuring the construct under investigation. For the current study, the researcher computed the Cronbach Alpha value for the study's main variables. The output from these computations is presented in Table 4.1. As can be observed, the Cronbach Alpha values observed for all of the study's variables are in excess of 0.6 indicative of a high level of reliability.

Table 4. 1: Cronbach Alpha Coefficient Values

Construct	No of Likert Scale Items	Cronbach's alpha
Behavioural Intention to use CMC	4 (abbreviated as BI1 to BI4)	0.744
Demonstrated Immediacy of response with CMC	4 (abbreviated as IM1 to IM4)	0.802
Professionalism in the use of CMC	7 (abbreviated as PR 1 to PR 7)	0.804
Support provided for CMC-based learning	5 (abbreviated as SU1 to SU4)	0.739

4.4 Sampling Adequacy

In order to ensure that the study's sample is adequate for the conducting of validity tests such as Factor Analysis and Structural Equation modelling, the Kaiser Mayer-Olkin (KMO) measure of sampling adequacy and the Bartlett's Test of Sphericity test were conducted. According to Williams (2010), if the KMO test indicates a high value close to 1 and the test is significant, then a Factor Analysis may be employed because this could be an indication of underlying variables that could be causing a high variance in the relationships between the study's existing variables. As indicated in Table 4.2, the KMO =0.866 and the Bartlett's Test for Sphericity is significant (P<0.05) thus suggesting that a factor analysis procedure is warranted.

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Table 4. 2: Sampling Adequacy Table

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.866
Bartlett's Test of Sphericity	Approx. Chi-Square	2622.811
	Df	378
	Sig.	.000

The Factor Analysis calculations are presented in Section 4.8. The next section is used to provide an overview of the study's main data thereby providing a context for the subsequent data analysis.

4.5 Descriptive Analysis and Inferential Analysis

The descriptive statistical analysis discussion provides the reader with a summary of important information about the study's main variables in the context of the study's data. The descriptive statistics will enable the presentation of the data in a more meaningful format, making data interpretation easier and can be through patterns that might emerge when graphically represented (Mishra et al., 2019). The descriptive analysis will be presented using standard aggregated computations that measure central tendency. This includes computations such as the mean, median and standard deviation. The aggregated version of the data will be presented visually via the use of bar charts, histograms and stacked bar charts.

From an inferential perspective, the aggregated values presented will be subjected to tests of significance ($p<0.05$) to ensure whether the mean/median values are significantly different from a neutral value of 3 (since the study's data has a Likert scale format). This computation will be performed via the one sample t-test. Since the one sample t-test is a parametric test, the study's data will be subjected to tests of normality to ensure that there is no serious deviation from assumption of normality (required for parametric testing). Correlation and regression analysis will be performed to examine the relationships between the study's main variables and provide the researcher with knowledge to answer the study's main and sub-research questions.

4.6 The Demographic Discussion

In order to present the reader with a demographic view of the study's data, the age, gender and academic clustering (referred to as the School) within the Faculty of Law and Management Studies at UKZN is presented.

The beginning of the questionnaire required users to complete demographic information and the first question presented to the study's participants was information about their age. This data is presented in Table 4.3.

Table 4. 3: Participant's Age

Age			
	Frequency	Percent	Cumulative Percent
18 – 24	245	88.8	88.8
25 – 30	27	9.8	98.6
31 and above	4	1.4	100
Total	276	100.0	

The results show that the majority of the participants were between the ages of 18 years to 24 years, with 88.8% representation followed by the participants with ages between 25 years and 30 years with 9.8% representation. Participants of 31 years and above were the least to participate with 1.4%. Table 4.3 presented depicts the data collected on ages of the participants. Participants in this study were mostly females as 58.3% of the participants were females, while 41.67% were male. The ratio male to female can be noted as 1.39. The ratio of the participant's gender is almost even, both genders were fairly represented, a bar graph analysis is presented in Figure 4.1.
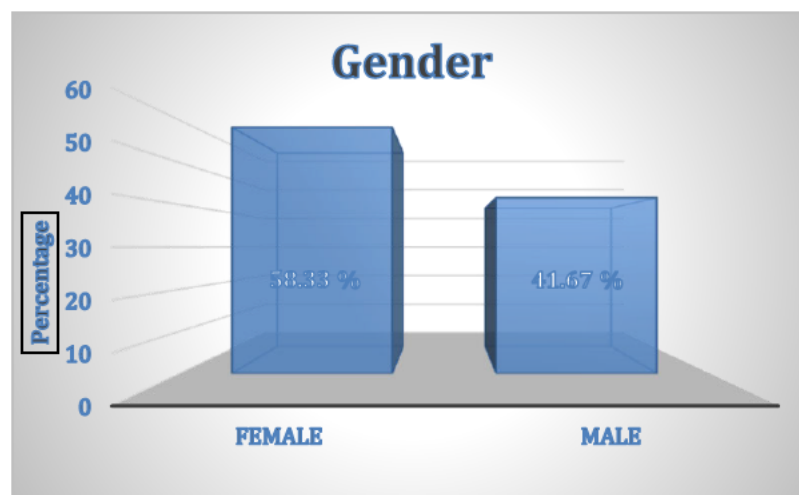
Figure 4. 1: Gender of the participants

In terms of academic grouping, the majority of participants were from the school of Accounting, Economics and Finance as their percentage was about 41.30%; this was followed closely by participants from the School of Management, IT and Governance at 46.38%. The least number of

students that participated in the study were from the School of Law with a percentage of 12.32% representation. The figure depicting the spread of the data on UKZN schools for the current study is shown in Figure 4.2.
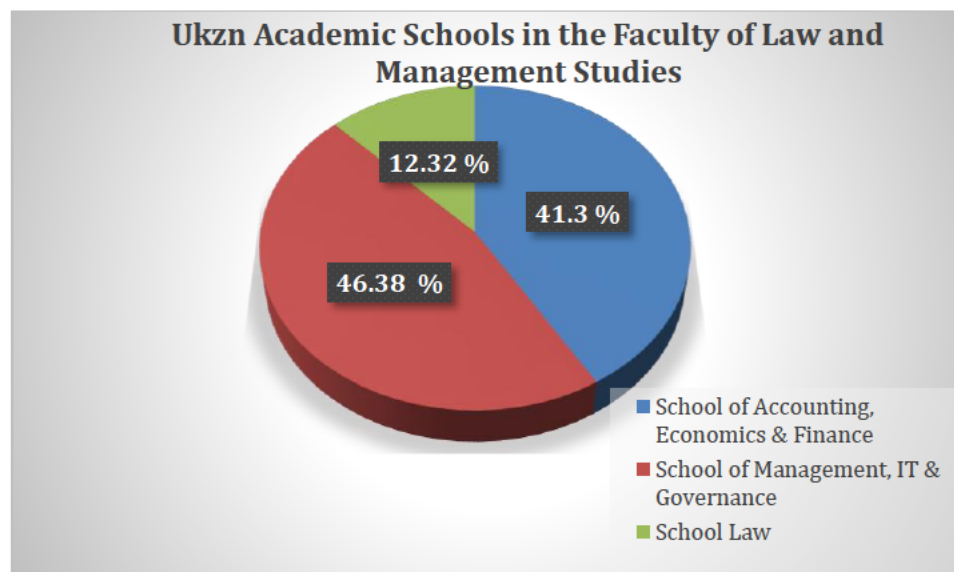
Figure 4. 2: Pie chart of participants by UKZN School

4.7 The CMC Platforms

The next section on the questionnaire aimed to find out information about students' preferences for CMC when communicating with their lecturers. This exercise did not have an explicit alignment with the study's conceptual model. However, it does provide pragmatic information that generates knowledge of current technological platforms that students have a preference for and it also serves the purpose of providing empirical evidence to support the discussion pertaining to the answering of Research Question One. This section of the study's questionnaire was also used strategically to ensure that students are able to quickly establish the purpose of the questionnaire and the study's main objectives because the nomenclature associated with current technological platforms tend to immediately strike up a chord of familiarity.

From a current technology perspective, the prominent CMC platforms entail the use of email, video conferencing solutions, learning management systems (LMS), social networking systems and instant chat platforms. These broad categories were used to identify instances of specific technologies that students were familiar with.

An aggregated view of the responses to questions dealing conceptually with the issue of preference for a specific platform are presented in Figure 4.3.

Figure 4. 3: Wilcoxon Signed Rank Tests for Preferred CMC

The essence of Figure 4.3 is to provide a "snapshot" view of student's responses to their preferred technological platform for CMC based interaction. The visualisation is contextualised in accordance with a Wilcon Signed Rank Test. This is the non-parametric equivalent of the one sample t-test and as Meek et al. (2007) explains, when the data exhibits high levels of skewness (as observed in Figure 4.3), the ideal measure of central tendency is the median and the Wilcoxon Signed Rank Test provides an indicator of whether the median has a significantly positive (agree of strongly agree) orientation or a significantly negative (strongly disagree or disagree) orientation. A comprehensive view of these responses is provided in Appendix A. For the sake of brevity, a compacted view of these responses is presented in Figure 4.3.

From Figure 4.3 it can be observed that the majority of responses show a preference for the Strongly Agree or Agree options for four of the platforms and these CMC platforms were eMail, Zoom ,Moodle/Learn and Whatsapp communication platforms respectively. As can be observed in Appendix A for Email communication, the measures of central tendency shows a mean (M=4.17 and SD = 0.998) and median (Mdn= 4). The skewness is reported to be -1.396 and the kurtosis is 1.753. Measures of central tendency for Zoom shows a mean (M=4.16 and SD = 0.881) and median (Mdn= 4). The skewness is reported to be -1.396 and the kurtosis is 1.753. Measures of central tendency for Moodle/Learn shows a mean (M=4.00 and SD = 0.898) and median (Mdn= 4). The skewness is reported to be -1.091 and the kurtosis is 1.655. Lastly, measures of central tendency Whatsapp shows a mean (M=3.62 and SD = 1.155) and median (Mdn= 4). The skewness is reported to be -.444 and the kurtosis is .751. For all four CMC platforms both the skewness & kurtosis values fall within the parameters of the guidelines provided in Kim (2013) that the absolute value of the skewness and kurtosis needs to be less than 1.96 in order for the assumption of normality to be valid.

There were mixed reviews with MS Teams and Google Meet. The mode value of both these platforms was a 3 which indicates Neutral. Measures of central tendency for MS Teams shows a mean (M=3.34 and SD = 1.181) and median (Mdn= 3). The skewness is reported to be -.145 and the kurtosis is .928. Measures of central tendency for Google Meet shows a mean (M=2.86 and SD = 1.009) and median (Mdn= 3). The skewness is reported to be -1.384 and the kurtosis is 2.332.

Facebook was the least preferred communication platform followed by Edmodo. Measures of central tendency for Edmodo shows a mean (M=2.40 and SD = 1.059) and median (Mdn= 2). The skewness is reported to be .435 and the kurtosis is -.232. Measures of central tendency for Facebook shows a mean (M=2.24 and SD = 1.157) and median (Mdn= 2). The skewness is reported to be .742 and the kurtosis is -.337.

The survey carried out was able to provide the researcher with information about the CMC platforms that the participants prefer to use when communicating with their lecturers. Email, Zoom, Moodle/ Learn and Whatsapp are the platforms that the majority of participants preferred to use. Which shows a broad mix of CMC platform types including instant messaging, LMS and video conferencing. Results for MS Teams & Google Meet showed that the participants were open to using them, however they were not the most preferred. Edmodo was not a popular choice, as majority of the participants indicated disapproval. Facebook was the least preferred CMC platform with majority of the participants indication their unwillingness to use Facebook as the CMC platform of choice when communication with lecturers.

4.8 Confirmatory Factor Analysis (CFA)

According to Kim et al. (1978), factor analysis (FA) is a technique that is used to identify latent factors that exist among observed variables. In the context of the current study, the observed variables are the questionnaire items (Appendix J) that constitute each section of the questionnaire. The questionnaire was partitioned into sections where each section represented a latent variable. The researcher was in a position to propose this ordering of questionnaire items based on the fact that the study is underpinned by a conceptual model. The main constructs of the conceptual model have been identified as the latent factors for the current study. The purpose of CFA is to establish whether the questionnaire items (variables) confirm the existence of these latent factors in the context of the study's data set or as Kim et al. (1978) suggest it is a measure of how accurately the questionnaire items measure the latent factors. Also, Prudon (2015) asserts that CFA is a highly reliable strategy for ensuring construct validity of the data collection instrument. The preceding statement is highly relevant in the context of the current study because of the use of a conceptual framework. The researcher needed to establish whether the items of the data collection instrument had significant validity based on the data collected for the study and to establish whether the conceptual model adopted in this study was structurally sound.

For the purpose of this study CFA was performed on the sections of the questionnaire that had a strong alignment to the study's conceptual model. These sections were section C to section F, which focused on *immediacy*, *support*, *professionalism* & the *behavioural intention to use* CMC. Sections that were excluded were investigating the demographic information of the participants and their preferred CMC platforms. The CFA in the study was conducted by using the SPSS plug-

in software named Analysis of the Moment Structures (AMOS). As a disclaimer to the CFA exercise is that the results may be subjected to scrutiny in the light of the assertion by MacCallum et al. (1999) that as the sample size increases, the variability of the factor loadings tends to decrease, thereby ensuring a more reliable interpretation of factor loadings. Also, as an approximate guide Suhr (2006) provides a range of 5 to 20 samples for each parameter estimate. In the current study, the number of parameter estimates that were generated by the study's variables equaled 44 (illustrated in the output derived from the AMOS analysis shown in Table 4.4). The lower range from a sampling perspective is 220 (44*5) and the upper range is 880 (44*20). Hence, from a sampling perspective the current sample size of n=276 does fall within the acceptable range for CFA. However, the possibility of inaccurate results based on the observation that the study's sample size is not ideal, is acknowledged as a limitation for the CFA computations.

Table 4. 4: Parameter Estimates for CFA

Variable counts (Group number 1)

Number of variables in your model:	44
Number of observed variables:	20
Number of unobserved variables:	24
Number of exogenous variables:	24
Number of endogenous variables:	20

The figure depicting the conceptual model for the current study's data is shown in Figure 4.4 which was produced using AMOS.
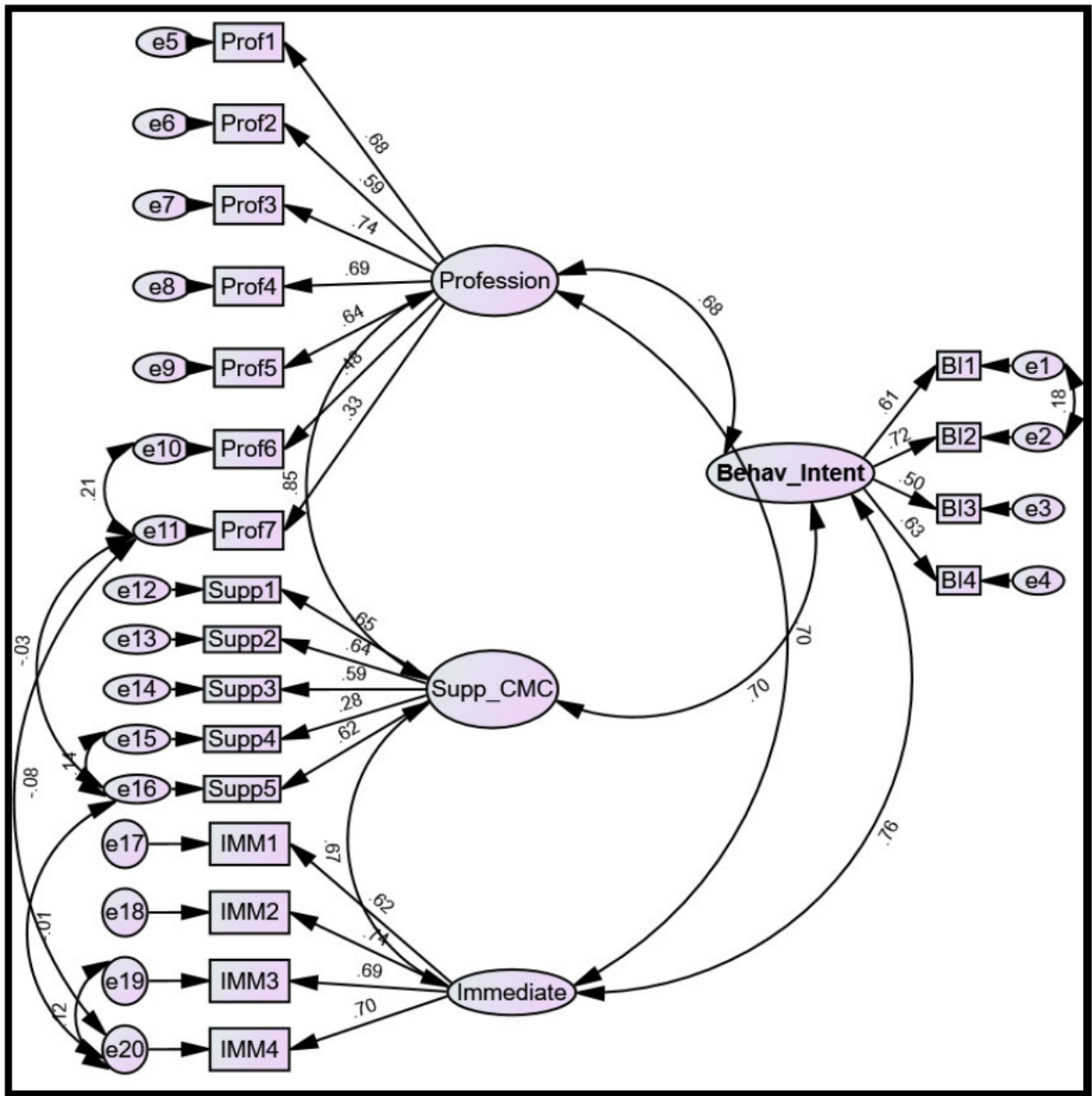
Figure 4. 4: CFA model showing factor loadings of the latent variables

The factor loadings displayed are indicators of correlation between the observed variables and the latent variables. These values range from 0 to 1, where a good convergent validity is represented by a factor loading that is greater than 0.5 and closer to 1 (Brown & Moore, 2012). As can be observed in Figure 4.4, the *immediacy* construct shows good convergent validity with all items indicating a correlation (with the latent variable) that is higher than 0.5. In terms of the *support* construct 4 of the 5 items show good convergent validity while one of the items indicate a correlation that is less than acceptable (Supp 4 =0.28 which is less than 0.5). This questionnaire item will be flagged as a potential source for lack of acceptability when it comes to an overall evaluation of the construct validity of the study's conceptual model. A similar observation needs

to be noted with the *professionalism* construct where 5 of the 7 items showed good convergent validity while 2 of the constructs (Prof 6 = 0.48 and Prof 7 = 0.33) displayed less than acceptable convergent validity. The items will be earmarked were earmarked for further analysis, pending the outcome of the overall model-fit index generated by the data used for examining the construct validity of the study's conceptual model. The *behavioural intention to adopt CMC* construct showed very good convergent validity for all items examined under this construct. A further observation from Figure 4.1 is that there were high levels of significant correlations (excess of 0.6) between the latent variables and the study's dependent variable. This outcome is a good indicator of the construct validity of the study's conceptual model. However, this indicator of model validity is confirmed by a series of tests that are produced as an output from the AMOS analysis. These tests which are extensively explained in Suhr (2006) entail the Comparative Fit Index (CFI) which is only adequate with a value above 0.90 and is excellent if it is above 0.95. For the Standardised Root Mean square Residual (SRMR) that is less than 0.10 is adequate and is excellent if it is less than 0.08 (Hu & Bentler, 1999). A Root Mean Squared Error of Approximation (RMSEA) is adequate if it is less than 0.08 and it is excellent if it is less than 0.06.

The results of these tests provide a goodness of fit index (GFI) that attests to the study's "data fit" to the conceptual model, are presented in Table 4.5 and Table 4.6

Table 4. 5: TFI and CFI indicators of Model-Fit

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.811	.771	.879	.851	.877
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

In Table 4.5, the main indicators of the GFI are the Tucker Lewis Index (TLI) and the Comparative Fit Index (CFI). It should be noted that the TLI and CFI values are marginally outside the acceptable range (TLI=.851 and CFI = .877)

Table 4. 6: RMSEA indicator of Model-Fit

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.072	.063	.081	.000
Independence model	.187	.179	.194	.000

In Table 4.6, the Root Mean Square Error of Approximation (RMSEA) has a value of 0.072 which is marginally acceptable, but ideally it should be less than 0.06 (Suhr, 2006).

Based on the CFA exercise, it can be concluded that the study's conceptual model does not have an optimal fit to the study's data. However, there is a marginal-fit indicating that the conceptual model adopted for the study has an acceptable level of construct validity. The lack of complete endorsement of the study's conceptual model may possibly emanate from limitations regarding an adequate sample size as well as the influence of the items/variables that were identified in Figure 4.5 that did not provide adequate convergent validity to the model.

In the adjusted version of the model, items Prof6 and Prof7 and Supp4 were removed. There was a marginal improvement observed in the CFI analysis (CFI=0.904 which is now acceptable), however the RMSEA = 0.078 is slightly worse than the previously reported value. Based on this observation the researcher decided not to tamper with the conceptual model and work on the assumption that the sample size may have a compromising influence on ensuring the lack of an optimal-fit between the study's data and conceptual model.

4.9 Data Presentation

The foray into data analysis will be preceded by a slight digression into the topic of Likert scale data and its associated controversies regarding conversion of Likert Scale data which is typically identified as ordinal data into interval data. This discussion is elaborated upon in Sullivan and Artino Jr (2013) where an explanation of the basis for this controversy is provided. This relevance of this discussion to the current study is that the study's primary form of empirical evidence is provided by 20 questionnaire items of Likert Scale data. Individual analysis of these 20 items will result in a complex myriad of data analytics based on responses to individual questions from the study's data collection instrument. The feasibility of this approach has been debated extensively in the statistical community (explained Sullivan and Artino Jr (2013)). However, for the purpose of the current study, guidance is provided by Joshi et al. (2015) and Boone and Boone (2012) where it is suggested that Likert Scale data that is structured according to an underlying theoretical/conceptual may be conflated/aggregated according to the underlying constructs of the theoretical/conceptual model. This aggregation is achieved by computing a sum or mean value of the associated Likert Scale items that should ideally be 4 or more items according to Boone and Boone (2012). All the constructs used in the current study have been measured using at least 4 questionnaire items. This observation paves the way for data analysis based on the aggregation of Likert Scale data thereby resulting in a conversion of ordinal data into interval data.

A further digression that will precede the data analytics for the current study is the controversy generated by the topic of data normality. Theoretically, prior to data analysis, data should be subjected to a test of normality which is pre-requisite to determine the type of statistical analysis that should be performed. As explained in Hoskin (2012), if the data has a normal distribution, then the researcher is advised to follow a route of parametric testing of the study's data. However, if the data has a non-normal distribution, then the researcher is advised to follow a route of nonparametric tests. This guideline has however come into increasing scrutiny, resulting in modified guidelines that resonate with the advice from the highly cited publication by Ghasemi and Zahediasl (2012) where it is suggested that if the sample size is greater than 40, then parametric statistical methods may be used. This recommendation is also aligned to the Central Limit Theorem as discussed in Islam (2018). Based on these deliberations and the fact that the current study has a sample size of n=274, the researcher does have a theoretical justification for proceeding with parametric data analysis. However, Ghasemi and Zahediasl (2012) do issue a word of caution that the sampling distributions should not have an extreme violation of the condition for normality. As a measure of caution, the current study is preceded by a test of normality of the variables used in the study. The results of this test are presented in Table 4.7

Table 4. 7: Test of Normality

Tests of Normality						
	Kolmogorov–Smirnov[a]			Shapiro–Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Preferred CMC	.084	276	.000	.983	276	.002
Professionalism	.087	276	.000	.960	276	.000
Support	.098	276	.000	.965	276	.000
Immediacy	.132	276	.000	.956	276	.000
Behavioural Intention	.112	276	.000	.959	276	.000
a. Lilliefors Significance Correction						

The null hypothesis is that the population is normally distributed. The alternate hypothesis is that the population is not normally distributed. From Table 4.7, it can be seen that the level of significance (p<0.05) does indicate that the null hypothesis has to be accepted for all the study's variables. The conclusion is that the study's data does **not** have a normal distribution or it is significantly different from a normal distribution. The plan for further data analysis will be guided by Kim (2013) who suggests that the issue of normality is also resolved by visually inspecting the histogram (frequency distribution) and using the skewness or data symmetry and kurtosis as a practical guide to establishing the normality of a study's data. The decision to conduct parametric

or non-parametric tests on the data will done on the basis of a visual inspection of the frequency illustrations of the study's main variables.

The plan for the initial data analysis where the researcher uses statistical presentations and tests to acquire an understanding of the data in its raw form was conducted as follows:

- visual presentation of the raw Likert Scale data in aggregated form
- histogram representation of the composite version of the Likert Scale data
- A t-test computation to establish whether the study's measures of central tendency is reliable or by chance. This was achieved by implementing a hypothesis testing approach where the null hypothesis (H_0) states that the test parameter assumes a neutral value of 3 and the alternate hypothesis H_a is that the test parameter is significantly different from the neutral value. In the case of parametric testing the test statistic that was used is the mean ($H_0 : M = 3$) and in the case of non-parametric testing, the test statistic that was used is the median ($H_0 : Mdn = 3$).

Data Analytics for the Construct of Professionalism

From an overview perspective, an aggregated visualisation of the responses to the questionnaire items for the construct of **_Professionalism_** is presented in Figure 4.5

Figure 4. 5: Aggregated count of responses for the construct of _Professionalism_

The illustration in Figure 4.5 provides an overview of the study's raw data for the construct of professionalism. From this figure it can be observed that the majority of responses show a

preference for the Strongly Agree or Agree options. However, in order to verify the validity of this claim, a histogram-based analysis is presented in Figure 4.6.

Figure 4. 6: Frequency based distribution and Central Tendency Data for *Professionalism*

As can be observed in Figure 4.6, the measures of central tendency for the construct of Professionalism shows a mean (*M*=3.7 and *SD* = 0.81) and median (*Mdn*= 4). The skewness is reported to be -0.681 and the kurtosis is 0.613. Both these values fall within the parameters of the guidelines provided in Kim (2013) that the absolute value of the skewness and kurtosis needs to be less than 1.96 in order for the assumption of normality to be valid. This observation paves the way for parametric testing of the mean as a significant measure of central tendency for the construct of professionalism. A one sample t-test was conducted on the observed mean and presented in Table 4.8. The null hypothesis is that the population mean is equal to the test value proposed. The alternative hypothesis is that the population mean does not equal the test value proposed.

Table 4. 8: One Sample t-Test for *Professionalism*

					95% Confidence Interval of the Difference	
One–Sample Test						
			Test Value = 3			
	t	df	Sig. (2–tailed)	Mean Difference	Lower	Upper
Mean_Prof	26.429	275	.000	.90683	.8393	.9744

As can be seen in Table 4.8 there is a statistically significant difference between the hypothesised mean and

the observed mean at the 95% confidence level. The null hypothesis stated as $H_0 = 3$ can now be rejected and the conclusion can be made that the observed mean is significantly greater than 3 $((t(276) = 26.42, p<0.01))$. This result is confirmed in the non-parametric version of the t-test which is the One Sample Wilcoxon Signed Rank test illustrated in Figure 4.7 where the observed median is shown to be significantly greater than the hypothesised median of 3. The null hypothesis is that the population has equal medians. The alternate hypothesis is that the population does not have equal medians.

Figure 4. 7: One Sample Wilcoxon-Signed Rank Test for *Professionalism*

Data Analytics for the Construct of Support

From an overview perspective, an aggregated visualisation of the responses to the questionnaire items for the construct of **Support** is presented in Figure 4.8.

Figure 4. 8: Aggregated count of responses for the construct of *Support*

The illustration in Figure 4.8 provides an overview of the study's raw data for the construct of support. From this figure it can be observed that the majority of responses show a preference for the Strongly Agree or Agree options. However, in order to verify the validity of this claim, a histogram-based analysis is presented in Figure 4.9.

Figure 4. 9: Frequency based distribution and Central Tendency Data for *Support*

As can be observed in Figure 4.9, the measures of central tendency for the construct of Support shows a mean (*M*=3.9 and *SD* = 0.59) and median (*Mdn*= 4). The skewness is reported to be -0.554 and the kurtosis is 0.305. Both these values fall within the parameters of the guidelines provided in Kim (2013) that the absolute value of the skewness and kurtosis needs to be less than 1.96 in

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order for the assumption of normality to be valid. This observation paves the way for parametric testing of the mean as a significant measure of central tendency for the construct of support. A one sample t-test was conducted on the observed mean and presented in Table 4.9. The null hypothesis is that the population mean is equal to the test value proposed. The alternative hypothesis is that the population mean does not equal the test value proposed

Table 4. 9: One Sample t-Test for *Support*

					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Support	26.148	275	.000	.93043	.8604	1.0005

One-Sample Test

Test Value = 3

As can be seen in Table 4.9 there is a statistically significant difference between the hypothesised mean and the observed mean at the 95% confidence level. The null hypothesis stated as $H_0 = 3$ can now be rejected and the conclusion can be made that the observed mean is significantly greater than 3 $((t(276) = 26.14, p<0.01))$.

This result is confirmed in the non-parametric version of the t-test which is the One Sample Wilcoxon Signed Rank test illustrated in Figure 4.10 where the observed median is shown to be significantly greater than the hypothesised median of 3. The null hypothesis is that the population has equal medians. The alternate hypothesis is that the population does not have equal medians.
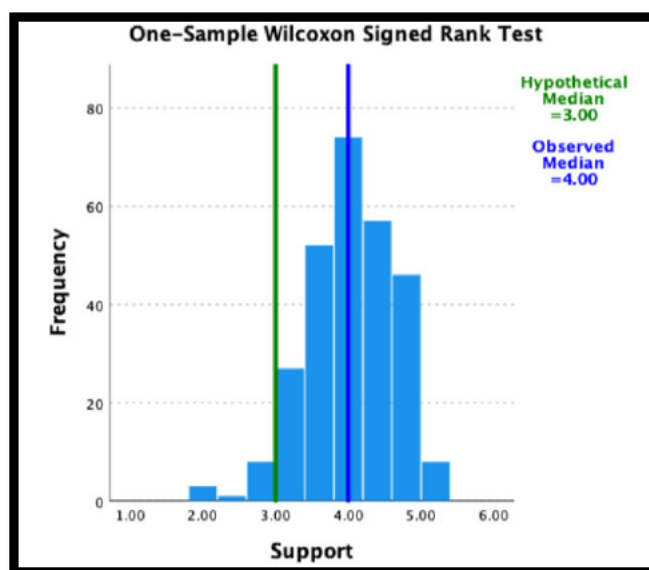
Figure 4. 10: Observed Median for *Support*

From an overview perspective, an aggregated visualisation of the responses to the questionnaire items for the construct of **Immediacy** is presented in Figure 4.11.
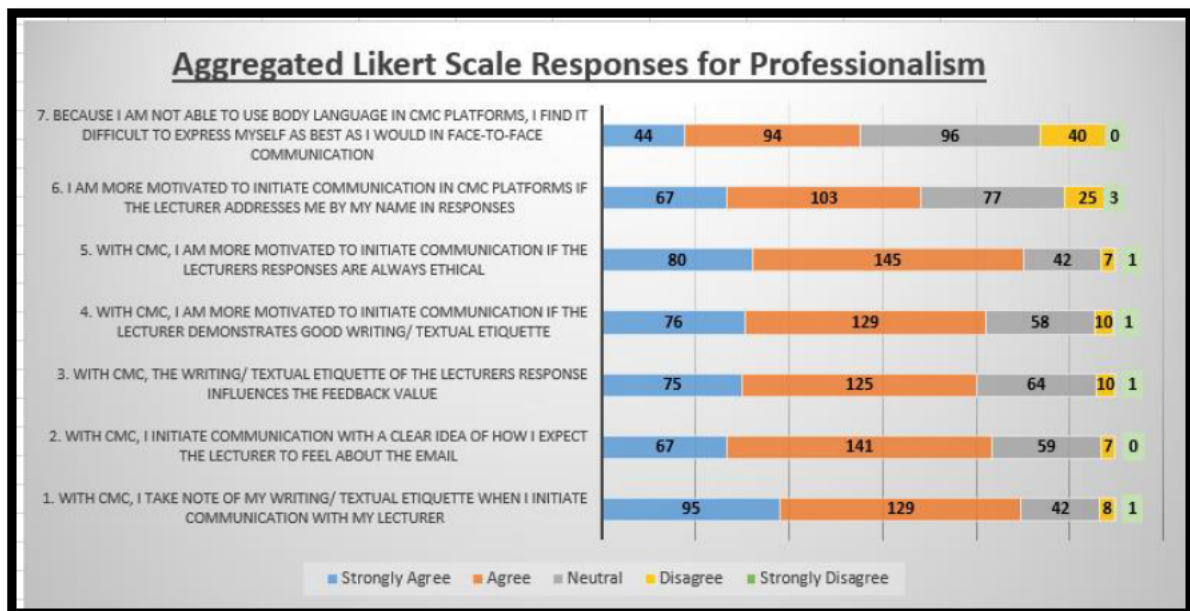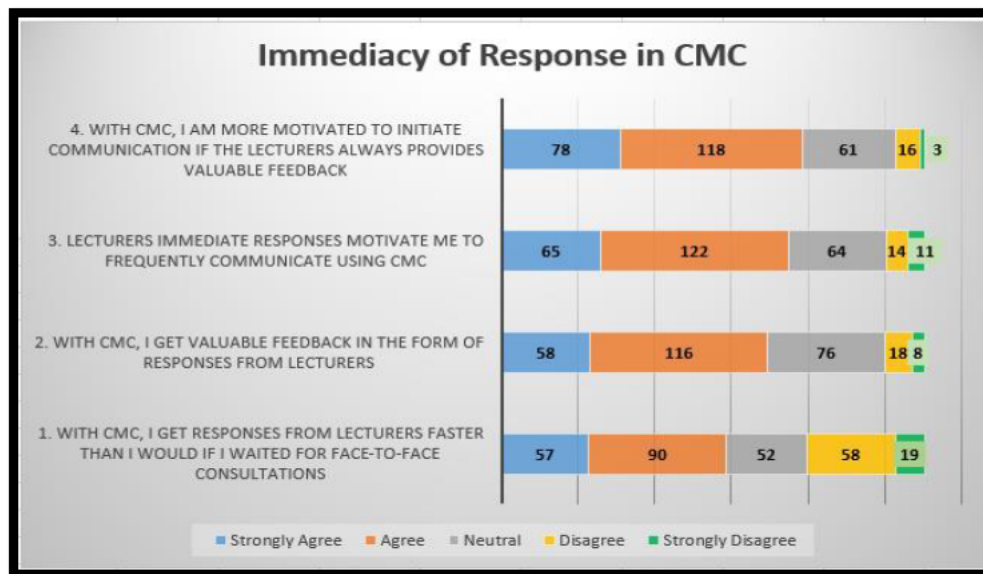

Figure 4. 11: Aggregated count of responses for the construct of *Response*

The illustration in Figure 4.11 provides an overview of the study's raw data for the construct of immediacy. From this figure it can be observed that the majority of responses show a preference for the Strongly Agree or Agree options. However, in order to verify the validity of this claim, a histogram-based analysis is presented in Figure 4.12.
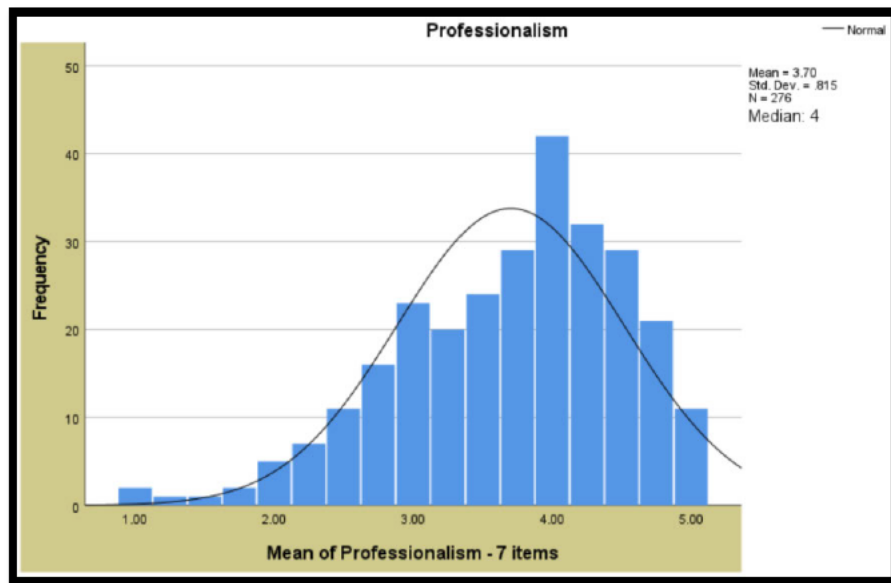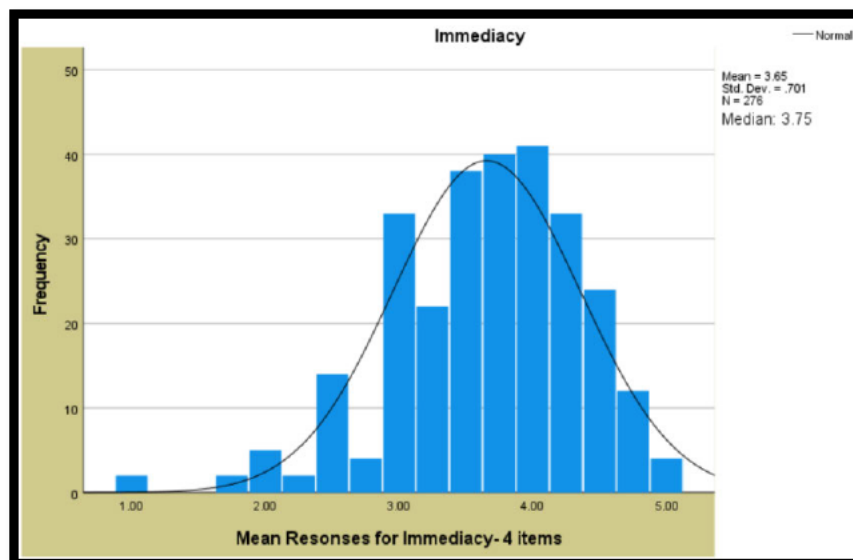

Figure 4. 12: Frequency based distribution and Central Tendency Data for *Immediacy*

As can be observed in Figure 4.12, the measures of central tendency for the construct of Immediacy shows a mean (*M*=3.6 and *SD* = 0.70) and median (*Mdn*= 3.75). The skewness is reported to be -

0.670 and the kurtosis is 0.188. Both these values fall within the parameters of the guidelines provided in Kim (2013) that the absolute value of the skewness and kurtosis needs to be less than 1.96 in order for the assumption of normality to be valid. This observation paves the way for parametric testing of the mean as a significant measure of central tendency for the construct of immediacy. A one sample t-test was conducted on the observed mean and presented in Table 4.10. The null hypothesis is that the population mean is equal to the test value proposed. The alternative hypothesis is that the population mean does not equal the test value proposed

Table 4. 10: One Sample t-Test for *Immediacy*

					95% Confidence Interval of the Difference	
	t	df	Sig. (2–tailed)	Mean Difference	Lower	Upper
Immediacy	14.294	275	.000	.70109	.6045	.7976

As can be seen in Table 4.10 there is a statistically significant difference between the hypothesised mean and the observed mean at the 95% confidence level. The null hypothesis stated as $H_0 = 3$ can now be rejected and the conclusion can be made that the observed mean is significantly greater than 3 (($t(276) = 14.29, p<0.01$)).

This result is confirmed in the non-parametric version of the t-test which is the One Sample Wilcoxon Signed Rank test illustrated in Figure 4.13 where the observed median is shown to be significantly greater than the hypothesised median of 3. The null hypothesis is that the population has equal medians. The alternate hypothesis is that the population does not have equal medians.
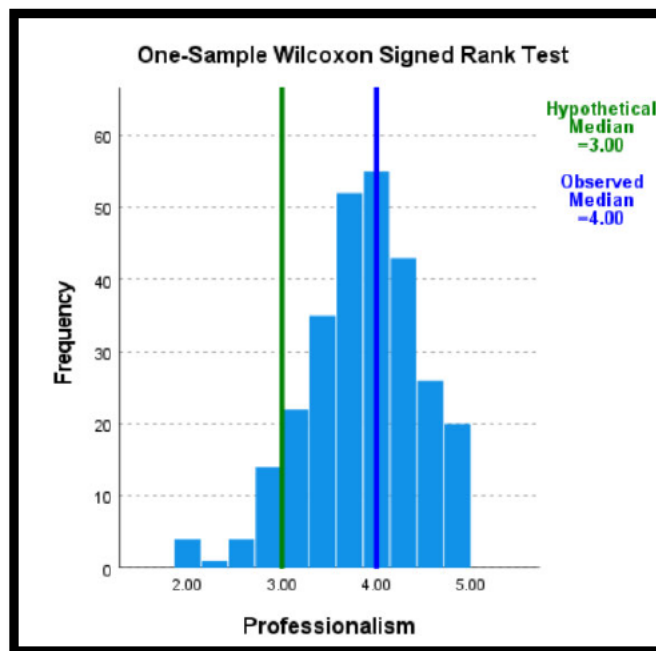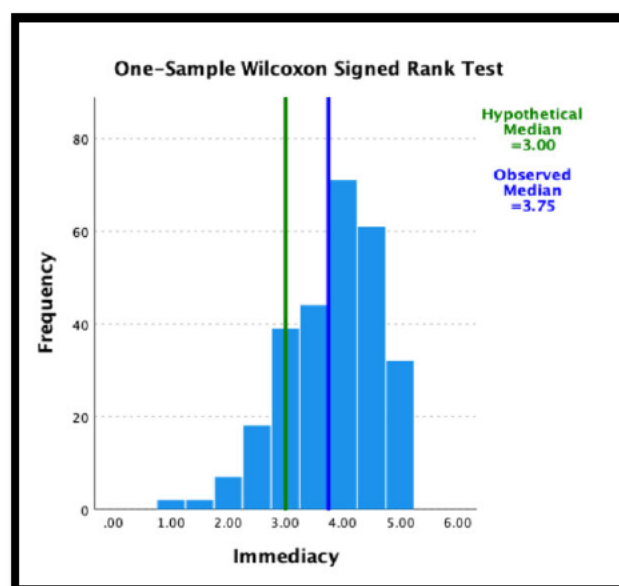

Figure 4. 13: Observed Median for *Immediacy*

Data Analytics for the Construct of Behavioural Intention to Adopt CMC

From an overview perspective, an aggregated visualisation of the responses to the questionnaire items for the construct of **Behavioural Intention** is presented in Figure 4.14.
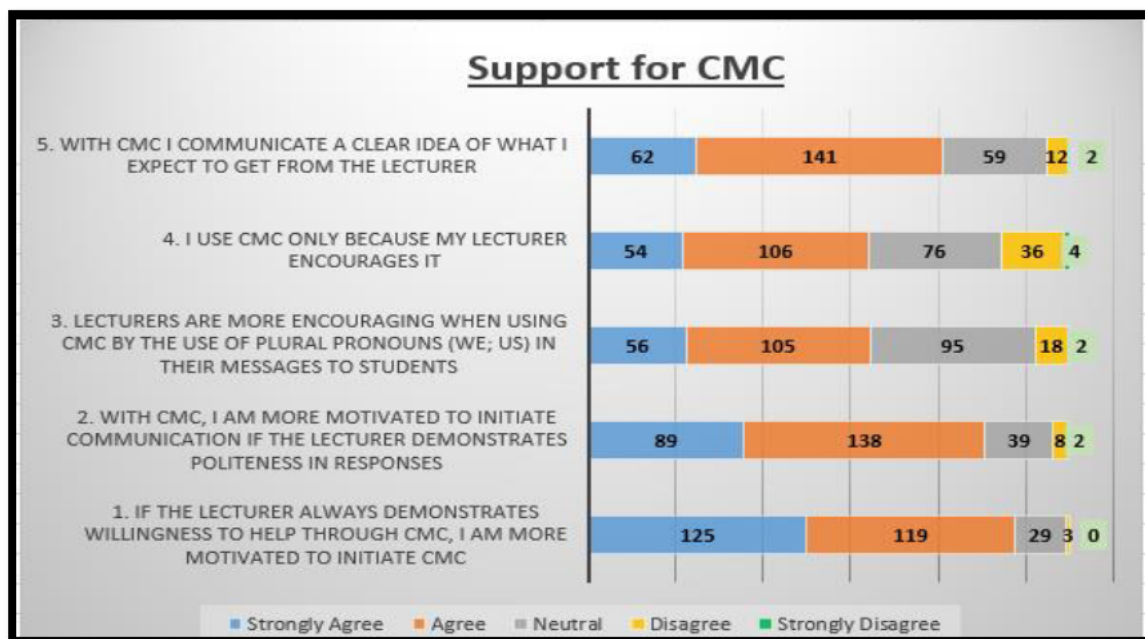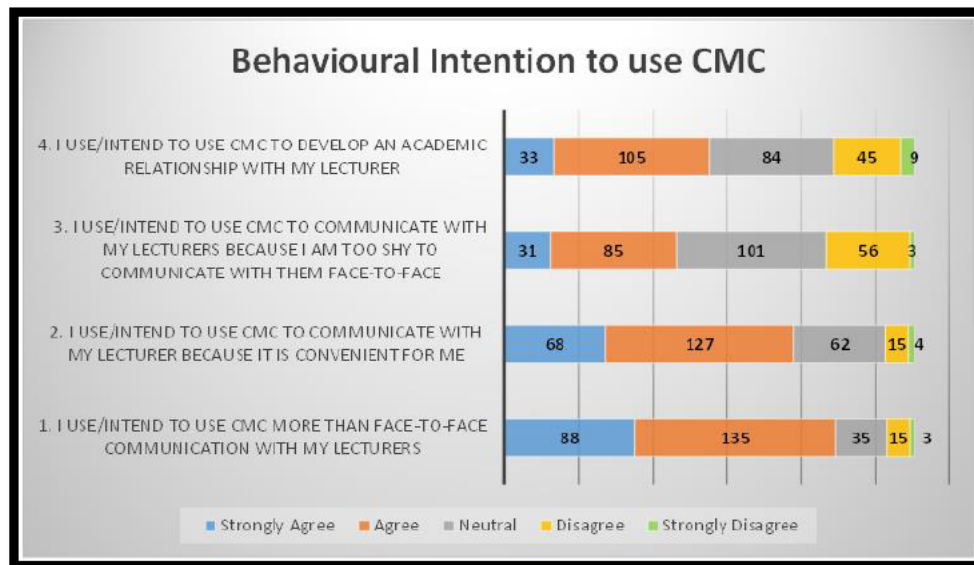

Figure 4. 14: Aggregated count of responses for the construct of *Behavioural Intention*

The illustration in Figure 4.14 provides an overview of the study's raw data for the construct of Behavioural Intention. From this figure it can be observed that the majority of responses show a preference for the Strongly Agree or Agree options. However, in order to verify the validity of this claim, a histogram-based analysis is presented in Figure 4.15.
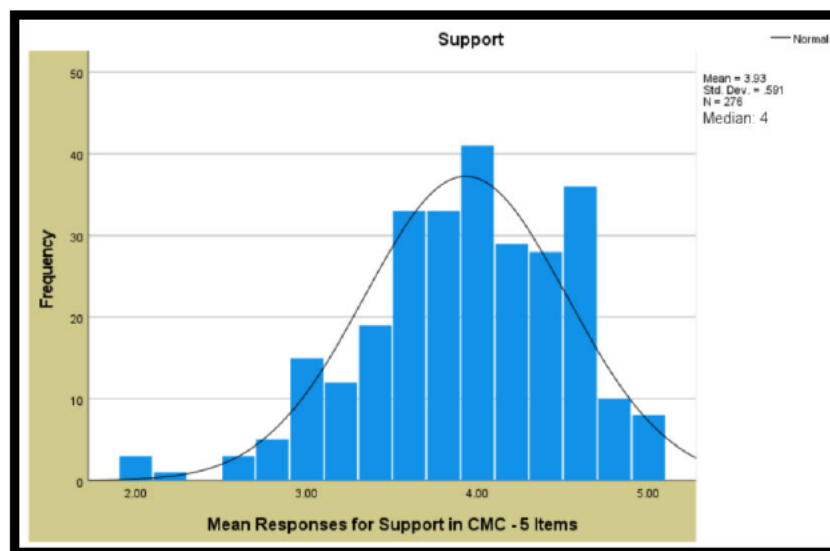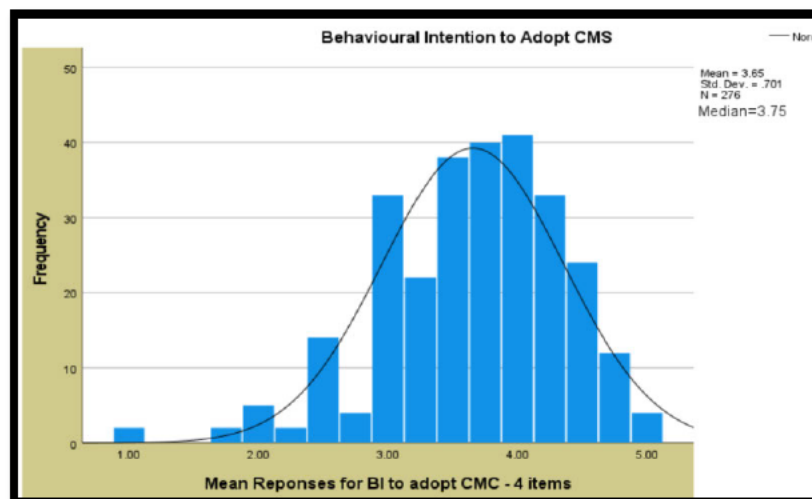

Figure 4. 15: Frequency based distribution for *Behavioural Intention*

As can be observed in Figure 4.15, the measures of central tendency for the construct of Immediacy shows a mean (*M*=3.65 and *SD* = 0.70) and median (*Mdn*= 3.75). The skewness is reported to be

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-0.703 and the kurtosis is 0.844. Both these values fall within the parameters of the guidelines provided in Kim (2013) that the absolute value of the skewness and kurtosis needs to be less than 1.96 in order for the assumption of normality to be valid. This observation paves the way for parametric testing of the mean as a significant measure of central tendency for the construct of Behavioural Intention. A one sample t-test was conducted on the observed mean and presented in Table 4.11. The null hypothesis is that the population mean is equal to the test value proposed. The alternative hypothesis is that the population mean does not equal the test value proposed

Table 4. 11: One Sample t-Test for *Behavioural Intention*

One-Sample Test					
			Test Value = 3		
					95% Confidence Interval of the Difference
	t	df	Sig. (2–tailed)	Mean Difference	Lower	Upper
Behavioural Intention	15.510	275	.000	.65489	.5718	.7380

As can be seen in Table 4.11 there is a statistically significant difference between the hypothesised mean and the observed mean at the 95% confidence level. The null hypothesis stated as $H_0 = 3$ can now be rejected and the conclusion can be made that the observed mean is significantly greater than 3 (($t(276) = 15.51$, $p<0.01$)).This result is confirmed in the non-parametric version of the t-test which is the One Sample Wilcoxon Signed Rank test illustrated in Figure 4.16 where the observed median is shown to be significantly greater than the hypothesised median of 3. The null hypothesis is that the population has equal medians. The alternate hypothesis is that the population does not have equal medians.
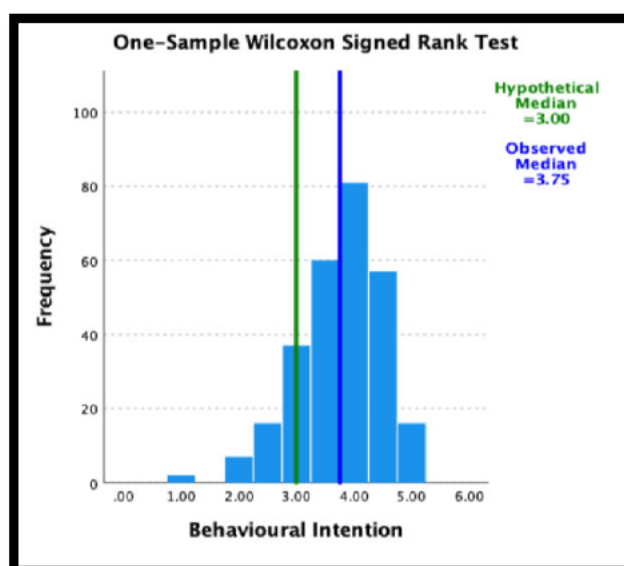

Figure 4. 16: Observed Median for *Behavioural Intention*

4.8 Correlation Analysis

The statistical analysis conducted thus far has provided an aggregated view of the study's data by using measures of central tendency such as the mean and median. The current section focuses on ascertaining the influence that the study's variables have on each other (as independent variables) as well as their collective influence on the study's dependent variable, which is the intention to adopt CMC. This section of the statistical analysis is also crucial in enabling the researcher to answer the core of the study's research questions. The researcher has labelled the study as an exploratory study that leveraged a conceptual framework to operationalise the study's main variables. The correlation analysis will determine the cogency of the study's conceptual framework in respect of its alignment to the actual data collected by examining the bivariate relationship between the study's variables.

The correlation analysis was conducted using the Pearson correlation, which determined the direction and the strength of the bivariate relationship between the study's variables. More importantly, the Pearson test also provided knowledge of the statistical significance of the bivariate relationship between the study's variables. The significance level was set at $p < 0.05$ so that the researcher will have a 95% confidence level with which to answer the study's research questions. The decision to opt for a parametric version of the correlation analysis is supported by the claims made in Ghasemi and Zahediasl (2012) as well as Norman (2010). In both these seminal papers, Central Limit Theorem is used to support the argument that for sample sizes in excess of 30 to 40, it is advisable for the researcher to use parametric correlation testing because it is more robust than the non-parametric equivalent.

According to Sekaran and Bougie (2016), correlation analysis is used to determine whether variables are associated or influence each other without specifying whether one variable causes the other and the Pearson correlation co-efficient is used to establish the strength of this influence. The results of the Pearson Correlation performed on the study's main variables is illustrated in Table 4.12.

Table 4. 12: Pearson's Bivariate Correlations

Correlations					
		Professionalism	Support	Immediacy	Behavioural Intention to use CMC
Professionalism	Pearson Correlation	1	.563**	.515**	.480**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	276	276	276	276
Support	Pearson Correlation	.563**	1	.472**	.413**
	Sig. (2-tailed)	0.000		0.000	0.000
	N	276	276	276	276
Immediacy	Pearson Correlation	.515**	.472**	1	.537**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	276	276	276	276
Behavioural Intention to use CMC	Pearson Correlation	.480**	.413**	.537**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	276	276	276	276
**. Correlation is significant at the 0.01 level (2-tailed).					

In order to contextualise the results in Table 4.12 a hypothesis testing approach that entails a statement of the null and alternate hypothesis is adopted. The hypothesis statements will be confined to the outcome variable (which is the Behavioural Intention to use CMC). This will ensure that the analysis and discussion are focused on the study's research questions. The hypotheses (null and alternate) will be listed and the discussion will be based on the data presented in Table 4.12.

Hypothesis One

- H_0: Professionalism has no influence on the Behavioural Intention to use CMC
- H_a: Professionalism does influence the Behavioural Intention to use CMC

The results from Table 4.12 indicate that Professionalism does have a moderate positive correlation with the Behavioural Intention to use CMC (r=0.48; p<0.05). The implication is that the null hypothesis rejected and the alternate hypothesis is accepted.

Hypothesis Two

- H_0: Support has no influence on the Behavioural Intention to use CMC
- H_a: Support does influence the Behavioural Intention to use CMC

The results from Table 4.12 indicate that Support does have a moderate positive correlation with the Behavioural Intention to use CMC (r=0.41; p<0.05). The implication is that the null hypothesis rejected and the alternate hypothesis is accepted.

Hypothesis Three

- H₀: Immediacy has no influence on the Behavioural Intention to use CMC
- Hₐ: Immediacy does influence the Behavioural Intention to use CMC

The results from Table 4.12 indicate that Immediacy does have a moderate positive correlation with the Behavioural Intention to use CMC (r=0.54; p<0.05). The implication is that the null hypothesis rejected and the alternate hypothesis is accepted.

It is noted from the results in Table 4.12, that the bivariate relationships between the study's independent variables are all statistically significant. This alludes to a high level of covariance among the study's variables thereby suggesting that co-variances among the study's independent variables. In order to obtain a clearer understanding of how the independent variables influence the dependent variable, a regression analysis is conducted.

4.10 Multiple Regression Analysis

According to Sekaran and Bougie (2016) regression analysis is undertaken when the objective is to obtain an understanding of how the variance in the independent variable explains the variance in the dependent variable. The pre-requisite requirement is that an ANOVA test to determine whether the conceptual model has a statistically significant fit to the study's data. As illustrated in Table 4.13, a significant regression equation was found ($F(3,272)=49.21$, $p<0.05$).

Table 4. 13: ANOVA Test of Significance

ANOVAᵃ						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47.738	3	15.913	49.421	.000ᵇ
	Residual	87.578	272	0.322		
	Total	135.316	275			
a. Dependent Variable: Mean_BI						
b. Predictors: (Constant), Professionalism, Support, Immediacy						

Table 4.14 provides an indicator that the overall conceptual model used in the study explains 35% ($R^2=0.35$) of the variance in the dependent variable (behavioural intention to use CMC).

Table 4.14: Variance in the Study's Conceptual Model

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.594[a]	0.353	0.346	0.56743	0.353	49.421	3	272	0.000
a. Predictors: (Constant), Professionalism, Support, Immediacy									

An examination of the co-efficient summary provided in Table 4.15, reveals that professionalism ($\beta= 0.28$; $p<0.05$) explains 28% of the variance in the dependent variable and Immediacy ($\beta= 0.32$; $p<0.05$) explains 32% of the variance in the dependent variable.

Table 4.15 also provides evidence that the construct of Support does not make a significant contribution ($p>0.05$) to the variance behaviour of the dependent variable. Based on this outcome, the construct of support has been subjected to structural equation modelling to determine a possible better configuration of this construct in the study's conceptual model.

Table 4. 15: Co-efficient Output from the Regression Analysis

Coefficients[a]					
		Unstandardized Coefficients		Standardized Coefficients	
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.867	0.264		3.285	0.001
	Professionalism	0.282	0.077	0.229	3.643	0.000
	Support	0.132	0.072	0.111	1.825	0.069
	Immediacy	0.316	0.051	0.367	6.227	0.000
a. Dependent Variable: Behavioural Intention to use CMC						

4.11 A Structural Equation Modelling Intervention

The current study has leveraged a conceptual framework that was proposed by the researcher based on a literary inquisition on the topic of CMC usage. The constructs of this model have formed the foundation on which much of the data analysis has taken place. It should however be noted that during the confirmatory factor analysis exercise undertaken in Section 4.8, there was concern regarding the cogency of the model and alignment between the items used to measure each construct with the data collected in the study. Basically, there were a few concerns regarding the "fit of the conceptual model" to the study's data. This becomes an area of exploration that could

become the focus of further analysis such as the technique of path analysis that is used in the domain of structural equation modelling (SEM). As Streiner (2006) explained, path analysis is a model testing procedure that basically establishes whether the model that has been identified during confirmatory factor analysis a "good fit" for the study's data. Path analysis also provides an indicator of the co-variance between the study's variables. For the current study, a path analysis exercise was conducted on the study's conceptual model. The outcome from this exercise is the illustration in Figure 4.17 and the discussion that follows.
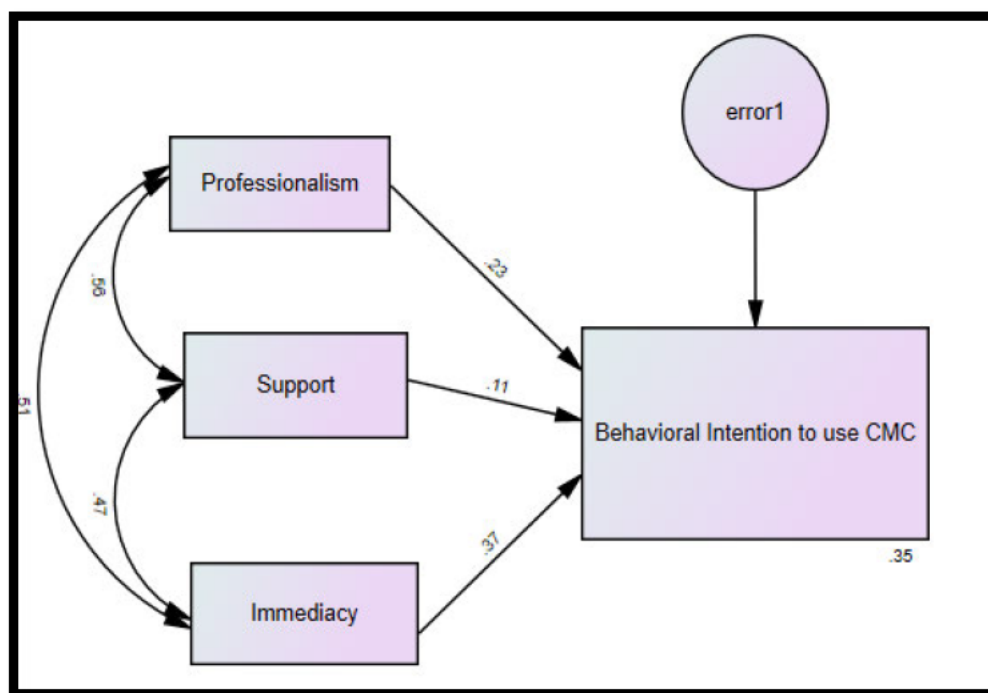
Figure 4. 17: Path Analysis illustration of the conceptual model

An initial glance reveals that the latent variables in the conceptual model marginally explains the variance of the dependent variable (DV) which is the Behavioral Intention to use CMC. This conclusion is reached by examining the beta weights (numbers on the lines between the study's main constructs. Before engaging in a discussion of these beta weights, AMOS provides a textual overview of the model's fit to the study's data. This description commences with the calculation of a chi-square (χ^2) value that has a null hypothesis that assumes the model does not fit the study's data. If p>0.05, then the χ^2 value is not significant and we can reject the null hypothesis (Streiner, 2006). In the current analysis, p=0.00 which indicates that the χ^2 calculation is significant implying that the study's conceptual model is not a good fit for the study's data. Streiner (2006) does however warn that Path Analysis and SEM should not be used as a model building tool. It can

however be used to examine different configurations of the study's latent variables with the DV. This advice was heeded with the objective of exploring the possibility of developing a better fitting model for the study's current data. After various iterations, the researcher settled on a model illustrated in the path analysis diagram shown in Figure 4.18.
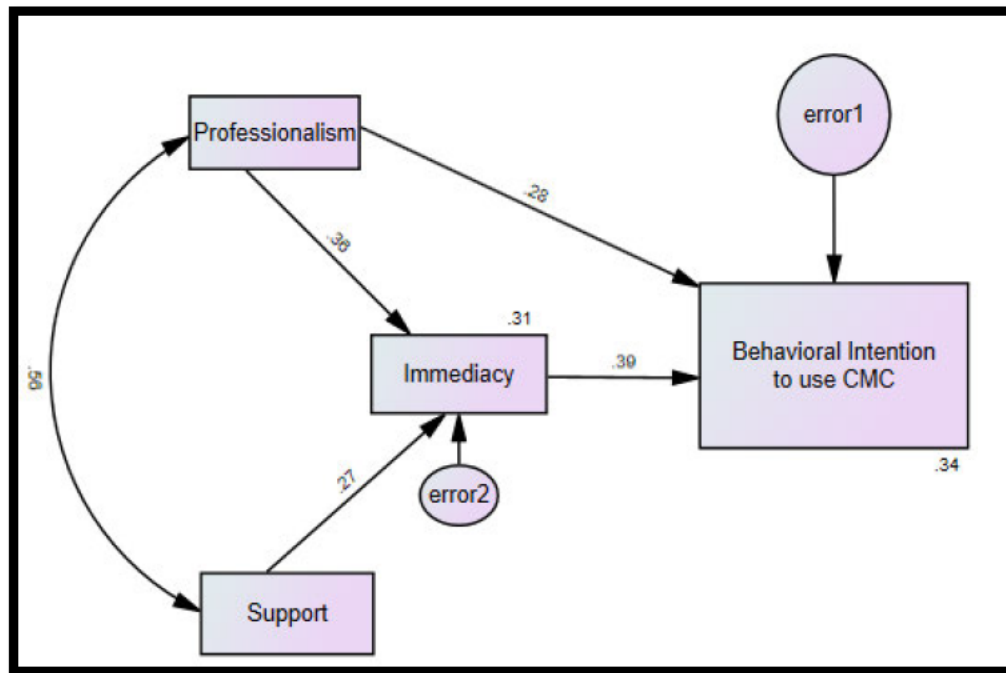
Figure 4. 18: Path Analysis illustration of the Adjusted Conceptual model

In the adjusted version of the path analysis illustration in Figure 4.18, the beta weights that provide an indication of the co-variance between the study's variables is not greatly different from Figure 4.17. However, this time around, the χ^2 value is not significant (p=0.067; p>0.05) implying that we can reject the null hypothesis and accept the alternate hypothesis that the current model is not significantly different from a model that has a perfect fit with the study's data. The other main indicators (TLI=0.956; RFI=0.939) are all within the parameters that indicate a good model fit. The model illustrated in Figure 4.18 indicates that the constructs initially proposed in the study's conceptual model are all significant contributors to the values of the DV. However, based on the regression analysis in Table 4.15, the construct of Support is not a significant direct predictor of behavioural intention to use CMC (dependent variable). Re-arranging the model has the outcome that Support is a significant predictor of Immediacy which in turn takes on the role of a mediating variable between the latent variable of Support and the DV. The regression co-efficient (also referred to beta weights) is an indicator of the role that the variables play in explaining the variance

in the study's data. As an example, a unit change in immediacy results in a 39% change in the value of the dependent variable and a unit change in professionalism results in a 28% variance in the Behavioural intention to use CMC. This is an improvement in the predictive capacity of the constructs of Professionalism and Immediacy on the dependent variable that was reported in the initial conceptual model (illustrated in Figure 4.17).

The outcome of the correlation analysis, regression analysis and the SEM is that all of the main constructs used in the study's conceptual model do have an influence on the study's dependent variable. However, only Professionalism and Immediacy contribute in a predictive manner. SEM was used to examine a different configuration of these constructs as illustrated in the path analysis exercise undertaken in this section. This exercise contributed marginally by identifying a better model fit for the study's data which can form the basis of further studies on this topic, but with the adjusted model (Figure 4.18) as the conceptual model and possibly a larger data sample.

4.12 Discussion of the Data Analysis

A discussion of the results reported from the data analysis section of this study will be conducted in the narrative that follows.

4.12.1 Introduction

The quantitative data analysis focused on a summarised view of the demographics of the study's sample with a view to establishing a context for the study's data. The quantitative data analysis consisted of statistical procedures that served to ensure that the study's data was reliable, valid and ensured a statistically significant conformance to the study's conceptual model. This was achieved by making use of Cronbach's alpha, descriptive analysis, correlation analysis, confirmatory factor analysis and structural equation modelling. The final phase of the data analysis entailed a structural equation modelling exercise that was conducted in an exploratory manner to obtain a better understanding of the inter-relationships between the main constructs in the study's conceptual model.

4.12.2 Socio-demographic Information

The study had 276 participants, majority of which were between the ages 18-24 years and approximately 10% were between the ages 25-30 years old. The gender of these participants is evenly matched with females having a slightly bigger value. The participants came from various educational backgrounds with participants from the School of Management, IT and Governance having a slight edge over the participants from the School of Accounting, Economics and Finance

and the least number of participants were from the School of Law. However, the analysis found that the data had equal variances across all ages, gender, and campuses. Because all the participants are tertiary students, this means they are all educated as they would have been able to obtain at least their National Senior Certificate. Furthermore, they are familiar with using CMC platforms to communicate with their lecturers hence they were requested to take part in this voluntary study.

4.12.3 Preferred CMC Platform

The researcher had compiled a list of CMC platforms that are commonly used at the UKZN tertiary institution, and asked the participants to indicate which CMC platform they prefer using the 5 point Likert scale. The study found that the majority of participants prefer eMail, Zoom, Moodle/Learn and Whatsapp CMC platforms for communication with their lecturers respectively. When further evaluated according to gender, the split between males and females was found to be relatively even with no significant variance. The majority of the participants were neutral about the use of MsTeams and Google Meet for communication with lecturers. The least preferred mode of communication was Facebook and Edmodo.

The popularity of a LMS such as Moodle to enable and enhance online learning is confirmed by Edumadze (2019). However, Mpungose (2020) provides empirical evidence that attests to the greater potential for a LMS such as Moodle that is used in conjunction with an instant messaging facility such as WhatsApp to provide support for online learning and enhance the effectiveness of CMC between student and lecturer. Studies by Niu (2019) and Jumaat et al. (2019) do confirm the role played by social networking sites such as Facebook for online learning only as supplementary and it cannot be used as a primary tool for online learning or CMC.

4.12.4 Behavioural Intention to use CMC

The study found that the majority of participants use CMC more than face-to-face communication with their lecturers and they find CMC convenient for communication with lecturers. It was found they also use CMC as means to develop a relationship with their lecturers. There was an almost even split on the number of participants who indicated they use CMC because they are too shy to communicate with the lecturers face-to-face. Overall the study found that there was an alignment between CMC and the value that the participants obtained from this interaction.

4.12.5 Demonstrated Immediacy

The study found that the majority of the participants were in agreement that lecturers' immediate responses motivate them to frequently communicate using CMC and that with CMC they are able to get valuable feedback which in turn motivates them to initiate communication via CMC. There

is a positive correlation between construct of Immediacy and the Behavioural Intention to use CMC. Also, Immediacy has been identified as one of the significant predictors of a student's intention to use CMC and accounted for approximately 39% of the variance in the value of the dependent variable (intention to use CMC). Most of the users said they get responses from lecturers faster than they would if they would have waited for a face-to-face consultation.

4.12.6 Demonstrated Professionalism

From an overall perspective, professionalism in the conduct of a CMC-based collaboration was identified as a significant predictor of students' behavioural intention to use CMC. It accounted for approximately 28% of the variance in the value of the dependent variable. This evidence attests to a significant influence that aspects such as writing/textual etiquette, quality and depth of the response/feedback obtained when communicating with lecturers. These indicators are elucidated in the detailed data presentation from Appendix A where the individual questionnaire items are analysed. The study found that the majority of the participants take note of their writing or textual etiquette when initiating communication with their lecturers' with a mean of 4.12, and SD=.795. Similarly the writing/textual etiquette of the lecturer's response influences the perception of a quality engagement where students are in agreement that a quality, well thought of response is required (M=3.95, SD=.828). A quality-driven experience underpinned by good writing and textual etiquette is also a pre-requisite for further engagement M=3.97, SD=.824). Participants were also noted to initiate communication on the CMC platforms with the lecturer having a clear idea of how they expect their lecturer to feel about the message mean=3.97, SD=.757. Findings revealed that participants are more motivated to initiate communication if the lecturers' responses are always ethical and concise (M= 4.07, SD=.767). The issue of personalised engagement with the lecturer was also covered under the construct of professionalism. Students are in agreement that they would be more motivated to engage using CMC platforms if lecturers addressed them by their name (M =3.75, SD=.962). The high level of standard deviation was also indicative of many students who felt that this aspect of personalisation was not that important. The inability to leverage body language as a means of communication on a CMC platform did not present itself as a significant factor. There was however marginal agreement that the lack of body language expression does hinder communication with a lecturer (M=3.51, SD=0.93). The high standard deviation was also indicative of the fact that many students did not see the lack of body language expression as a major hindrance for CMC based engagement.

4.12.7 Demonstrated Support

From an overview perspective, the construct of support did not present itself as a significant predictor of behavioural intention to use CMC (Table 4.15). However, the quality of support provided did contribute to the overall cogency of the conceptual model and accounted for 11% of the variance in the value of the dependent variable. The Structural Equation exercise resulted in the construct of support being removed as a direct antecedent of the behavioural intention to use CMC. It was better placed as a direct antecedent of the construct of Immediacy resulting in a better model fit for the study's data.

However, from a micro-analysis perspective, a cursory examination of the responses to the questionnaire items under this construct reveals that participants were more motivated to initiate CMC if the lecturer always demonstrated willingness to help (*M*=4.33, SD=.705) and the students had a level of expectation of the quality of support that will be provided by the lecturer (*M*=4.1, SD=.798). The last two questions under the demonstrated support construct showed the results closest to the 'neutral' response mean and they were both addressing the encouragement or level of encouragement to use the CMC platform. A further cursory observation that was that the use of an endearing form of communication via plural pronouns such as we/us provided the students with greater motivation levels to use CMC (*M*=3.71, SD=.889).

4.13 Conclusion of the Data Analysis

The data analysis section presented the following findings:

- Students have a preference to use a CMC form of interaction with lecturers; the most popular platforms for this engagement is the LMS named Moodle; WhatsApp is the preferred mode of instant messaging and Zoom is the preferred tool to enable a virtual classroom simulation
- Student do have a behavioural intention to use CMC as confirmed by the marginally positive, yet significant mean value obtained
- The construct of professionalism is a significant predictor to the behavioural intention to use CMC
- The construct of Immediacy is a significant predictor to the behavioural intention to use CMC
- The construct of Support is not a significant predictor to the behavioural intention to use CMC; however, this construct does make a contribution towards ensuring a reasonable good fit for the study's conceptual model to the study's data; a structural equation

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intervention was required to identify an optimal placement of the construct of support in the study's conceptual model

- The one sample t-test was used to confirm that all of the conceptual model variables showed the observed median to be significantly greater than the hypothesised neutral median of 3. The distribution of the study's data for all variables was approximately normally distributed with a mode of '4' which represents the 'Agree' response. This is indicative that the constructs used in the conceptual model were all perceived to be important (candidate) predictors of the behavioural intention to use CMC

- This chapter further shows the correlations and regressions between the conceptual framework's constructs. The results of the correlation analysis revealed that the constructs of *demonstrated immediacy, demonstrated support, and demonstrated professionalism* do have a positive influence on the *behavioural intention to use CMC;* the regression analysis does however provide evidence that the construct of *support* is not a significant predictor of the behavioural intention to adopt CMC.

CHAPTER 5: CONCLUSION

5.1 Introduction

This is the final chapter of the paper and it concludes the research paper with an overview summary covering the literature, methodology, analysis and aims to provide the answers to the research questions. This chapter discusses the limitations of the study and provides recommendations that serve to enhance CMC engagement between students and lecturers.

5.2 A Recap of the Study's Literature

The literature review is an important phase in the research study as it helps by providing an overview of current knowledge in the form of previous research studies, which enables the identification of relevant frameworks, methodologies and research gaps that are existing. Although online education has a number of benefits, we cannot overlook its shortcomings in these times of crisis. It is advantageous to some extent because it does not necessitate getting up early, there is no concern of being in the scenario of arriving late, and one can study in a relaxed manner. The previous research studies assist with the understanding of the determinants of successful computer mediated communication in educational institutions and the understanding of frameworks that can be used. The literature provided information in the context of developed and developing countries, however, there was still a gap in research focused on South Africa, understanding its socio-economic challenges. Furthermore, with the COVID-19 pandemic, a new gap was introduced since there was an added complexity in factors that needed to be taken into consideration in the ways that people all over the world were now required to communicate. The literature that was reviewed was found on multiple online databases including but not limited to Google Scholar, EBSCOhost and ResearchGate.

5.3 A Recap of the Study's Methodology

The methodology chapter provided the guidelines the researcher followed while conducting the study. The researcher highlighted the approach for the study, the research design, the research instrument and the data analysis. The methodology further covered the ethical considerations as well as the limitations of this study. A quantitative methodology was used so that the demonstrated immediacy, professionalism and support constructs could be measured meticulously across the various groups in order to provide an in-depth level of analysis. Purposive sampling which is also referred to as selective sampling is a type of non-probability sampling method in which researchers

choose people from the target population to participate in their surveys based on their own assessment, which in this study allowed for students who have used CMC for collaboration with lectures in the College of Law and Management Studies to be selected. The research instrument was administered in the form of an online questionnaire. The data collected was analysed thereafter using SPSS and SPSS AMOS.

5.4 A Recap of the Study's Data Analysis

The data analysis was conducted using the Statistical Package for Social Science (SPSS version 27 and SPSS Amos version 25). The presentation of the results started with a process called data screening, then the researcher tested the reliability of the instrument using Cronbach's alpha. The demographic data was presented using statistical descriptive analysis, in line with the quantitative nature of the study, graphs and tables were used in order to present the results in a reader-friendly manner. Further statistical analysis was conducted which addressed the area of demographic-oriented descriptive analysis, as well as inferential statistics in the form of t-tests and correlation and regression analysis. Confirmatory factor analysis was also conducted to examine the structure of the data as well as to identify factors that demonstrated both convergent and discriminant validity. Lastly, the model fit index test was computed to determine the degree to which the study's data aligned with the conceptual model.

5.5 Research Problem

Most South African universities had implemented learning management systems to meet the demand for more accessible and flexible online content distribution during the time of this study (Mpungose and Khoza, 2021). The University of KwaZulu-Natal had also made a swift transition to e-Learning which meant using solely CMC for student-lecturer interaction. Literature reviewed globally revealed that students complain about the lack of lecturers' immediacy and support when they communicate with them through CMC platforms. Similarly, lecturers often complain that many students do not demonstrate professionalism when communicating with them through CMC platforms (Maxwell, 2015; Da Rocha and Lombard, 2013; Bolkan and Holmgren, 2012). In education, CMC platforms facilitate learning relationships between the lecturer and student outside the 'lecture room' as the interaction can exceed the prescribed lecture time. Computer Mediated Communication (CMC), is communication or transmission of data between individuals using two or more electronic devices. There is a need to understand the factors that influence an effective interaction between lecturers and students through CMC, and propose adequate strategies to foster

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such an interaction. In this study an effective CMC interaction is defined as an interaction between a lecturer and a student that is perceived as prompt, professional and supportive by both the students and lecturers.

5.6 Answers to the Critical Questions

What are the Computer-Mediated Communication platforms that students prefer to use when interacting with lecturers?

Understanding the CMC platforms that students prefer to use when communicating with lectures' will assist the lectures' and education institutions to understand what needs to be done to ensure that the relevant CMC platforms are in place to enable an effective learning relationship that provides value to everyone involved. The study focused on seven different CMC platforms, which covered a wide range of CMC types and these included learning management systems, social networking sites and video conferencing apps. To address the question of student's CMC preference when communicating with lecturers, the top three CMC platforms will be discussed, as well as the least preferred CMC platform. Email was found to be the most preferred CMC platform by both students and lecturers and it was the only CMC to also have a mode of 'Strongly Agree'. Email further received the highest rating the participants could indicate for a preferred platform and this supports research findings by Ansari and Khan (2020); Maxwell (2015). The analysis further showed that Zoom was the second most preferred CMC platform regardless of the security flaws that have been documented (Rapanta and Botturi 2020). Descriptive analysis for Email and Zoom communication showed a mean of 4.17 and 4.16 respectively. Moodle/Learn was the third most preferred CMC platform.

Facebook was the least preferred CMC platform with a mean value of 2.24. Most of the participants indicated their disagreement to the use of Facebook for communication with lecturers. This supports the literature reviewed as social networking sites are not a popular choice as an educational platform due to the perceived lack of privacy and professionalism by both the lecturers and the students (Aydin, 2014; Da Rocha and Lombard, 2013; Teclehaimanot and Hickman, 2011). These results are slightly different from the findings by Aydin (2017) and Sanchez et al. (2019) who highlighted that there had been mixed reactions from students with regards to using Facebook for educational purposes. Furthermore the results further contradict findings by Mpungose (2020a) and Giannikas (2020) who are of the opinion that that students have a favourable disposition to the use of Facebook in a tertiary educational institution. The preceding outcome is somewhat

misleading because the context of Facebook usage in both those studies was that it was used in conjunction with a LMS (which was Moodle).

Hence, this discussion converges to a point where there is substantial evidence to suggest that CMC has to be centred on a recognised LMS such as Moodle. The remaining technological platforms provide secondary assistance. While the current study's empirical evidence suggests strong agreement that the use of a LMS tool such as Moodle is critical for successful CMC engagement, Mpungose (2020b) goes a step further to suggest that an ideal mix will be the use of a LMS with an instant messaging service such as WhatsApp. This outcome provides evidence that an all-integrated solution that encompasses an LMS, an instant messaging service and a video conferencing platform will provide ideal support for a successful CMC between students and lecturers.

How does immediacy of response influence the prospects of using Computer-Mediated Communication for student-lecturer interaction?

All the items in the *immediacy* construct displayed a positive moderate correlation with students' behavioural intention to use CMC. Also, from an overall perspective (aggregated values) immediacy had a moderate positive correlation to the *behavioural intention to use CMC*. Immediacy also contributes to the behavioural intention to use CMC in a predictive manner (confirmed by the regression analysis). Most students agreed that with CMC they get instantaneous feedback that is valuable, and this motivates them to initiate conversation with the lecturers. Similarly, lecturers' immediate responses motivate the students to frequently communicate using CMC. These results support research findings of Young et al. (2011) and Merdian and Warrior (2015) which highlighted the importance of immediacy. In both these studies the shortcoming of face-to-face interaction from an immediacy perspective are highlighted and students have a preference for CMC between student and lecturer with face-to-face communication. This outcome resonates with the studies by Da Rocha and Lombard (2013), Taylor et al. (2011) and Maxwell (2015) that immediacy of response is one of biggest advantages of CMC because it provides participants with an optimal control of learning space and time.

How does professionalism influence lecture-student interaction over Computer Mediated platforms?

As an independent variable, *professionalism* showed a positive moderate correlation to the *behavioural intention to use CMC.* This construct was also identified as a significant predictor of

the behavioural intention to use CMC. In summary, most students agreed that the writing/textual etiquette of the lecturer influences their perceived feedback value. Similarly, students take note of their writing/textual etiquette when initiating communication with their lecturers. The results also showed that students are more motivated to initiate communication if the lecturer's responses are always ethical, professionally compiled with minimal errors evident. Also, the tone and writing style of the received conveys an attitude that influences the level of intensity with which student use CMC with their lecturers. This outcome resonates with the findings of Carr and Stefaniak (2012), Schwab and Rothenberger (2015), Carr and Stefaniak (2012) where there are suggestions that lecturers should avail themselves of technological affordances such as spelling and grammar checks to improve the quality of their communication on CMC platforms because this level of professionalism contribute to greater use of the platform especially in an academic context.

How does support influence the use of Computer Mediated Communication for lecture-student interaction?

From a holistic perspective, the construct of support did display a marginal positive influence on students' intention to use CMC. From a micro-analysis perspective (taken from the evaluation if responses to the individual questionnaire items that is viewable in Appendix A), the construct of *support* consisted of 5 questionnaire items. One of the 5 items produced a positive but moderate response in terms of support being a factor that contributes towards the adoption of CMC. The remaining 4 questionnaire items under the construct of support produced a neutral to positive indication as factors that contribute towards an adoption of CMC. The questionnaire items touched on aspects such as the lecturer's willingness and enthusiasm for providing academic assistance via the CMC platform. Students indicated a greater level of motivation to use CMC if the lecturer encouraged students to use the platform and also provided responses that were helpful and academically uplifting. One of the suggestions for this positive energy generated on the CMC platform was the lecturer's use of emotionally supportive language by making use of plural pronouns such as "us" and "we". This outcome is slightly different from that reported in Rains et al. (2017) where the role played by support is endorsed as a valid contributor to greater CMC use. However, the focus is more on informational support (support aligned to providing information about the problem domain) rather than emotional support. The construct of support also receives extensive focus in the study by Fahy (2003) where support from a CMC perspective alludes to the effort made by lecturers to impart a sense or personalisation and individualisation of the CMC learning platform. Basically it is a reference to the effort made by the lecturer to reduce the distance

between the learner and the lecturer in an online environment. A deliberate strategy to provide support that enhances and encourages usage of the CMC platform results in greater student intention to use the platform. This outcome resonates strongly with the results from the current study.

In terms of predictive capacity, the construct of support was not identified as a significant predictor of student's behavioural intention to use CMC.

5.7 Limitations

The study's main limitation was the lack of a bigger sample size. Also, the respondents of the study provided information during a time period when the world was impacted by the COVID-19 pandemic and the use of online learning became necessity. This may have influenced the rationality of the responses because many of the respondents were not contextually bound to an environment where the responses could be focused on the problem of CMC learning as opposed to the problem of learning in a COVID-19 ravaged society.

Due to time constraints, the study's structural equation modelling outcome was not subjected to further inquiry. However, further studies on this topic where a different data set is used, could provide an indication of the validity of the study's conceptual model as well as the reworked model that was the output of the structural equation modelling exercise.

Also, a future study could enhance the generalisability of the study's results by invoking a probability-driven sampling approach that has a wider audience.

5.8 Recommendation

The current study has pioneered a pathway into understanding CMC adoption behaviour by making use of a conceptual framework that has been validated in the context of the study's data. This conceptual model could be extended/enhanced in further studies where the constructs within the framework are expanded to include additional variables that may provide greater elucidation of the complex phenomenon of understanding human behaviour in the adoption of online technologies as a platform to enhance/enable teaching and learning.

The current study's methodology has been confined to a quantitative approach that could be expanded into a mixed-methods study whereby the researcher will leverage the scope (quantitative) and depth (qualitative) of the data to provide a more nuanced view of this complex phenomenon.

The study has implications on the cognitivism in education. Because understanding students' mental state, especially during a pandemic and any distance learning means it is easier to empathise and ultimately foster a successful CMC relationship for both lecturer-student and student-content interaction.

5.9 The Study's Conclusion

Human behaviour around the adoption of technology in the domain of teaching and learning is a complex phenomenon (Hrastinski, 2009; Yukselturk, 2010). The study approached this topic with the objective of using a conceptual framework that will contribute towards a reduction in the complexity inherent in a study of CMC adoption. The domain of technology adoption abounds with various theoretical frameworks that provide assistance in reducing the complexity of technology adoption behaviour from a generic perspective. The study adopted a pragmatic approach to provide empirical evidence attesting to the role played by the constructs of Demonstrated Immediacy, Demonstrated Professionalism and the Demonstrated Support in influencing adoption behaviour towards the use of CMC as a teaching and learning platform. These constructs have been subjected to empirical inquiry, both individually and as a collective in terms of the role played in contributing towards CMC adoption behaviour. Individually, each of the constructs have been empirically tested in the study to demonstrate a marginal positive correlation towards the adoption of CMC as a platform to support teaching and learning. Collectively, the constructs did contribute in a sub-optimal manner. A structural equation modelling intervention resulted in the identification of an optimal arrangement of these constructs into a more viable conceptual model that provides a basis for further academic inquiry. Both the individual and collective outcomes from the study enabled the researcher to gather evidence that contributed towards the answering of the study's research questions. A concomitant outcome is that each of these factors provide pragmatic guidance on the enhancement of pedagogy on CMC-oriented platforms. These are:

- Immediacy – CMC enables instantaneous interactivity thereby ensuring a dynamic and current learning environment; hence the need to uphold the principle of quick response time by lecturers to student queries, confirmed in Coman et al. (2020); Kelley (2014).
- Professionalism – CMC does not make any explicit demand on the quality and etiquette/tone of the interaction between student and lecturer on the CMC platform; however the current study provides empirical evidence that suggests that these intangible attributes of writing style, etiquette, tone and quality of feedback need to be accorded a level of priority if the

adoption of the CMC platform is to be sustained. Lecturers and students need to make an effort to ensure correctness and rigour in the style of written communication on a CMC platform to ensure its sustainability.

- Support - Higher educational institutions need to adopt an attitude whereby lecturing staff provide support/encouragement in the use of CMC as a preferred mode for teaching and learning; this form of 'cajolement' towards the use of CMC platforms can take on diverse forms, but an explicit suggestion is that the lecturer needs to establish a degree of individualisation/personalisation with the student thereby reducing the impact of the physical disconnect. This kind of behaviour will lead to an enhancement in the adoption of the CMC platform, confirmed in Inkelaar and Simpson (2015); Martin and Bolliger (2018); and Tanga and Luggya (2020).

In the light of the general complexity associated with online pedagogy coupled with the additional challenge that the COVID-19 pandemic has imposed on the domain of teaching and learning (Daniel, 2020), the current study has provided knowledge that may be used to reduce the complexity of the afore-mentioned challenge. It has also provided a theoretical basis that could be evolved into a comprehensive framework of factors that explain and enhance human behaviour when it comes to the adoption of CMC as a platform to support teaching and learning.

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APPENDICES

Appendix A: Statistical Analysis of the Questionnaire Items

	Mean	Median	Mode	Std. Deviation	Skewness
Age	1.13	1.00	1	.374	3.053
Gender	1.42	1.00	1	.494	.340
Campus	1.17	1.00	1	.377	1.764
Ukzn School	1.71	2.00	2	.674	.422
1. I prefer to communicate with my lecturer via email	4.17	4.00	5	.998	-1.396
2. I prefer to communicate with my lecturer via Facebook	2.24	2.00	2	1.157	.742
3. I prefer to communicate with my lecturer via WhatsApp	3.62	4.00	4	1.155	-.444
4. I prefer to communicate with my lecturer via Moodle/Learn	4.00	4.00	4	.898	-1.091
5. I prefer to communicate with my lecturer via Edmodo	2.40	2.00	3	1.059	.435
6. I prefer to communicate with my lecturer via MsTeams	3.34	3.00	3	1.181	-.145
7. I prefer to communicate with my lecturer via Zoom	4.16	4.00	4	.881	-1.384
8. I prefer to communicate with my lecturer via Google Meet	2.86	3.00	3	1.009	.209
1. I use CMC more than face-to-face communication with my lecturers	4.07	4.00	4	.867	-1.019
2. I use CMC to communicate with my lecturer because it is convenient for me	3.88	4.00	4	.936	-.830
3. I use CMC to communicate with my lecturers because I am too shy to communicate with them face-to-face	3.11	3.00	4	1.160	-.009
4. I use CMC to develop a relationship with my lecturer	3.36	4.00	4	1.061	-.379
1. With CMC, I get responses from lecturers faster than I would if I waited for face-to-face consultations	3.40	4.00	4	1.225	-.364
2. With CMC, I get valuable feedback in the form of responses from lecturers	3.75	4.00	4	.958	-.674
3. Lecturers immediate responses motivate me to frequently communicate using CMC	3.90	4.00	4	.944	-.893
4. With CMC, I am more motivated to initiate communication if the lecturers always provides valuable feedback	3.98	4.00	4	.884	-.728
1. With CMC, I take note of my writing/ textual etiquette when I initiate communication with my lecturer	4.13	4.00	4	.791	-.776

	Mean	Median	Mode	Std. Dev	Skewness
2. With CMC, I initiate communication with a clear idea of how I expect the lecturer to feel about the email	4.01	4.00	4	.748	-.379
3. With CMC, the writing/ textual etiquette of the lecturers response influences the feedback value	3.98	4.00	4	.818	-.482
4. With CMC, I am more motivated to initiate communication if the lecturer demonstrates good writing/ textual etiquette	3.98	4.00	4	.822	-.553
5. With CMC, I am more motivated to initiate communication if the lecturers responses are always ethical	4.08	4.00	4	.766	-.717
6. I am more motivated to initiate communication in CMC platforms if the lecturer addresses me by my name in responses	3.74	4.00	4	.970	-.428
7. Because I am not able to use body language in CMC platforms, I find it difficult to express myself as best as I would in face-to-face communication	3.35	3.00	4	1.136	-.309
1. If the lecturer always demonstrates willingness to help through CMC, I am more motivated to initiate CMC	4.33	4.00	5	.705	-.745
2. With CMC, I am more motivated to initiate communication if the lecturer demonstrates politeness in responses	4.19	4.00	4	.763	-.876
3. Lecturers are more encouraging when using CMC by the use of plural pronouns (we; us) in their messages to students	3.75	4.00	4	.903	-.283
4. I use CMC only because my lecturer encourages it	3.65	4.00	4	1.003	-.369
5. With CMC I communicate a clear idea of what I expect to get from the lecturer	3.96	4.00	4	.794	-.624

Appendix B: Pearson's Correlations of Preferred CMC Platform Variables

			Email	Facebook	Whatsapp	Moodle/ Learn	Edmodo	MS Teams	Zoom	Google Meet
Spearman's rho	Email	Correlation Coefficient	1	-.055	-.195**	.219**	-.029	.126*	.170**	.180**
		Sig. (2-tailed)		.362	.001	.000	.636	.036	.005	.003
	Facebook	Correlation Coefficient	-.055	1	.232**	.038	.405**	.194**	-.035	.329**
		Sig. (2-tailed)	.362		.000	.524	.000	.001	.565	.000
	Whatsapp	Correlation Coefficient	-.195**	.232**	1	-.088	.182**	.092	.008	.174**
		Sig. (2-tailed)	.001	.000		.147	.002	.129	.900	.004

Moodle/Learn	Correlation Coefficient	.219**	.038	-.088	1	.180**	.024	.170**	.064
	Sig. (2-tailed)	.000	.524	.147		.003	.692	.005	.288
Edmodo	Correlation Coefficient	-.029	.405**	.182**	.180**	1	.371**	.078	.426**
	Sig. (2-tailed)	.636	.000	.002	.003		.000	.199	.000
MS Teams	Correlation Coefficient	.126*	.194**	.092	.024	.371**	1	.223**	.410**
	Sig. (2-tailed)	.036	.001	.129	.692	.000		.000	.000
Zoom	Correlation Coefficient	.170**	-.035	.008	.170**	.078	.223**	1	.145*
	Sig. (2-tailed)	.005	.565	.900	.005	.199	.000		.016
Google Meet	Correlation Coefficient	.180**	.329**	.174**	.064	.426**	.410**	.145*	1
	Sig. (2-tailed)	.003	.000	.004	.288	.000	.000	.016	
*. Correlation is significant at the 0.05 level (2-tailed).									
**. Correlation is significant at the 0.01 level (2-tailed).									

Appendix C: Pearson's Correlations of the CMC Information Variables

		BI1	BI2	BI3	BI4
I use CMC more that face-to-face communication with my lecturers(BI1)	Correlation Coefficient	1	.566**	.300**	.423**
	Sig. (2-tailed)		.000	.000	.000
I use CMC with my lecturers because it is convenient for me(BI2)	Correlation Coefficient	.566**	1	.425**	.446**
	Sig. (2-tailed)	.000		.000	.000
I use CMC to communicate with my lecturers because I am too shy to communicate with them face-to-face(BI3)	Correlation Coefficient	.300**	.425**	1	.387**
	Sig. (2-tailed)	.000	.000		.000
I use CMC to develop a relationship with my lecturer(BI4)	Correlation Coefficient	.423**	.446**	.387**	1
	Sig. (2-tailed)	.000	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed).					

Appendix D: Pearson's Correlations of the Demonstrated Immediacy Variables

		IM1	IM2	IM3	IM4
With CMC, I get responses from lecturers faster than I would if I waited for face-to-face consultations (IM1)	Correlation Coefficient	1	.561**	.485**	.410**
	Sig. (2-tailed)		.000	.000	.000
With CMC, I get valuable feedback in the form of responses from lecturers (IM2)	Correlation Coefficient	.561**	1	.505**	.547**
	Sig. (2-tailed)	.000		.000	.000
Lecturers immediate responses motivate me to frequently communicate using CMC (IM3)	Correlation Coefficient	.485**	.505**	1	.583**
	Sig. (2-tailed)	.000	.000		.000
With CMC, I am more motivated to initiate communication if the lecturer's always provides valuable feedback (IM4)	Correlation Coefficient	.410**	.547**	.583**	1
	Sig. (2-tailed)	.000	.000	.000	

		PR1	PR2	PR3	PR4	PR5	PR6	PR7
*. Correlation is significant at the 0.05 level (2-tailed).								
**. Correlation is significant at the 0.01 level (2-tailed).								

Appendix E: Pearson's Correlations of the Demonstrated Professionalism Variables

		PR1	PR2	PR3	PR4	PR5	PR6	PR7
With CMC, I take note of my writing/ textual etiquette when I initiate communication with my lecturer (PR1)	Correlation Coefficient	1	.507**	.484**	.471**	.416**	.279**	.244**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
With CMC, I initiate communication with a clear idea of how I expect the lecturer to feel about the email (PR2)	Correlation Coefficient	.507**	1	.508**	.447**	.392**	.344**	.129*
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.032
With CMC, the writing/ textual etiquette of the lecturers response influences the feedback value (PR3)	Correlation Coefficient	.484**	.508**	1	.579**	.446**	.424**	.305**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
With CMC, I am more motivated to initiate communication if the lecturer demonstrates good writing/ textual etiquette (PR4)	Correlation Coefficient	.471**	.447**	.579**	1	.463**	.368**	.282**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
With CMC, I am more motivated to initiate communication if the lecturer's responses are always ethical (PR5)	Correlation Coefficient	.416**	.392**	.446**	.463**	1	.334**	.164**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.006
I am more motivated to initiate communication in CMC platforms if the lecturer addresses me by my name in responses (PR6)	Correlation Coefficient	.279**	.344**	.424**	.368**	.334**	1	.360**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
Because I am not able to use body language in CMC platforms, I find it difficult to express myself as best as I would in face-to-face communication (PR7)	Correlation Coefficient	.244**	.129*	.305**	.282**	.164**	.360**	1
	Sig. (2-tailed)	.000	.032	.000	.000	.006	.000	
*. Correlation is significant at the 0.05 level (2-tailed).								
**. Correlation is significant at the 0.01 level (2-tailed).								

Appendix F: Pearson's Correlations of the Demonstrated Support Variables

		SU1	SU2	SU3	SU4	SU5

Spearman's rho			SU1	SU2	SU3	SU4	SU5
	If the lecturer always demonstrates willingness to help through CMC, I am more motivated to initiate CMC (SU1)	Correlation Coefficient	1	.484**	.310**	.185**	.345**
		Sig. (2-tailed)		.000	.000	.002	.000
	With CMC, I am more motivated to initiate communication if the lecturer demonstrates politeness in responses (SU2)	Correlation Coefficient	.484**	1	.360**	.317**	.433**
		Sig. (2-tailed)	.000		.000	.000	.000
	Lecturers are more encouraging when using CMC by the use of plural pronouns (we; us) in their messages to students. (SU3)	Correlation Coefficient	.310**	.360**	1	.359**	.490**
		Sig. (2-tailed)	.000	.000		.000	.000
	I use CMC only because my lecturer encourages it (SU4)	Correlation Coefficient	.185**	.317**	.359**	1	.402**
		Sig. (2-tailed)	.002	.000	.000		.000
	With CMC I communicate a clear idea of what I expect to get from the lecturer (SU5)	Correlation Coefficient	.345**	.433**	.490**	.402**	1
		Sig. (2-tailed)	.000	.000	.000	.000	
*. Correlation is significant at the 0.05 level (2-tailed).							
**. Correlation is significant at the 0.01 level (2-tailed).							

Appendix G: Independent Samples T Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
1. I prefer to communicate with my lecturer via email	Equal variances assumed	.220	.640	1.476	274	.141	.235	.159	-.079	.549
	Equal variances not assumed			1.458	65.490	.150	.235	.161	-.087	.557
2. I prefer to communicate with my lecturer via Facebook	Equal variances assumed	12.405	.001	3.566	274	.000	.647	.181	.290	1.004
	Equal variances not assumed			4.799	101.084	.000	.647	.135	.380	.915
3. I prefer to communicate with my lecturer via WhatsApp	Equal variances assumed	7.781	.006	-.954	274	.341	-.176	.185	-.541	.188
	Equal variances not assumed			-1.098	78.055	.276	-.176	.161	-.496	.143
4. I prefer to communicate with my lecturer via Moodle/Learn	Equal variances assumed	.210	.647	.534	274	.594	.077	.144	-.207	.361
	Equal variances not assumed			.590	73.908	.557	.077	.130	-.183	.337

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
5. I prefer to communicate with my lecturer via Edmodo	Equal variances assumed	.913	.340	.438	274	.662	.074	.170	-.260	.409
	Equal variances not assumed			.465	70.446	.644	.074	.160	-.245	.394
6. I prefer to communicate with my lecturer via MsTeams	Equal variances assumed	3.925	.049	2.721	274	.007	.509	.187	.141	.877
	Equal variances not assumed			2.892	70.647	.005	.509	.176	.158	.859
7. I prefer to communicate with my lecturer via Zoom	Equal variances assumed	1.975	.161	1.212	274	.227	.171	.141	-.107	.449
	Equal variances not assumed			1.046	58.660	.300	.171	.163	-.156	.498
8. I prefer to communicate with my lecturer via Google Meet	Equal variances assumed	.458	.499	.982	274	.327	.159	.162	-.160	.477
	Equal variances not assumed			.961	64.942	.340	.159	.165	-.171	.488
1. I use CMC more than face-to-face communication with my lecturers	Equal variances assumed	4.391	.037	2.121	274	.035	.292	.138	.021	.564
	Equal variances not assumed			1.833	58.699	.072	.292	.160	-.027	.612
2. I use CMC to communicate with my lecturer because it is convenient for me	Equal variances assumed	4.277	.040	3.196	274	.002	.471	.147	.181	.762
	Equal variances not assumed			2.895	60.767	.005	.471	.163	.146	.797
3. I use CMC to communicate with my lecturers because I am too shy to communicate with them face-to-face	Equal variances assumed	.004	.950	2.643	274	.009	.486	.184	.124	.847
	Equal variances not assumed			2.656	66.574	.010	.486	.183	.121	.851
4. I use CMC to develop a relationship with my lecturer	Equal variances assumed	.092	.762	3.068	274	.002	.514	.167	.184	.843
	Equal variances not assumed			3.008	65.025	.004	.514	.171	.173	.855
1. With CMC, I get responses from lecturers faster than I would if I waited for face-to-face consultations	Equal variances assumed	.000	.993	3.734	274	.000	.716	.192	.338	1.093
	Equal variances not assumed			3.659	64.995	.001	.716	.196	.325	1.106
2. With CMC, I get valuable feedback in the form of responses from lecturers	Equal variances assumed	.247	.619	3.780	274	.000	.566	.150	.271	.861
	Equal variances not assumed			3.737	65.539	.000	.566	.151	.264	.869

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
3. Lecturers immediate responses motivate me to frequently communicate using CMC	Equal variances assumed	4.544	.034	3.321	274	.001	.493	.149	.201	.786
	Equal variances not assumed			3.026	61.046	.004	.493	.163	.167	.819
4. With CMC, I am more motivated to initiate communication if the lecturers always provides valuable feedback	Equal variances assumed	3.759	.054	2.216	274	.027	.312	.141	.035	.588
	Equal variances not assumed			2.081	62.577	.041	.312	.150	.012	.611
1. With CMC, I take note of my writing/ textual etiquette when I initiate communication with my lecturer	Equal variances assumed	.138	.710	2.306	274	.022	.290	.126	.042	.537
	Equal variances not assumed			2.240	64.457	.029	.290	.129	.031	.548
2. With CMC, I initiate communication with a clear idea of how I expect the lecturer to feel about the email	Equal variances assumed	3.021	.083	2.229	274	.027	.265	.119	.031	.499
	Equal variances not assumed			2.087	62.424	.041	.265	.127	.011	.519
3. With CMC, the writing/ textual etiquette of the lecturers response influences the feedback value	Equal variances assumed	.465	.496	1.964	274	.051	.256	.130	-.001	.512
	Equal variances not assumed			1.965	66.269	.054	.256	.130	-.004	.516
4. With CMC, I am more motivated to initiate communication if the lecturer demonstrates good writing/ textual etiquette	Equal variances assumed	1.176	.279	1.755	274	.080	.230	.131	-.028	.488
	Equal variances not assumed			1.691	63.974	.096	.230	.136	-.042	.502
5. With CMC, I am more motivated to initiate communication if the lecturers responses are always ethical	Equal variances assumed	.156	.693	1.166	274	.245	.143	.123	-.098	.384
	Equal variances not assumed			1.089	62.293	.280	.143	.131	-.119	.405
6. I am more motivated to initiate communication in CMC platforms if the	Equal variances assumed	.099	.753	.976	274	.330	.152	.155	-.154	.457
	Equal variances not assumed			.960	65.219	.341	.152	.158	-.164	.467

Item		F	Sig	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
lecturer addresses me by my name in responses										
7. Because I am not able to use body language in CMC platforms, I find it difficult to express myself as best as I would in face-to-face communication	Equal variances assumed	.004	.952	2.035	274	.043	.368	.181	.012	.724
	Equal variances not assumed			2.045	66.583	.045	.368	.180	.009	.727
1. If the lecturer always demonstrates willingness to help through CMC, I am more motivated to initiate CMC	Equal variances assumed	1.265	.262	.983	274	.327	.111	.113	-.111	.333
	Equal variances not assumed			.990	66.758	.326	.111	.112	-.113	.335
2. With CMC, I am more motivated to initiate communication if the lecturer demonstrates politeness in responses	Equal variances assumed	.010	.921	.179	274	.858	.022	.122	-.219	.263
	Equal variances not assumed			.180	66.503	.858	.022	.122	-.222	.265
3. Lecturers are more encouraging when using CMC by the use of plural pronouns (we; us) in their messages to students	Equal variances assumed	3.550	.061	-.517	274	.605	-.075	.145	-.360	.210
	Equal variances not assumed			-.585	76.211	.560	-.075	.128	-.330	.180
4. I use CMC only because my lecturer encourages it	Equal variances assumed	.921	.338	2.523	274	.012	.401	.159	.088	.715
	Equal variances not assumed			2.423	63.791	.018	.401	.166	.070	.732
5. With CMC I communicate a clear idea of what I expect to get from the lecturer	Equal variances assumed	.421	.517	2.019	274	.045	.255	.126	.006	.504
	Equal variances not assumed			2.133	70.176	.036	.255	.120	.017	.494

Appendix H: One-Sample Wilcoxon Signed Rank Test

Null Hypothesis	Test	Sig [a,b]	Decision
The median of 1. I prefer to communicate with my lecturer via email equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

The median of 2. I prefer to communicate with my lecturer via Facebook equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 3. I prefer to communicate with my lecturer via WhatsApp equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 4. I prefer to communicate with my lecturer via Moodle/Learn equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 5. I prefer to communicate with my lecturer via Edmodo equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 6. I prefer to communicate with my lecturer via MsTeams equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 7. I prefer to communicate with my lecturer via Zoom equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 8. I prefer to communicate with my lecturer via Google Meet equals 3.	One-Sample Wilcoxon Signed Rank Test	.027	Reject the null hypothesis.
The median of 1. I use CMC more than face-to-face communication with my lecturers equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 2. I use CMC to communicate with my lecturer because it is convenient for me equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 3. I use CMC to communicate with my lecturers because I am too shy to communicate with them face-to-face equals 3.	One-Sample Wilcoxon Signed Rank Test	.113	Retain the null hypothesis.
The median of 4. I use CMC to develop a relationship with my lecturer equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 1. With CMC, I take note of my writing/ textual etiquette when I initiate communication with my lecturer equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 2. With CMC, I initiate communication with a clear idea of how I expect the lecturer to feel about the email equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 3. With CMC, the writing/ textual etiquette of the lecturers response influences the feedback value equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

The median of 4. With CMC, I am more motivated to initiate communication if the lecturer demonstrates good writing/ textual etiquette equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 5. With CMC, I am more motivated to initiate communication if the lecturers responses are always ethical equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 6. I am more motivated to initiate communication in CMC platforms if the lecturer addresses me by my name in responses equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 7. Because I am not able to use body language in CMC platforms, I find it difficult to express myself as best as I would in face-to-face communication equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 1. If the lecturer always demonstrates willingness to help through CMC, I am more motivated to initiate CMC equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 2. With CMC, I am more motivated to initiate communication if the lecturer demonstrates politeness in responses equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 3. Lecturers are more encouraging when using CMC by the use of plural pronouns (we; us) in their messages to students equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 4. I use CMC only because my lecturer encourages it equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of 5. With CMC I communicate a clear idea of what I expect to get from the lecturer equals 3.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of Immediacy equals 3.00.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of Professionalism equals 3.00.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of Support equals 3.00.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

The median of CMCInfo equals 3.00.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of Preferred equals 3.00.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of Adjusted Predicted Value equals 3.00000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of Standard Error of Predicted Value equals 3.00000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of COVRATIO equals 3.00000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of Adjusted Predicted Value equals 3.00000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of Standard Error of Predicted Value equals 3.00000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
The median of COVRATIO equals 3.00000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

The significance level is .050.a

Asymptotic significance is displayed.b

Appendix I: Consent Form

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

APPLICATION FOR ETHICS APPROVAL
For research with human participants

Information Sheet and Consent to Participate in Research

Greetings,

My name is Nonhlanhla Ntombela from the College of Law and Management Studies at the University of KwaZulu-Natal, my contact details are as follows: nonhlanhla.f.ntombela@gmail.com/ 214512466@stu.ukzn.ac.za, 0604896885. My supervisors are Dr S Ranjeeth, ranjeeths@ukzn.ac.za, 031 260 5641 and Dr S Ako-Nai (akonaia@ukzn.ac.za).

You are invited to participate in a study titled 'The Determinants of Effective Computer Mediated Communication between Lecturers and Students at a Tertiary Education Institution'. The main objective of the study is to determine factors that facilitate effective computer mediated communication between students and lecturers at a. tertiary education institution in South Africa.

An approximate total of 300 students are expected to participate in the study. Data for the study will be collected via an online questionnaire that comprises of closed-ended questions. The study does not pose a physical or emotional risk to the participants

Computer Mediated Communication (CMC) is a term that defines any human interaction that occurs through the use of two or more electronic devices. Lecturers and students are finding themselves communicating electronically more than they did in the past. Therefore, there is a need for both students and lecturers to understand what they individually expect from each other in terms of immediacy, support and professionalism when using CMC as a platform for communicating because the research shows that those three factors affect the attitude of the sender and the receiver in all CMC platforms. Therefore, this study will help students and lecturers better understand the above factors thus enabling successful learning relationships between students and lecturers through CMC.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number_____).

In the event of any problems or concerns/questions you may contact the researcher at (0604896885, nonhlanhla.f.ntombela@gmail.com / 214512466@stu.ukzn.ac.za)
or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:
HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private   Bag   X   54001
Durban 4000   KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557- Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Your participation in the study is voluntary and by participating, you are granting the researcher permission to use your responses. You may refuse to participate or withdraw from the study at any time with no negative consequence. Your anonymity will be maintained by the researcher and the School of Management, I.T. & Governance and your responses will not be used for any purposes outside of this study.
All data, both electronic and hard copy, will be securely stored during the study and archived for 5 years. After this time, all data will be destroyed.
If you have any questions or concerns about participating in the study, please contact me or my research supervisor at the numbers listed above.

Sincerely

_____
Nonhlanhla Ntombela
214512466

CONSENT TO PARTICIPATE

I (Name) _____ have been informed about the study entitled The Determinants of Effective Computer Mediated Communication between Lecturers and Students at a Tertiary Education Institution by Nonhlanhla Ntombela.

I understand the purpose and procedures of the study.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at Nonhlanhla Ntombela or the research supervisor Dr Sanjay Ranjeeth.

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private   Bag   X   54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557 - Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

_____   _____
Signature of Participant   Date

_____   _____
Signature of Witness   Date
(Where applicable)

_____   _____
Signature of Translator   Date
(Where applicable)

Appendix J: Questionnaire

The Determinants of Effective Computer Mediated Interaction between Lecturers and Students at a Tertiary Education Institution

Researcher: Nonhlanhla F. Ntombela
Supervisors: Dr S Ranjeeth and Dr S Ako-Nai

Discipline of Information Systems & Technology

College of Law and Management Studies
University of KwaZulu-Natal
Pietermaritzburg campus

- Please kindly complete this questionnaire.
- Please note that there is no correct/incorrect answer.
- Please note that participation in the study is voluntary.
- Please sign the letter of informed consent, giving me permission to use your responses for this research study.

GENERAL INSTRUCTION: In all the sections, kindly provide your response by making a cross **(X)** in the appropriate box and fill in the gaps in the case of open-ended questions.

SECTION A: DEMOGRAPHIC INFORMATION

1. Your age: ☐ 18 – 24   ☐ 25 – 30   ☐ 31 and above

2. Your gender: ☐ Female   ☐ Male

3. School of Accounting, Economics & Finance   School of Management, IT & Governance   School of Law

☐   ☐   ☐

SECTION B: PREFERRED COMPUTER MEDIATED COMMUNICATION (CMC)

Computer mediated communication (**CMC**) refers to human communication or transmission of data occurs, over the internet, through the use of two or more electronic devices. **CMC** platforms used in this study refers to platforms such: emails, Facebook, WhatsApp, Moodle and Edmodo.

1. I prefer to communicate with my lecturer via email

2. I prefer to communicate with my lecturer via Facebook

3.	I prefer to communicate with my lecturer via WhatsApp
4.	I prefer to communicate with my lecturer via Moodle
5.	I prefer to communicate with my lecturer via Edmodo
6.	I prefer to communicate with my lecturer via Teams
7.	I prefer to communicate with my lecturer via Zoom
8.	I prefer to communicate with my lecturer via Google Meet

Others (please specify): _____

SECTION C: Intention/Usage of the CMC platform

1.	I use/intend to use CMC more than face-to-face communication with my lecturers
2.	I use/intend to use CMC to communicate with my lecturer because it is convenient for me
3.	I use/intend to use CMC to communicate with my lecturers because I am too shy to communicate with them face-to-face
4.	I use/intend to use CMC to develop an academic relationship with my lecturer

SECTION D: DEMONSTRATED IMMEDIACY

|	
1.	With CMC, I get **responses** from lecturers faster than I would if I waited for face-to-face consultations
2.	With CMC, I get **valuable feedback** in the form of responses from lecturers
3.	Lecturers **immediate responses** motivate me to frequently communicate using CMC
4.	With CMC, I am **more motivated** to initiate communi-cation if the lecturer's always provides valuable feedback

SECTION E: DEMONSTRATED PROFESSIONALISM

1.	With CMC, I take note of my writing/ textual etiquette when I initiate communication with my lecturer
2.	With CMC, I initiate communication with a clear idea of how I expect the lecturer to feel about the email
3.	With CMC, the writing/ textual etiquette of the lecturers response influences the feedback value
4.	With CMC, I am more motivated to initiate communication if the lecturer

demonstrates good writing/ textual etiquette

5. With CMC, I am more motivated to initiate communi-cation if the lecturer's responses are always ethical

6. I am more motivated to initiate communication in CMC platforms if the lecturer addresses me by my name in responses

7. Because I am not able to use body language in CMC platforms, I find it difficult to express myself as best as I would in face-to-face communication

SECTION F: DEMONSTRATED SUPPORT
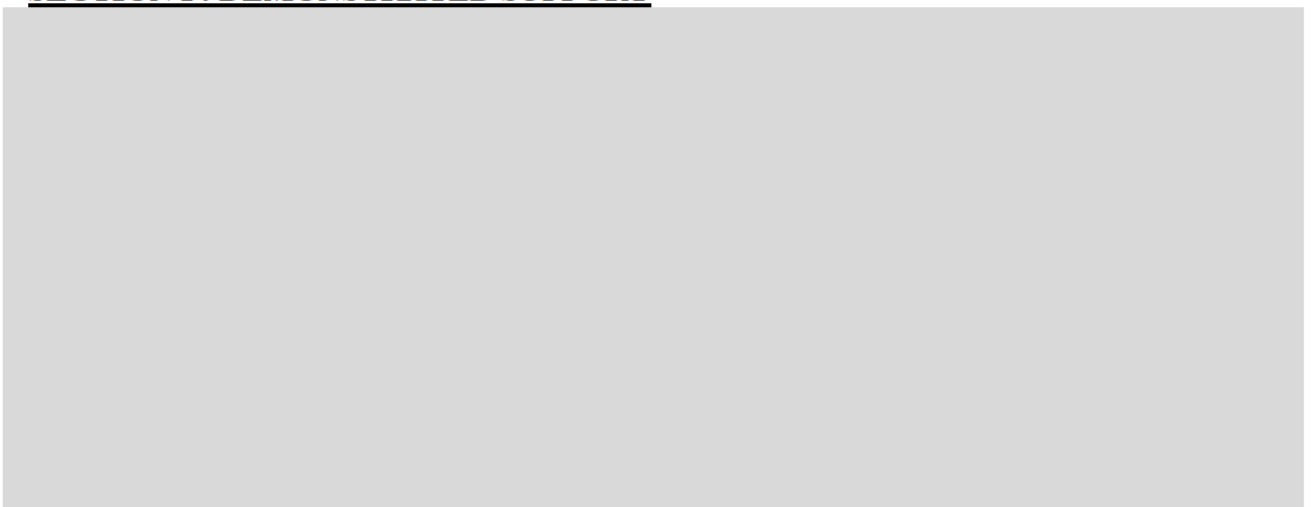
1. If the lecturer always demonstrates willingness to help through CMC, I am more motivated to initiate CMC

2. With CMC, I am more motivated to initiate communication if the lecturer demonstrates politeness in responses

3. Lecturers are more encouraging when using CMC by the use of plural pronouns (we; us) in their messages to students

4. I use CMC only because my lecturer encourages it

5. With CMC I communicate a clear idea of what I expect to get from the lecturer

THANK YOU FOR YOUR TIME!

Appendix K: Ethical Clearance

UNIVERSITY OF ™
KWAZULU-NATAL

INYUVESI
YAKWAZULU-NATALI

04 February 2021

Miss Nonhlanhla Fortunate Ntombela (214512466)
School Of Man Info Tech & Gov
Pietermaritzburg Campus

Dear Miss Ntombela,

Protocol reference number: HSSREC/00002188/2020
Project title: The determinants of effective computer mediated communication between lecturers and students at a tertiary education institution
Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 23 November 2020 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 04 February 2022.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,
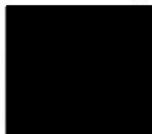
Professor Dipane Hlalele (Chair)

/dd

INSPIRING GREATNESS