Surveying KwaZulu-Natal Universities' Language Academics for the Modelling of Factors Affecting their Attitudes towards Computer Assisted Language Learning Tools for African Indigenous Languages

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Abstract

Computer Assisted Language Learning (CALL) has been proven by literature to be of immense benefit to the teaching and learning of language at all levels of education. However, it is interesting that university language academics seem to have a negative attitude towards CALL. The aim of this study, therefore, is to design a conceptually sound model of the factors that affect the attitudes of language academics towards Computer Assisted Language Learning Tool for African Indigenous Languages (CALLTAIL) and to examine the relationship between CALL and language attrition, especially for marginalised African languages. Supporting this study are these four theories, namely, the Theory of Reasoned Action, the Theory of Planned Behaviour, Hume's Theory of Beliefs, and the Digital Divide Theory. The study uses content analysis review of suitable literature and a survey of fifty (50) language academics from three (3) public universities in the province of KwaZulu-Natal in South Africa. The factors identified to affect the attitudes of language academics are their computer experience, their subjective norms, and their perceived usefulness of CALLTAIL. The findings of this study indicate that subjective norms and perceived usefulness of CALLTAIL are the two factors that affect other variables in this study. The findings also indicate that all the variables in this study are interlinked and interrelated. The study recommends the optimization of language academics' computer experience, subjective norms, and perceived usefulness of CALLTAIL. The chief contribution of this study is to have investigated the use and adoption of Computer Assisted Language Learning Tools in the context of African indigenous languages and this can be considered as a new research in comparison to the reviewed studies of this research.

Keywords: instructors, teachers, academics, attitude, Computer Assisted Language Learning

Declaration

I, Theophilus Adedayo Adedokun, hereby declare that the research work presented by this dissertation is my original work and all the materials used are appropriately acknowledged and explicitly referenced. A reference list is attached to the dissertation.

I also confirm that the dissertation has not been submitted in any of its part or entirety for any degree in any other institution of higher learning internationally or locally.

I therefore give permission that my work be available for replication and/or for re-printing, for inter-library loan, and for the title and abstract of my dissertation to be made available to other educational institutions and students that might need it.

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Supervisor Date

Dr Sylvia Phiwani Zulu

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Co-supervisor Date

Professor Seraphin Desire Eyono-Obono

Dedication

I dedicate this research work to the Almighty God, the beginning of my life, my source of inspiration, my stronghold, knowledge and understanding. He has been my source of strength during the course of my programme. I would continue to serve you as long as I live.

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Finally, I would like to thank the Durban University of Technology for not only allowing me to undertake this research but also for giving me the opportunity to attend conferences both locally and internationally.

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CHAPTER ONE
INTRODUCTION

The aim of this chapter is to present a definition of the central concepts of this study, and to emphasise the core benefits of CALL (Computer Assisted Language Learning) in education.

The first section of this chapter will determine the ubiquitous of Information and Communication Technologies (ICTs). The second section presents a brief history of CALL, followed by the definition of CALL, giving several other synonymous variations of CALL. Thereafter, some disadvantages of CALL are described, despite its enormous benefit to education and to language instructors in specific. The remaining section of the chapter is devoted to a description of the research questions, aim and objectives of the factors affecting language academic towards CALL Tools for African Indigenous Languages (CALLTAIL). At the end of this chapter, the whole organisation of the dissertation is presented.

1.1 OMNIPRESENSE OF ICTs

The worldwide adoption of ICTs is quite visible in many aspects of life, including for example in communication and in education. This viewpoint is largely supported by existing literature. “Society has reached a point of no return, one that leaves us completely reliant on omnipresent ICT-mediated communication” (Benczúr n.d.:1). This viewpoint is also maintained by Shamsi and Imtinan (2011:73) according to whom “ICT is everywhere and anybody even the person who is nobody can access Internet and be in touch with the world”. A similar viewpoint is expressed by Lee *et al*. (2014: 789) and by Aerts (2014:4), who respectively state that “ICT is everywhere with varied forms”, and “ICT is now pervasive and omnipresent”. Existing literature also reveals that this omnipresence of ICTs extends to the education domain. In reality, according to Talebian *et al*. (2014:301), “ICT now permeates the education environment and underpins the very success of the twenty-first century education”. This standpoint is upheld by Khan *et al*. (2013:367), who are of the opinion that “ICT plays a significant role in developing human capital through bringing a revolutionary change in [the] education system”. A similar stance is adopted by Fu (2013:112) who affirms that “ICT is considered a powerful tool for educational change and reform”.

1.1.1 CALL (CALL).

Language learning is not exempt from the influence of ICTs. For example, Marzban (2011: 1) argues that “ICT has the most positive effect on teaching and learning languages”. Floris (2014: 139) also reveals that “ICT has the potential important role in supporting and enhancing language learning”. Akindele (2013: 285-286) also upholds that “ICT provides a platform for the amalgamation of both spoken and written language and therefore encourages creativity in language use”. A similar stance is conveyed by Guemide and Benachaiba (2012:33) who assert that “ICT can play a major part in face-to-face language teaching, offering new ways of solving old problems”. The above citations from the existing literature seem to indicate that the use of ICTs in language learning can prevent the disappearance of languages, possibly because ICTs can be used to store language resources in order for them to be transmitted from generation to generation. Notwithstanding the above-identified positive influence of ICTs on language learning, their influence on the revival of languages which are at risk of extinction is still considered a challenge. This is why the research problem and aim of this study, therefore, is to design a conceptually sound model of the factors that affect the attitudes of language academics towards Computer Assisted Language Learning Tool for African Indigenous Languages (CALLTAIL) and to examine the relationship between CALL and language attrition, especially for marginalised African languages. This duality between marginalised languages and dominant languages is further highlighted in the problem statement of this study, including the education sector in general, and in higher education in specific.

1.2 A BRIEF HISTORY OF CALL

CALL, according to Butler-Pascoe (2011:17), “has its origins in the 1960s with the development of the mainframe computer and programs located at several universities around the world”. The computer courseware, citing Butler-Pascoe (2011), was developed “using programming languages [and] was stored on a mainframe typically located on campus and was accessed by students at connecting terminals”. Programmed Logic for Automated Teaching Operations (PLATO) system was the first ICT ever introduced for the teaching of the Russian reading course at the University of Illinois and is based on the grammar translation method; the program was used for direct translation with brief grammar explanation, vocabulary and grammar drill (Greenfield 2001).

A ground-breaking advancement in CALL occurred towards the end of the 1960s at Stanford University in the Slavic Language Department, a project led by Van Campen. The first focus of this project which was on Russian language where Van Campen presented a “computer-based” preliminary course which was self-instructing and where most of the teaching was performed on computer. In the long term, the course encompassed courses in the history of Russian Literary Language, Armenian, Old Church Slavonic and Bulgarian. A noteworthy CALL project was established later in the 1970s at Dartmouth College in New Hampshire and at the University of Essex in England (Greenfield 2001).

According to Saranya and English (2019) citing Warschauer (2013), “the history of CALL can be divided into three (3) phases, namely: Behaviouristic CALL; Communicative CALL; and Integrative CALL. The evolution of these phases of CALL was dependent on factors such as “research in applied linguistics, change in the status of languages and language learning, and sociological changes in schools and education, [and] technological change”.

1.2.1 Behaviouristic CALL

According to Rafiee and Purfallah (2014), this first phase of CALL was characterised by the Behaviourism theory which was the dominant during the 1950s and 1960s. This theory affected the education system at that time. One of the preliminary examples of behaviouristic CALL was a project pioneered by the University of Illinois called the PLATO project. The main role of PLATO was to make available some “mechanical types of vocabulary grammar drill”, thus creating more class time for communicative activities. Behaviouristic CALL featured the following:

i. Repeated exposure to the same material being beneficial or even essential to learning.
ii. A computer can present such material on an individualised basis, allowing students to proceed at their own pace and freeing up class time for other activities (Rafiee and Purfallah 2014).

1.2.2 Communicative CALL

This next phase of CALL was referred to as Communicative CALL because it highlighted the “communicative use of the language rather than mastery of isolated forms” (Browne and Fotos 2013) and originated in the 1970s and early 1980s. CALL programs for teaching and learning

in this phase consisted of puzzles, language games, doze tests, reading and writing practice and text reconstruction. In this phase, the predominant model was referred to as “computer as tutor for the student, a teacher in the machine”. Communicative CALL featured the following:

i. It focused more on using forms rather than on the forms themselves;
ii. It taught grammar implicitly rather than explicitly;
iii. It used the target language exclusively and created an environment in which using the target language felt natural, both on and off the screen; and
iv. It would never try to do anything that a book could do just as well (Rafiee and Purfallah, 2014).

1.2.3 Integrative CALL

This last phase of CALL arose in the twenty-first century. According to Yaiche (2018:20), this phase of CALL “seeks both to integrate various skills (e.g., listening, speaking, reading, and writing) and also integrate technology more fully into the language learning process” (cited in Donaldson and Haggstorm 2006). This last phase of CALL is said to witness tremendous expansion in terms of multimedia computing, which comprises a blend of text, graphics, sound and video accessible in one computerised program. Rahimi and Yadollahi (2012:109) argue that this phase of CALL views

> *“language learning from the perspective of socio-cognitive theory which attaches a great importance to authentic use of language in meaningful contexts. It also gives emphasis to the integration of each skill by means of multimedia networked computers providing […] language learners with opportunities to use information communication technology” (cited in Akbulut, 2008).*

1.3 DEFINITION OF CALL

According to Adedokun *et al*. (2019:288), citing Heift and Schulze (2015), “the field of CALL came into existence almost 50 years ago and it draws from many other fields, including Computer Assisted Instruction (CAI), Educational Psychology, Artificial Intelligence (AI), Computational Linguistics, Instructional Design, Human Computer Interaction (HCI), Second Language Acquisition (SLA), and Web Based Instruction (WBI)” (Vula 2017). Accordingly, Kumaresan *et al*. (2012) postulate that “CALL is an inherently multidisciplinary and rapidly

evolving field which explores the role of ICTs in language learning and teaching". Beatty (2013), cited in Adedokun et al. (2019:288), reveals that

> *"the CALL field is constantly undergoing changes because technological innovations are creating opportunities to revisit old findings, conduct new research, and challenge established beliefs about the ways in which teaching and learning can be carried out, both with a human teacher and without one".*

CALL as a term is related to other synonymous typologies such as Computer Enhanced Language Learning (CELL), Technology Enhanced Language Learning (TELL), Technology Assisted Language Learning (TALL), Computer Assisted Language Instruction (CALI), Computer-based Language Training (CBLT), Network-Based Language Teaching (NBLT), Digital Language Learning (DLL) and Mobile Assisted Language Learning (MALL) (Hubbard 2014). These synonymous typologies of CALL can be grouped into two classifications: one group comprises of CBLT, CALL, CALI and CELL, and this group focuses on computers use for language learning and teaching. The other category views language learning and teaching as a broader technological continuum and this includes NBLT, TALL, DLL and MALL and TELL.

From this point onwards, the various terminologies associated with CALL are discussed extensively.

1.3.1 Computer Enhanced Language Learning (CELL)

According to Hoven (1997), CELL is a kind of learning which uses computers in a language learning environment to enhance the learning. He further explains that "language learning could and does occur anyway, regardless of the presence of computers, but the incorporation of computers is intended to improve, expand, or enhance the learning in some way". CELL thus suggest that the role of the computer in language education is to enhance language learning; in other words, to make language learning better.

1.3.2 Computer Assisted Language Instruction (CALI)

According Hubbard (2014), CALI "with 'instruction' in it is more teaching oriented". This implicitly suggests that the use of computers in language education should concentrate more on language teaching than on language learning.

1.3.3 Computer Based Language Training (CBLT)

CBLT, according to Hubbard (2014), “views elements of language learning as ‘training’ and tends to use an approach with definable, measurable objectives”. This suggest that the role of the computer in language education should pay more attention to language training than to language teaching or language learning.

1.3.4 Technology Enhanced Language Learning (TELL)

According to Hubbard (2014), TELL “accommodates more than just computers, often bringing in video and seeing the computer as just one part of a larger system”. This suggest that contemporary language learning is not just improved by computers, but also improved by several other types of technology.

1.3.5 Network Based Language Teaching (NBLT)

NBLT, according to Hubbard (2014), “focuses on computers linked in networks, both locally and through the Internet, especially for computer-mediated communication”. The emphasis here is that the role of “computer networks, computer-mediated communication, and the Internet in language education should focus more on teaching rather than on learning”.

1.3.6 Digital Language Learning (DLL)

DLL is defined as “a broad category that includes online learning, whether self-paced or collaborative; digital learning resources (e.g., e-textbooks, e-gradebooks, interactive media); mobile learning apps, including educational games and other mobile services” Richards (2015: 19). This stresses that the fact that digital devices in language education should place emphasis on learning implicitly suggests that the role of digital devices in language education should focus more on learning than on teaching.

1.3.7 Mobile Assisted Language Learning (MALL)

MALL, as stated by Kukulska-Hulme and Shield (2007) and as cited in Zhang (2018:3), is “the use of mobile technologies and portable devices to assist learning in general and language learning specifically”. The focus of this is that mobile devices such as mp3 players, tablets and mobile telephones in language education should place emphasis on learning rather than on teaching.

1.3.8 CALL (CALL)

CALL, according to Davies (2000:1) “is often perceived, somewhat narrowly, as an approach to language teaching and learning in which the computer is used as an aid to the presentation, reinforcement and assessment of material to be learned, usually including a substantial interactive element”. For Devendran and Kalaiarasan (2018), CALL refers to a number of approaches to teaching and learning where “computer and computer-based resources”, for instance the Internet and other technological tools, are used to facilitate language leaning. In the case of Saranya and English (2019:369), CALL “is the general term for the range of processes and activities that employ computers in the teaching and learning of a […] language and [this typically includes] a substantial interactive element”.

Gamper and Knapp (2002:329) propose a similar definition of CALL as “a research field which explores the use of computational methods and techniques as well as new media for language learning and teaching”. On the other hand, Sadeghi and Soleimani (2015:2408), citing Levi (1997), consider CALL “as the search for and study of applications of the computer in language teaching and learning”. Rahimi and Yadollahi (2011) define CALL as the incorporation and active use of ICT tools in language teaching and learning from the initiation of computers into the world. Another definition of CALL, as proposed by Cox (2008:11) citing Beatty (2003), has to do with the “learning [of] language [with] the computer either as a direct activity through structured lessons or during an activity peripheral to the study of language but that, nonetheless, promotes language awareness and acquisition”.

The above illustrations and descriptions of CALL point to the fact that CALL is of immense benefit for the teaching and learning of language.

1.4 THE BENEFITS OF CALL

The herewith presented benefits of CALL were identified from Rico García and Vinagre Arias (2000); Genç and Aydin (2011); Nim et al (2009); Alkahtani (2011); Başöz and Çubukçu (2014); Yang (2010); Levy (2009); Mason (2014); Khamkhien (2012); Gilakjani (2012); Phan and Hamid (2017); and Pourabad (2016).

These benefits can be classified into: (a) saves instructors' time; (b) enhances instructors' language skills; (c) provides instructors with the ability to deliver more interesting lessons to students; (d) provides instructors with easy and rapid access to a variety of language resources and multimedia; (e) assists instructors in facilitating the language learning process better.

1.4.1 Saves instructors' time

According to Nim et al (2009), one of the core benefits of CALL is that it saves instructors' time, as they do not have to write on a blackboard, as well as offering instructors the ability to offer interesting lessons to students of language which are full of authentic pictures, images, animations and video clips in the language classroom.

1.4.2 Enhances instructors' language skills

Alkahtani (2011) and Başöz and Çubukçu (2014) identify that the use of CALL by language instructors enhances their language skills; these language skills include reading, listening, pronunciation, vocabulary and writing. Yang (2010:911), citing Warschauer and Healey (1998), also claim that "skills do have a place in language [teaching] and learning, particularly in […] vocabulary acquisition where giving the same information in multiple modes, such as visual plus aural plus textual, enhances recognition and recall". Levy (2009: 773) believes that the use of CALL by language instructors has the ability to "address central problems in the development of the writing skill, including the need for accuracy, production, multiple drafts, channels for context-sensitive feedback and correction, peer editing, reflection, and a record of the process".

1.4.3 Provides instructors ability to deliver a more interesting lesson to students

According to Mason (2014:179), the use of CALL by instructors provides them with the ability "deliver a more interesting lesson to students". For instance, students during a class could record the teacher's voice, then download the voice recording into a computer with the help of their instructor; also, they could download software which could edit their recordings and transcribe them to the written word. These transcriptions could then be used by students while revising what they have learned and subsequently used to prepare for their tests and examinations. Access to the Internet also could also help them with completion of tasks given to them by their instructor with little or no supervision from their instructor.

1.4.4 Provides instructors and students with easy and rapid access to variety of language resources and multimedia for teaching and learning

According to Khamkhien (2012), CALL has the ability to assist instructors in providing easy and rapid access to a variety of language learning resources and multimedia components for dynamic and authentic input in all areas of language which could not be offered without additional teaching aids. Language resources and multimedia "can provide a large amount of instructional information to the students for the purpose of [language teaching] and learning and accelerate the process of information searching" (Gilakjani 2012:57). Accordingly, CALL adoption in language teaching and learning assists instructors and students in gaining "more access to language resources for self-study outside the classroom" (Phan and Hamid 2017:49).

1.4.5 Assists instructors in facilitating language learning process better

CALL, which serves as a pedagogical tool for instructors assists them in facilitating language learning better; hence, making "the language learning process easy for learners" (Pourabad 2016:10). CALL subsequently supports the contents taught by learners in the language classroom and also serves as a beneficial instrument in incorporation of students with special needs and assisting students who need special training (Rico García and Vinagre Arias 2000; Genç and Aydin 2011).

1.5 PROBLEM STATEMENT

The main problem that this study identifies is instructors' negative attitude towards CALL despite the quantifiable benefits which CALL offers to the teaching and learning of languages at all levels of education, be they primary, high school or tertiary levels. Therefore, there is a need to identify factors that affect the instructors' attitudes towards CALL. Evidence from existing literature points out the challenges being faced by CALL.

1.5.1 Disadvantages of CALL

One of the disadvantages of CALL to instructors is their perception of CALL as a threat to their jobs. Language instructors are afraid to adopt CALL as a result of their perception that they and the classroom could be replaced by CALL and that it therefore constitutes a threat to their job security (Orsini-Jones 1999). Because CALL is technologically based, which requires instructors to be technologically equipped before they are able to use it to facilitate in their classrooms, they tend to have a negative attitude towards its adoption.

According to Lu and Peng (2006), one of the disadvantages of CALL is that instructors perceive it as a source of extra work for them beside their regular teaching workload which is already overwhelming and which then adds to it. More so, CALL implementation is practically impossible without additional technical support for instructors to be able to make use of it in a productive way. Adedokun *et al*. (2019:291), citing Dina and Ciornei (2013), state that one of the disadvantages of CALL is that that "instructors exhibit a negative attitude towards [it] because they strongly believe that it is merely technology, and that technologies can never replace human beings as instructors". Abuseileek *et al*. (2012) also claim that one of the disadvantages of CALL is that instructors perceive that CALL can never replace textbooks. Another disadvantage of CALL, as noted by Hani (2014), is that instructors perceive it as associated with computer games. Games during language teaching and learning according to Sung *et al*. (2015:69) constitute a "distraction from learning tasks".

1.6 DOMINANT LANGUAGES, MARGINALISED LANGUAGES AND ENDANGERED LANGUAGES

According to Amano *et al*. (2014:1), "many of the world's languages" are on an almost daily basis facing a "serious risk of extinction". This problem is expressed by several terms such as language extinction; language death; linguistic genocide; language loss; language attrition; language decimation; and language shift. An alarm is rung by Rafiu (2013:39) on "the rate at which human languages are going into extinction". Isern and Fort (2014:1) are also adamant that "language diversity has become greatly endangered in the past centuries". As for Deka and Sinha (2016:1), "many languages have already died out [,] some are on the verge of extinction and yet others are endangered". This viewpoint is shared by Skutnabb-Kangas and Phillipson (2011:177), according to whom "languages are today being killed at a much faster pace than ever before in human history". There are also unfortunate situations where some languages are marginalised even though they are not endangered. This is supported by the following extract from Mufwene (2004:206):

> *"[Marginalised languages] may be spoken by the majority population of a polity but [they are] relegated to ethnographically 'low' communicative functions. If this view is taken literally, most indigenous languages in former European colonies fall into this category*

because they are not associated with the 'high(er)' communicative functions of their polities".

The extract above clearly indicates, as supported by the following citation from Ndhlovu (2008:144) that "African languages are currently marginalized or totally ignored in the activities of national, regional, sub-regional and continental economic programmes".

The fact that most indigenous African languages are marginalised is certainly a matter of great concern, but that is not really the main problem at the core of this study. The main problem at the core of this study is related to the fact that many indigenous African languages are endangered because they are no longer transmitted from generation to generation. The current research hypothesises that this problem can be alleviated by the use of innovative methods for the teaching and learning of indigenous languages, and it considers CALLTAIL as one of these innovative methods.

CALLTAIL can be simply defined as the use of computer applications for the teaching and learning of indigenous African languages. In order for CALLTAIL to have any significant impact on the active transmission of indigenous African languages, it must enjoy the support of key stakeholders from the following domains: education; government leadership; civil society; and the larger society. The scope of the current research is restricted to the study of the attitudes of language academics towards CALLTAIL considering that these academics are key educational stakeholders who can influence the possible impact of CALLTAIL.

1.7 RESEARCH QUESTION, AIM AND OBJECTIVES

The benefits and challenges of CALL highlighted above, and the endangering and marginalisation of indigenous African languages, raise questions about the attitudes of language academics towards CALLTAIL. The aim of this study is therefore, to examine the attitudes of language academics towards CALLTAIL in an attempt to contribute towards a solution to the problem identified above of language endangerment especially in the African context. The questions formulated from the aim of the study is: What are the factors affecting the attitudes of language academics towards CALLTAIL? How can they be shaped into a conceptually sound validated model that can be used to make recommendations on how to

improve the adoption of CALLTAIL for the teaching and learning of indigenous African languages?

1.7.1 Objectives

The following three objectives of this study are derived from the above-identified aim:

i. To determine the factors affecting the attitudes of language academics towards CALLTAIL design a conceptually sound model of those factors;
ii. To empirically validate the above-identified conceptual model; and
iii. To suggest possible recommendations on how to improve the attitudes of language academics towards the use of CALLTAIL for the teaching and learning of indigenous African languages.

1.7.2 Research sub-questions

The aim mentioned above can be formulated in the interrogative form by the following research questions:

i. What are the factors affecting the attitudes of language academics towards CALLTAIL and how can those factors be shaped into a conceptually sound model?
ii. To what extent is the above-stated conceptual model empirically validated?
iii. What possible recommendations can be made on how to improve the adoption of CALLTAIL for the teaching and learning of indigenous African languages based on the empirically validated factors of the above-identified model?

1.8 ORGANISATION OF THE DISSERTATION

This dissertation on the factors affecting the attitudes of language academics towards CALLTAIL comprises six chapters. A short summary of the respective contents of these chapters is described below:

CHAPTER ONE: INTRODUCTION

This chapter defines CALL and describes the various terms associated with it. The key advantages and disadvantages of CALL are also discussed. The chapter also identifies the

aim, research questions and objectives of this study on the factors affecting the attitudes of language academics towards CALLTAIL.

CHAPTER TWO: RESEARCH METHODOLOGY

This chapter provides a broad narrative of the methodologies which this study followed for both the design of the conceptual model and for the empirical validation of this model. The two methodologies adopted are content analysis and surveys.

CHAPTER THREE: LITERATURE REVIEW AND THEORETICALLY SOUND CONCEPTUAL MODEL

This chapter reviews existing literature on the factors affecting the attitudes of language academics towards CALLTAIL. Also presented is a selection of some of the theories and models reviewed, and these are used to formulate the conceptually sound model of factors affecting the attitudes of language academics towards CALLTAIL.

CHAPTER FOUR: RESEARCH FINDINGS

This chapter presents the results of the survey conducted by this study on the factors affecting the attitudes of language academics towards CALLTAIL. The presentation of the results is in a statistical calculated format from the analysis of the study survey in terms of frequencies, means and correlations.

CHAPTER FIVE: DISCUSSION, RECOMMENDATIONS, AND CONCLUSION

This chapter relates the present study alongside the one presented in the third chapter of this study. The aim of this comparison is to scrutinise the innovation of the present study from the existing literature. This chapter also suggests innovative recommendations and ideas on ways to improve the attitudes of language academics towards CALLTAIL. This chapter ends by providing a conclusion on the factors affecting the attitudes of language academics towards CALLTAIL.

1.9 CONCLUSION

The roles of ICTs in almost all spheres of human endeavour was introduced briefly earlier in this chapter before concentrating on computer-aided language education, otherwise known as CALL. This chapter presented a brief history of CALL, which was divided into three (3) phases:

Behaviouristic CALL; Communicative CALL; and Integrative CALL. The various synonymous typologies of CALL were discussed, including CELL, TELL, TALL, CALI, CBLT, NBLT, DLL and MALL.

Discussion concerning the benefits of CALL was performed in this chapter, such as it saving instructors' time, enhancing instructor language skills, providing instructors with the ability to deliver more interesting lessons to students, providing instructors with easy and rapid access to a variety of language resources and multimedia, and assisting instructors in facilitating language learning process better.

Nevertheless, the prevalence of a negative attitude towards CALL and the disadvantages of CALL are also presented in this chapter, regardless of the benefits identified above. Prior to the structure of this dissertation, this chapter presented the problem statement, the aim and objectives, and the research question and sub-research questions for the study. The research methodology of this study is presented in the next chapter.

CHAPTER TWO:
RESEARCH STRATEGY

This chapter presents the two research strategies used to meet the objectives of this research. These two research strategies are the survey and the content analysis strategies.

According to Vitouladiti (2014:279), citing Gray and Densten (1998) and Shoemaker and Reese (1996), content analysis is “a research methodology which examines textual data for patterns and structures, singles out the key features to which researchers want to pay attention, develops categories, and aggregates them into perceptible constructs in order to seize text meaning”. Similarly, Cloete (2013:48) cites Ferber *et al*. (1980) to define a survey as a method of collecting data in numerical format “from a number of individuals (known as the sample), in order to investigate or learn something about the larger population from which the sample was drawn”, usually with the help of a questionnaire.

2.1 CONTENT ANALYSIS

For Roudgarmi (2011:874), “content analysis is a research tool used to determine the presence of certain words or concepts within texts or sets of texts”. For this review of existing studies on the factors affecting language academics’ attitude towards CALL, the six (6) steps of content analysis were followed (Gaur and Kumar 2018:283).

1) Select database(s) according to the objective of the review;
2) Select the literature sample according to the review objective’s criteria. Selection criteria may include the time period, domain definition for the literature review, or type of manuscript;
3) Develop a valid coding scheme;
4) Code the entire sample;
5) Assess coding accuracy and inter-coder reliability using reliability test methods, such as Cohen’s kappa or Krippendorf’s alpha (Potter and Levine-Donnerstein 1999); and
6) Summarise and interpret the coded text.

2.1.1 Database for the content analysis

Google Scholar was the database from which the studies of this content analysis were selected provided that they were freely available.

2.1.2 Sample selection for the content analysis

The sample of studies for content analysis was selected based on three criteria. One criterion was the inclusion of the following keywords by the selected studies: “teachers’ attitude”, “academics’ attitude”, and “CALL”. The publication year of the selected studies also had to fall within the new millennium. Thirdly, the selected studies must have used surveys, interviews or observations to arrive at their empirical results.

2.1.3 Scheme of coding for the content analysis

A comprehensive account of the coding scheme for this study’s content analysis is given in this section. This includes the coding schemes for the studies, authors, theories, research designs, research strategies, research data, data collection methods, contexts, research population, samples, sampling methods, research variables, methods of analysis, validity and reliability tests and key research findings of the studies reviewed.

2.1.3.1 Authors and studies codes

This study, through its literature review, went all out to indicate and allocate a code to each of the authors and each of the studies of all the studies reviewed. This section also indicates that the codes that were assigned to authors were done in increasing order, starting with the first author and ending with the last.

2.1.3.2 Theories

This study, through its literature review, endeavoured to indicate and allocate a code to each of the theories which have been used by all studies reviewed herein. This section indicates that the codes that were assigned to the theories occurred in ascending order according to the order in which they appeared in their respective papers, even for those studies with multiple authors.

2.1.3.3 Research designs

This study, through its literature review, has made effort to indicate and allocate a code for each of the theories which have been used by all studies reviewed herein. A research design is described by Mpiyane (2016: 44) as “a strategic framework for action, to guide the arrangement of conditions for the collection and analysis of data in such a way that there will be a combination of research questions and the implementation of the research”. This section also indicates that the codes that were assigned to the research designs occurred in ascending order according

to the order in which they appeared in their papers, even for those studies with multiple research designs. For example, in the event where the research design for a study was quantitative, the code 1 was assigned, and other research designs found in the reviewed studies were assigned codes in ascending order.

2.1.3.4 Research strategies

This study, through its literature review, has made constant effort to indicate and allocate a code to each of the research strategies which were used by all the studies reviewed for this study. According to Bugembe (2018:24), “a research strategy is a step-by-step plan of action that gives direction to your thoughts and efforts, enabling you to conduct research systematically and on schedule to produce quality results and detailed reporting”. This section also indicates that the codes that were assigned to the research strategies occurred in ascending order according to the order in which they appeared in the studies reviewed, even for those studies with multiple research strategies. For example, in the event where the research strategy of a study was a case study, the code 1 was assigned, and other research strategies found in the reviewed studies were assigned codes in ascending order.

2.1.3.6 Research data

This study, through its literature review, has made intensive effort to indicate and allocate a code for each of the research data that were used by all the studies reviewed herein. Kaye *et al*. (2017:59) define research data as “recorded factual material commonly retained by and accepted in the scientific community as necessary to validate research findings”. This section also indicates that the codes that were assigned to the research data occurred in ascending order according to the order they appeared in the studies reviewed, even for those studies with multiple research data types. For example, in the event where the research strategy of a study was primary, the code 1 was assigned, and other research data found in the reviewed studies were assigned codes in ascending order.

2.1.3.7 Data collection methods

This study, through its literature review, has made rigorous effort to indicate and allocate a code to each of the data collection methods used by all the studies reviewed herein. A data collection method, according to Bazzibwe (2018:21), “is a process of collecting information from all the relevant sources to find answers to the research problem, test the hypothesis and evaluate the

outcomes". This section also indicates that the codes that were assigned to the data collection methods occurred in ascending order according to the order in which they appeared in the studies reviewed, even for those studies with multiple data collection methods. For example, in the event where the data collection method of a study was a questionnaire, the code 1 was assigned, and other data collection methods were assigned codes in ascending order.

2.1.3.8 Contexts

This study, through its literature review, has made relentless effort to indicate and allocate a code to each of the contexts which were used by all the studies reviewed herein. According to Sugino *et al*. (2017:573), citing Dey (2001), context can be defined "as any information that can be used to characterise the situation of an entity". The contexts of the studies reviewed by this study associated the contexts of this review to the various continents on which the studies were published, such as Asia, Europe and North America. The other context has to do with the time at which the reviewed studies were published. This section also indicates that the codes that were assigned to the contexts occurred in ascending order according to the order in which they appeared in the studies reviewed, even for those studies with multiple contexts. For example, in the event where the location context of a study was Asia, the code 1 was assigned, and other contexts were assigned codes in ascending order. As regards the year of publication, the categorisation will first be in yearly intervals, before they are assigned codes in accordance with the technique described above.

2.1.3.9 Research population

This study, through its literature review, indicated and allocated a code to each of the research populations for each of the studies reviewed herein. According to Nketia (2017:25), a research population is defined as "the totality of a well-defined collection of individuals or objects that have common, binding characteristics or traits". The focus of this review will be on only two categories of research population, i.e. high school language instructors and higher educational institution language instructors. This section also indicates that the codes assigned to the research populations occurred in ascending order according to the order in which they appeared in the studies reviewed. For example, in the event where the research population of a study was high school language instructors, the code 1 was assigned and other research populations found in the reviewed studies were assigned codes in ascending order.

2.1.3.10 Sample and sample sizes

This study, through its literature review, made sure to indicate and allocate a code to each of the sample sizes for each of the studies reviewed herein. A sample, according to Goraseb (2017:49), “is a group of people, objects, or items that are taken from a larger population for measurement purposes”. Sample size, according to Matimati and Rajah (2015:6), refers to “a subset of the entire population under study whose characteristics are synonymous to the sample population”. 250 market women is an example of a sample and sample size. The focus of this review was to categorise sample sizes in sample size intervals and then assign them codes. This section also indicates that the codes assigned to the sample sizes occurred in ascending order according to the order in which they appeared in the studies reviewed. For example, in the event where the first sample size of a particular study fell within the first interval, the code 1 was assigned. Other sample sizes found in the reviewed studies were assigned codes in ascending order in accordance with the technique described above.

2.1.3.11 Sampling methods

This study, through its literature review, made an attempt to indicate and allocate a code to each of the sampling methods for each of the studies reviewed herein.

A sampling method, according to Novati (2017), is the procedure for the selection of a representative group from the population under investigation, such as purposive sampling, clustered sampling, convenience sampling, random sampling and so forth. This section also indicates that the codes that were assigned to the sampling methods occurred in ascending order according to the order in which they appeared in the studies reviewed, even for those studies with multiple data collection methods. For example, in the event where the sampling method of a study was random sampling, the code 1 was assigned, and other sampling methods found in the reviewed studies were assigned codes in ascending order in accordance with the technique described above.

2.1.3.12 Research variables

This study, through its literature review, made effort to indicate and allocate a code for each of the research variables of each of the studies reviewed herein. According to Muna (2015:37), a research variable is “an attribute, characteristics or values of person, object or activity which have certain variation determined by the researcher to be discussed and concluded”, such as

either independent or dependent variables. This section also indicates that the codes that were assigned to the research variables occurred in ascending order according to the order in which they appeared in the studies reviewed, even for those studies with multiple research variables. For example, in the event where the research variable for a study fell within the first grouping, the code 1 was assigned, and other research variables found in the reviewed studies were assigned codes in ascending order in accordance with the technique described above.

2.1.3.13 Methods of data analysis

This study, through its literature review, made an attempt to indicate and allocate a code to each method of data analysis for each of the studies reviewed herein. A method of data analysis, according to Shamsuddin *et al*. (2017), is the method of analytically adopting logical procedures in describing and illustrating, condensing, recapping and evaluating data, such as using statistical procedures; for example, parametric or non-parametric methods, or a combination of both, or using content analysis. Parametric statistical tests depend on the assumption that the data which is being tested has the semblance of a certain distribution while non-parametric tests, on the other hand, are commonly called “distribution-free” tests, since the data distribution is not strictly checked for assumptions (Emerson and Anemone 2018). This section also indicates that the codes assigned to the methods of data analysis occurred in ascending order according to the order in which they appeared in the studies reviewed, even for those studies with multiple methods of data analysis. For example, in the event where the method of data analysis of a study was parametric, the code 1 was assigned, and other methods of data analysis found in the reviewed studies were assigned codes in ascending order.

2.1.3.14 Data validity and data instruments reliability tests

This literature review of this study made an effort to indicate and allocate a code for each data validity and data instrument reliability tests used in each of the studies reviewed herein. Validity tests measure the degree “to which differences in observed scale scores reflect true differences in what is being measured rather than systematic or random error”, while reliability tests measure the consistency or stability of test scores if such tests are repeated multiple times, such as using either Pearson’s correlation coefficient for validity, and using Chi-square for reliability (Oroh *et al*., 2017, YingFeng, 2018). This section also indicates that the codes assigned to data validity and data instrument reliability tests occurred in ascending order according to the order in which they appeared in the studies reviewed, even for those studies

with multiple data validity and data instrument reliability tests. For example, in the event where the data validity test of a study is Pearson's correlation coefficient, the code 1 was assigned, and other data validity tests found in the reviewed studies were assigned codes in ascending order. On the other hand, in the event where the data instrument reliability test of a study was Cronbach's alpha coefficient, the code 1 was assigned, and other data instrument reliability tests found in the reviewed studies were assigned codes in ascending order.

2.1.3.15 Key research findings

This study, through its literature review, has made an intensive effort to indicate and allocate a code to each key research finding for each of the studies reviewed herein. Research findings, according to Travis (1999:1045), discusses "the transferability of knowledge gleaned through the rich description and process of applying the methodology and constructing appropriate models". This section also indicates that the codes that were assigned to the research findings occurred based on studies' findings in relationship with a certain research variable, such as either negative, positive, or having no relationship. The codes assigned to each of the above-mentioned research findings occurred in ascending order according to the order in which they appeared in the studies reviewed, even for those studies with multiple research findings. For example, in the event where the research finding of a study had a negative relationship with a certain variable, the code 1 was assigned. Other research findings found in the reviewed studies were assigned codes in ascending order.

2.1.4 Coding scheme for the entire studies under review

The combination of each of the above-discussed codes as identified by the content analysis of the review of literature performed for this study can be found below:

- Authors and studies
- Theories
- Research designs
- Research strategies
- Research data
- Data collection method
- Type of time horizon

- Context
- Research population
- Sample and sample sizes
- Sampling methods
- Research variables
- Methods of data analysis
- Data validity and data instruments reliability tests
- Key research findings

2.1.5 Coding accuracy and inter-coder reliability of the studies under review

The intra-class correlation method was used to assess the coding accuracy and the inter-coder reliability of the coding scheme of the content analysis conducted for this study. The suitability of the coding scheme for each of the sixteen variables of the content analysis of this study were rated with the help of two PhD students. The next chapter will present the analysis of these ratings.

2.1.6 Coded text summary and interpretation

The next chapter of the present study will be devoted to summarising and interpreting the content analysis of the review of literature for this study.

2.2 SURVEY

Balnaves and Caputi (2001:14) define a survey as “a method of collecting data from people about who they are (education, finances, etc.), how they think (motivations, beliefs, etc.) and what they do (behaviour)”. Surveys usually gather data by the use of questionnaires or interviews from a sample selected by the researcher to represent a population to which the findings of the data analysis can be generalised (Brungardt 2011).

The population of this study, its sample size, its sampling method, its research instrument, its reliability, its validity and its data analysis method are described in this section in order to present the survey that was conducted by this study.

2.2.1 Research population

KwaZulu-Natal, South Africa is the place where the survey for this study was conducted. This survey took place between the months of September and October 2018. KwaZulu-Natal is a coastal province and is also the second largest province of the country. Other provinces include the Western Cape, Eastern Cape, North West, Northern Cape, Mpumalanga, Limpopo, Gauteng and Free State. The researcher chose KwaZulu-Natal because it is the location of his university. The countries that the province is bordered with include Mozambique, Swaziland and Lesotho (Figure 2.1).

The researcher selected three (3) KwaZulu-Natal public universities out of the five (5) public universities which exist in the province. These selected universities were the University of Zululand (UNIZULU), the Durban University of Technology (DUT) and the University of KwaZulu-Natal (UKZN). The other two (2) non-selected universities were the Mangosuthu University of Technology (MUT) and the University of South Africa (UNISA). The criteria of inclusion and seclusion of the universities are based on the availability of language department and the geographical location of the universities. Academic staff of all ages, all origins, all genders, and various levels of teaching experience from the language departments at these universities were the target population for this study.

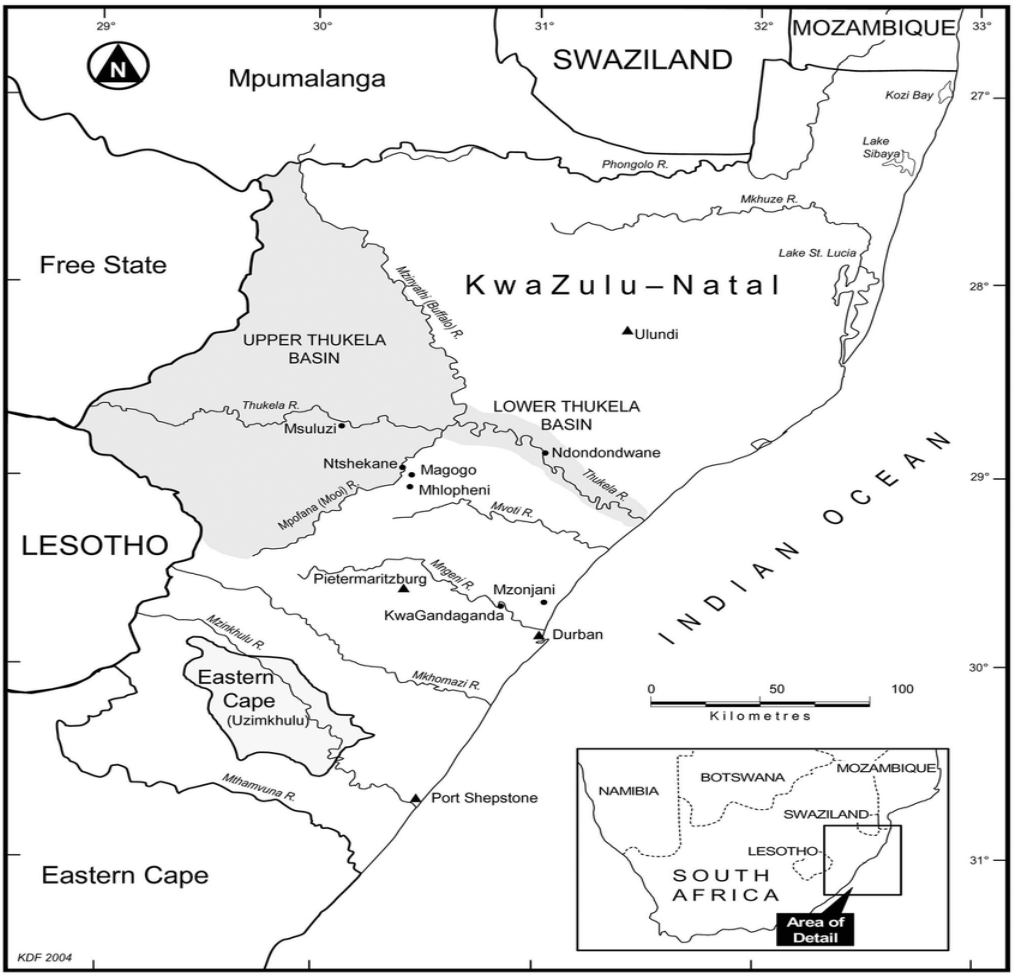

Figure 2.1 The KwaZulu-Natal province of South Africa

Table 2.16 below presents the population sizes of the selected language department: UNIZULU (24 academics), UKZN (14 academics), and DUT (12 academics). Consequently, the population size for this study was fifty (50).

Table 2.1 Population size of the universities surveyed

University name	**Computing department**	**Population size**
UNIZULU	African Languages and Culture	27
UKZN	Language and Arts	35
DUT	Media, Language, and Communication	11
	73	

2.2.2 Sampling

For Kamran et al. (2009:3), sampling is defined as "a statistical procedure which involves the selection of a finite number of individuals to represent and infer some knowledge about a population of concern". For the survey of the above-described population of language academics, the sample size was 50 (*n = 50*) and was calculated using the following formula recommended by Naing *et al*. (2006).

$$n = \frac{NZ^2P(1-P)}{d^2(N-1) + Z^2P(1-P)}$$

Equation 2.1 Naing et al (2006) recommended formula for sample size

In the above formula, n stands for the sample size, N stands for the population size which is equal to 73, Z stands for the confidence level which is equal to 1.96, P stands for the estimated proportion which is equal to 70%, and d stands for the precision/acceptable margin of error which is equal to 0.05.

The fifty (50) language academics from the sample were chosen from the research population of seventy-three (73) language academics using a random stratified sampling method. In random stratified sampling, "[a] researcher identifies subgroups within a population and then randomly selects a representative sample which mirrors the subgroups from each of the stratum" (Rudhumbu and Chawawa 2014:35).

For this study, each language department constituted a stratum for the sampling of the research population for the survey (Table 2.17).

Table 2.2 Respondent sampling in terms of the language departments

Universities language departments	**Department Size**	**Population Proportion**	**Sample Size**
UNIZULU African Languages and Culture	11	(11/73) = 15%	15%*50=8
UKZN Language and Arts	35	(35/73) = 48%	48%*50=24

DUT Media, Language and Communication	27	(27/73) = 37%	37%*50=18
			n = 50

2.2.3 Study research scales and instrument

A questionnaire was used to collect the data for this study's survey. The questionnaire was designed based on the research model in Chapter one (1) and on the scale proposed by Cassim and Obono (2011). It consisted of the following five (5) variables: demographics; computer experience; subjective norms of CALLTAIL; usefulness of CALLTAIL; and attitude towards CALLTAIL.

2.2.3.1 Demographics

Eight (8) pieces of demographical data were requested from the participants. These included the participants' academic institution of teaching; their academic department; their language specialisation; their age; their gender; their ethnic group; their citizenship; and their academic ranking (see the demographics section of Appendix A).

2.2.3.2 Computer experience

Garland and Noyes (2004), citing Jones and Clark (1995), define computer experience in relation to the following three components: the amount of computer use; the opportunities to use computers; and the diversity of computer experience. For Jones and Clark (1995), as cited by Garland and Noyes (2004:824), the amount of computer use simply "involve[s] the amount of time spent on a computer", and "opportunity to use computers covers issues such as whether the person has access to a computer at home, the extent to which they use computers, and whether they have ever done a course requiring the use of a computer". As for diversity of experience, this "examines a person's usage of software packages, programming, word processing, spreadsheets, databases, games, computer-assisted learning and familiarity with computer languages, and development of computerised information systems".

The following computer experience data was elicited from participants on their computer use, as proposed by Hasan (2003), Wilfong (2006) and Reed and Oughton (1997): DVDs/CD-ROMs/USBs; simulations and games; the Internet; emails; word processing; presentations; spreadsheets; and desktop publishing.

2.2.3.3 Subjective norms

According to Li *et al*. (2012), citing Fishbein and Ajzen (1975), the concept of subjective norms refers to the value which one gives to being judged by certain important people or groups as to whether to adopt or not to adopt a given behaviour. Participants were asked whether the following groups of people have an influence with regards to their use of CALLTAIL: their family members; their friends; their colleagues; their cluster/departmental officials; and their government officials.

2.2.3.4 Perceived usefulness

The questionnaire designed for this study described perceived usefulness as the extent to which language academics believe that using CALLTAIL enhances their teaching of the following language concepts as proposed by Schnall *et al*. (2015), Igbaria *et al*. (1994) and Davis (1989): lexicon or dictionary; phonology or words' sound for listening; phonology or words' sound for speaking; graphology or words' writing; grammar or sentence structure; and pragmatics or use of sentences.

2.2.3.5 Attitude towards CALLTAIL

The questionnaire designed for this study described attitude towards CALLTAIL as language academics positive or negative feelings (evaluative affect) on the following aspects of the use of CALLTAIL as proposed by Malhotra and Galletta (1999) and Palaigeorgiou *et al*. (2005): cool and trendy; safe; exciting; financially affordable; time-saving; and academically valuable.

2.3 ANALYSIS METHODS

The methods used for the analysis of the data from this study are described in this section. The SPSS (Statistical Package for the Social Sciences) Version 24 was used for the analysis of the data. Cronbach Alpha Coefficients and Pearson correlations were used for the assessment of the reliability and validity of the research instrument for this study respectively. For Asari *et al*. (2017:29), SPSS is "an application that has a high enough statistical analysis capability and data management systems in the graphical environment by using descriptive menus in simple dialog boxes and easy to understand how to operate". Some of the other SPSS functions used in this study include descriptive statistics and t-tests.

Moreover, it is worth mentioning the use of ANOVA. A significance p-value level between 0.00 and 0.05 was applied to all the above-identified tests.

2.4 CONCLUSION

This chapter was divided into two (2) sections. The six (6) steps of the content analysis methodology which was followed by this study as prescribed by Gaur and Kumar (2018: 283) were described in the first section. The outcome of that content analysis is presented in the next chapter in the form of a review of the existing literature on the factors affecting language academics' attitude towards CALL. The survey conducted by this study on fifty (50) language academics out of a population of 73 members of staff from the language departments at the selected universities in KwaZulu-Natal was described in the second section of this chapter. The findings of that survey are presented in Chapter Four.

CHAPTER THREE:
LITERATURE REVIEW

The aim of this chapter is to summarise and interpret the content analysis which was conducted for this study on the existing studies of factors affecting language instructors' attitudes towards CALL. The present chapter also categorises the existing relevant theories to substantiate the reviewed factors, in order to propose a theoretically sound conceptual framework of the factors affecting KwaZulu-Natal language instructors' attitudes towards CALLTAIL. This chapter will commence with an investigation of the reliability of the content analysis conducted for this study. Thereafter, it will present the analysis of the reviewed literature factors affecting language instructors' attitudes towards CALL. The conclusion of this chapter is devoted to the presentation of current studies.

3.1.1 Selection of the databases of the reviewed studies

Readers are reminded that all of the literature for this review is obtained from Google Scholar as mentioned in the previous chapter. The following databases were used in collecting literature on the factors affecting language instructors' attitude towards CALL: ERIC; Elsevier; Citeseer; EBSCOHost; OhioLink Library Catalog; Taylor and Francis; JSTOR; IJEE; MCSER; ERIC; IJEL; IJMLTL; and ETD library. The databases from which most of the literature was collected were Elsevier, ERIC, and Citeseer.

3.1.2 Selection criteria of the sample of the reviewed studies

The criteria of selection described in Chapter One of this study produced a total of twenty (20) studies on the factors affecting KwaZulu-Natal language instructors' attitudes towards CALLTAIL for this study's literature review. The studies used in this review were selected from Google Scholar, provided that they were freely available.

3.1.3 Coding scheme of the review

The content analysis conducted for this study with all the variables analysed as coded according to Section 2.1.3 above are described in this section.

3.1.3.1 Studies and authors

Table 3.1 gives the codes assigned to the authors of the twenty (20) studies which were reviewed by the literature review conducted by this study on the factors affecting language instructors' attitudes towards CALL.

Table 3.1: Codes of the authors for studies

Code	Studies		Code	Studies
1	Alkahtani (2010)		11	Kirmizi (2014)
2	Arishi (2011)		12	Faghiharam *et al*. (2012)
3	Genc (2011)		13	Seraji *et al*. (2017)
4	Mohammadi and Masoomi (2015)		14	Mahbudi and Rafatbakhsh (2016)
4	Basoz and Cubukcu (2013)		15	Shariatmadari and Mazandarani (2016)
6	Adalier (2012)		16	Ghafoor (2008)
7	Hafeez *et al*. (2011)		17	Kahraman *et al*. (2012)
8	Akcaoğlu (2008)		18	Albirini (2004)
9	Jalali and Panahzade (2014)		19	Hee Hong (2009)
10	Rezaee *et al*. (2012)		20	Van Braak (2001)

It is worthy of note that the review of this study on the factors affecting language instructors' attitude towards CALL found that more than half (11 or 55% out of a total of 20 studies) have multiple authors as compared with the ones with an author each (9 or 45% out of a total of 20 studies) (See Figure 3.1).

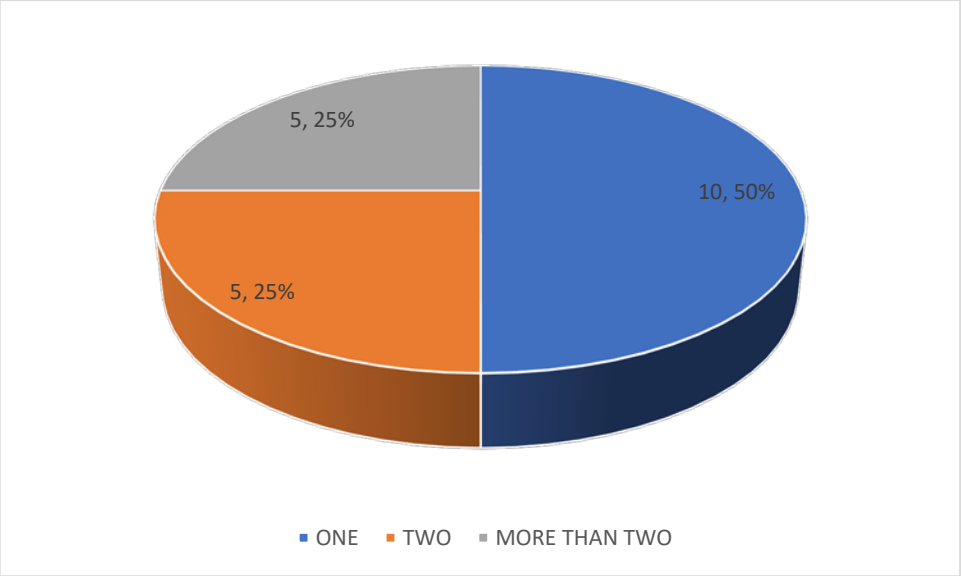

Figure 3.1: **Distribution of authors for studies**

Table 3.2: Codes of the authors for studies

Code	Authors		Code	Authors
1	Alkahtani		20	Faghiharam
2	Arishi		21	Zargham
3	Genc		22	Yi
4	Mohammadi		23	Salleh
5	Masoomi		24	Seraji
6	Basoz		25	Ziabari
7	Cubukcu		26	Rokni
8	Adalier		27	Mahbudi
9	Hafeez		28	Rafatbakhsh
10	Khattak		29	Shariatmadari
11	Gujjar		30	Mazandarani
12	Akcaoglu		31	Ghafoor
13	Jalali		32	Kahraman
14	Panahzade		33	Iseri
15	Rezaee		34	Unal
16	Abidin		35	Albirini
17	Issa		36	Hee Hong
18	Mustafa		37	Van Braak
19	Kirmizi			

This review also found that there was no author with more than one study. Figure 3.1 is a graphical representation of Table 3.1 and shows each of the authors with one paper each in this review.

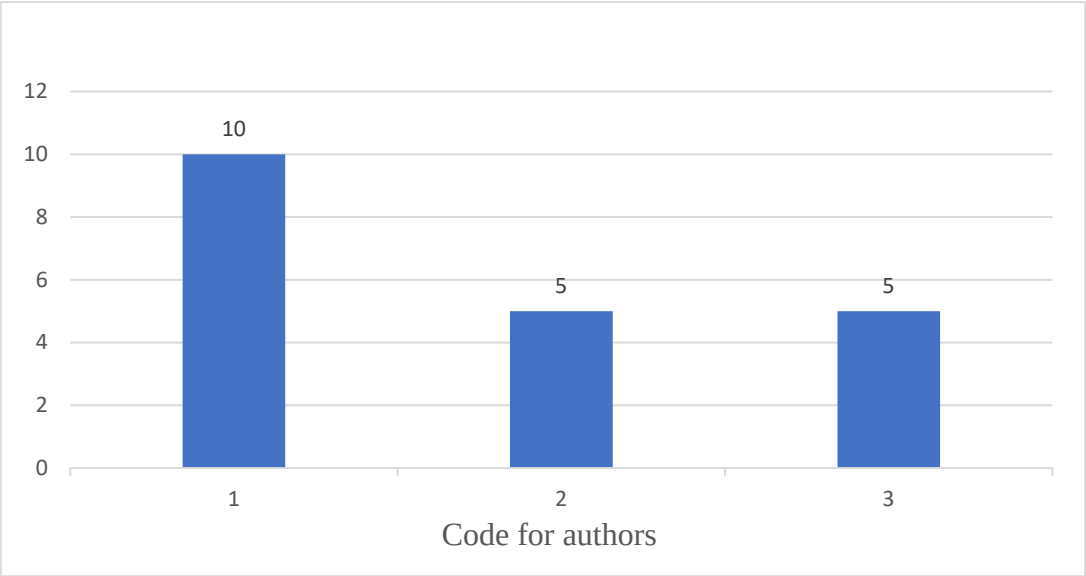

Figure 3.2**:** Number of authors for studies

3.1.3.2 Theories

Table 3.3 below gives the codes for the theories of the twenty (20) studies that were reviewed by the present study on factors affecting language instructors' attitudes towards CALL. Figure 3.3 is a graphical illustration of Table 3.3 and it indicates that the theories with the codes 1, 2 and 3 are the theories which occur most in this review. Readers are reminded that according to Table 2.2, the theories with the codes 1, 2 and 3 are respectively Diffusion of Innovation theory; Theory of Reasoned Action; and Technology Acceptance Model based theories. The theory that features most in this literature review is the Diffusion of Innovation theory which appears in the reviewed studies with the codes 10, 12, 16, 18 and 20.

Table 3.3: Codes of the theories for studies

Code	Theories		Code	Theories
0	No Theory		4	Social Learning Theory
1	Diffusion of Innovation Theory		5	Self-Efficacy Theory
2	Theory of Reasoned Action		6	Theory of Planned Behaviour
3	Technology Acceptance Model (TAM) based		7	Unified Theory of Acceptance and Use of Technology

This review of literature on the factors affecting language instructors' attitudes towards CALL found that slightly over half of the reviewed studies (11 studies) did not specify the theoretical foundation they adopted (55 percent).

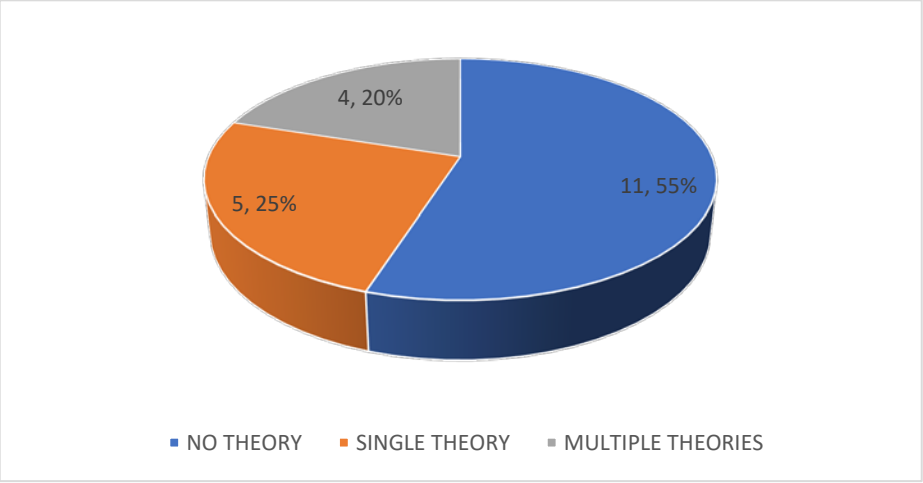

Figure 3.3 Distribution of theories for studies

Only one of the reviewed studies (Faghiharam *et al*. 2012) has its theoretical foundation in multiple theories, and of the reviewed studies this constitutes only 5 percent. The theories used by Faghilharam (2012) are Social Cognitive Theory (SCT); Theory of Reasoned Action (TRA);

Theory of Planned Behaviour (TPB); Decomposed Theory of Planned Behaviour (DTPB); Technology Acceptance Model (TAM); Technology Acceptance Model 2 (TAM2); Unified Theory of Acceptance and Use of Technology (UTAUT); and the Diffusion of Innovation Theory (DIT).

The most used theory as found by this review on the factors affecting language instructors' attitudes towards CALL is the Diffusion of Innovation Theory (DIT); five (5) studies made use of this theoretical foundation, which represents twenty-five (25 percent) of the studies reviewed (for example, Van Braak (2001), Albirini (2004), Ghafoor (2008), Faghiharam *et al*., (2012), and Razaee *et al*. (2012). Since the most used theory in the reviewed studies on the factors affecting language instructors' attitudes towards CALL is the Diffusion of Innovation Theory, it would not be out of place to discuss it briefly. Diffusion of Innovation Theory, as defined by Roger (2003) as cited in Cao and Li (2018:3), is "the process by which an innovation is communicated through certain channels over time among the members of a social system".

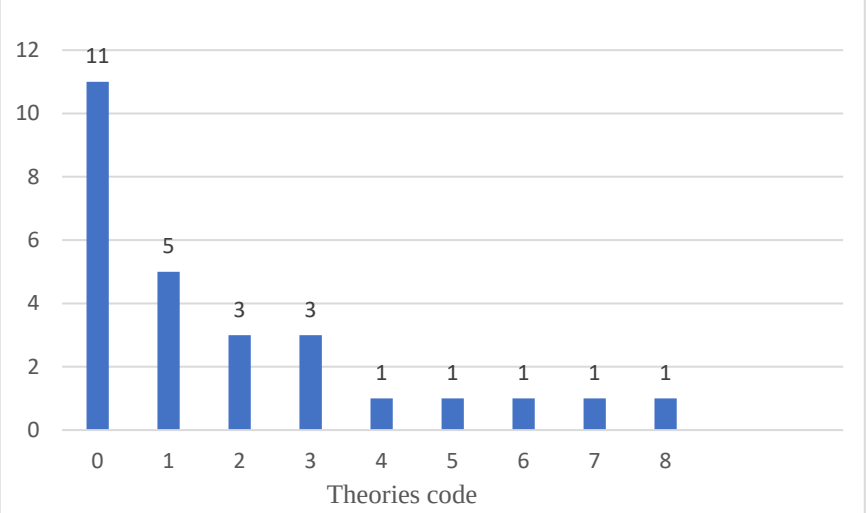

Figure 3.4: Number of study theories for studies

Table 3.3 represents the scheme of coding for the theories of the studies reviewed as earlier mentioned on the factors affecting language instructors' attitudes towards CALL. Figure 3.5 illustrates that more than half of the studies (55 percent) reviewed do not mention the theoretical foundation which they adopted.

3.2.1 Research design

Table 3.4 is the codes of the research designs of the twenty (20) studies which were reviewed in the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL. Figure 3.3 graphically represents Table 3.3 also shows that the frequently adopted research design is coded with 2. Readers are reminded that according to Table 2.3, the theory with the code 2 is the quantitative research design.

Table 3.4: Codes of the research designs for studies

Code	Research design
1	Mixed
2	Quantitative

It is worth noting that all the review of literature on the factors affecting language instructors' attitudes towards CALL found that all the studies reviewed stipulate the research design they adopted.

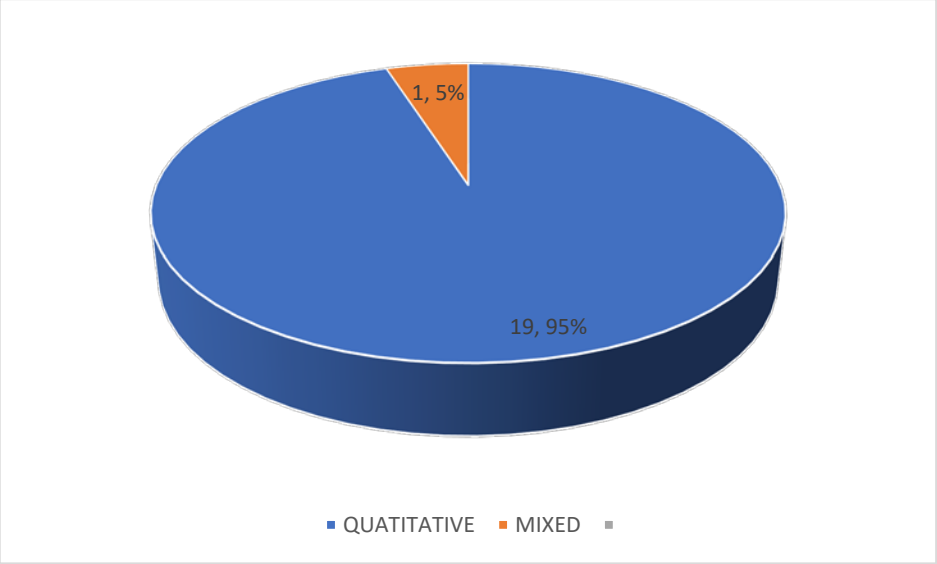

Figure 3.5 Distribution of research designs for studies

A mixed research design was used by only one (1) study of the reviewed studies on the factors affecting language instructors' attitudes towards CALL, out of the reviewed studies; this only account for 5 percent of the reviewed studies. This study is Arishi (2011). The quantitative research design is used by the remaining nineteen (19) studies (95 percent) on the factors

affecting language instructors' attitudes towards CALL. These nineteen studies (19) studies are: Alkahtani (2010); Mohammadi and Masoomi (2015); Basoz and Cubukcu (2013); Adalier (2012); Hafeez *et al*. (2011); Akcaoglu (2008); Jalali and Panahzade (2014); Razaee *et al*. (2012); Kirmizi (2014); Faghiharam *et al*. (2012); Saraji *et al*. (2017); Mahbudi and Rafabakhsh (2016); Shariatmadari and Mazandarani (2016); Ghafoor (2008); Kahraman *et al*. (2014); Albirini (2004); Hee Hong (2009); and Barak (2001).

Quantitative research as described by Casebeer and Verhoef (1997:131) is "the numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect" as against qualitative research which is defined as "the non-numerical examination and interpretation of observations, for the purpose of discovering underlying meanings and patterns of relationships" (Casebeer and Verhoef (1997:131). The mixed research design therefore combines both qualitative and quantitative research designs.

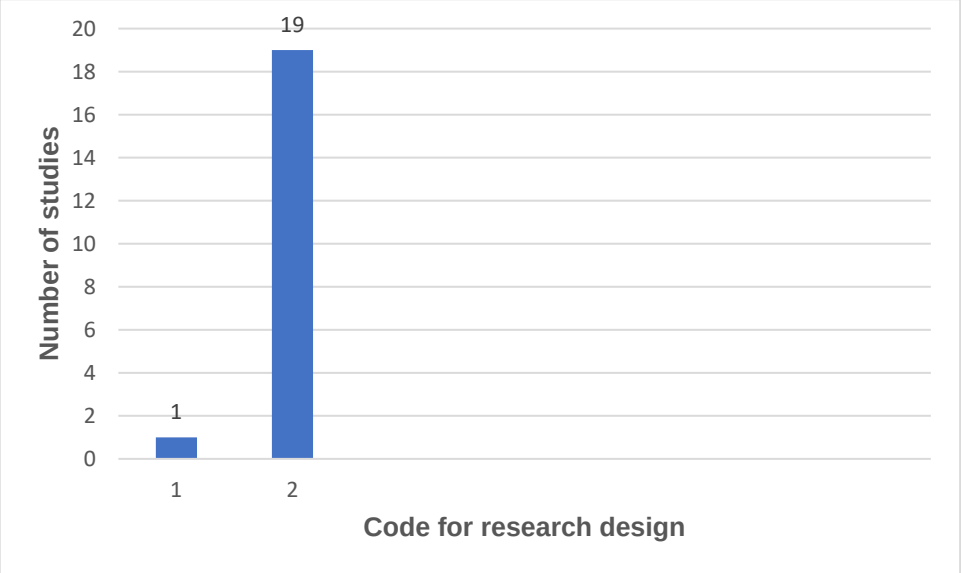

Figure 3.6: Number of research design for studies

The quantitative research design is interestingly the research design used by almost all the reviewed studies on the factors affecting language instructors' at towards CALL.

3.2.2 Research strategy

Table 3.5 gives the codes for the research strategies of the twenty (20) studies reviewed by the literature review conducted by the present study on factors affecting language instructors' attitudes towards CALL. Figure 3.4 graphically represent Table 3.4 and indicates that the most frequently used research strategy is coded with 2. Readers are reminded that according to Table 2.4, the research strategy with the code 2 is the survey research strategy, which appears in the majority of the reviewed studies including for instance, in the studies with the codes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,12, 13, 14, 15, 16, 17, 18, 19, 20 (Table 2.1.1) (Alkahtani 2010; Genc 2011; Mohammadi and Masoomi 2015; Basoz and Cubukcu 2013; Adalier 2012; Hafeez *et al*. 2011, Akcaoglu 2008; Jalali and Panahzade 2014; Razaee *et al*. 2012; Kirmizi 2014; Faghiharam *et al*. 2012; Saraji *et al*. 2017; Mahbudi and Rafabakhsh 2016; Shariatmadari and Mazandarani 2016; Ghafoor 2008; Albirini 2004; Hee Hong 2009: and Barak 2001).

Table 3.5: Codes of the research strategies for studies

Code	Research strategies
1	Case study
2	Survey

The research strategies adopted by all the studies reviewed on the factors affecting language instructors' attitudes towards CALL are all specified.

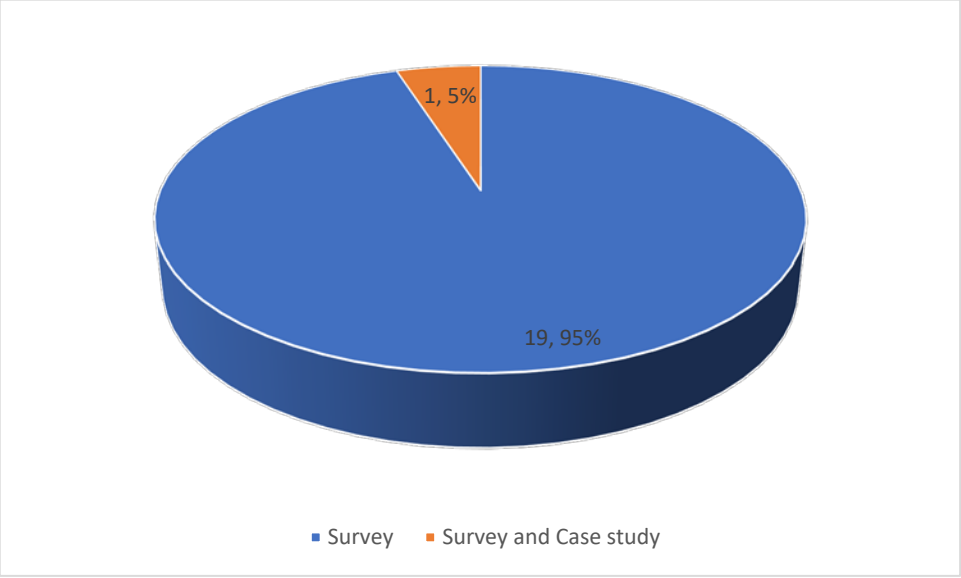

Figure 3.7 Distribution of research strategies for studies

A survey and a case study which account for 5 percent of the studies reviewed on the factors affecting language instructors' attitudes towards CALL was adopted by just one (1) study (Arishi 2011). Interestingly, almost all the studies reviewed on the factors affecting language instructors' attitudes towards CALL made use of the survey research strategy and this accounts for 95 percent of the reviewed studies.

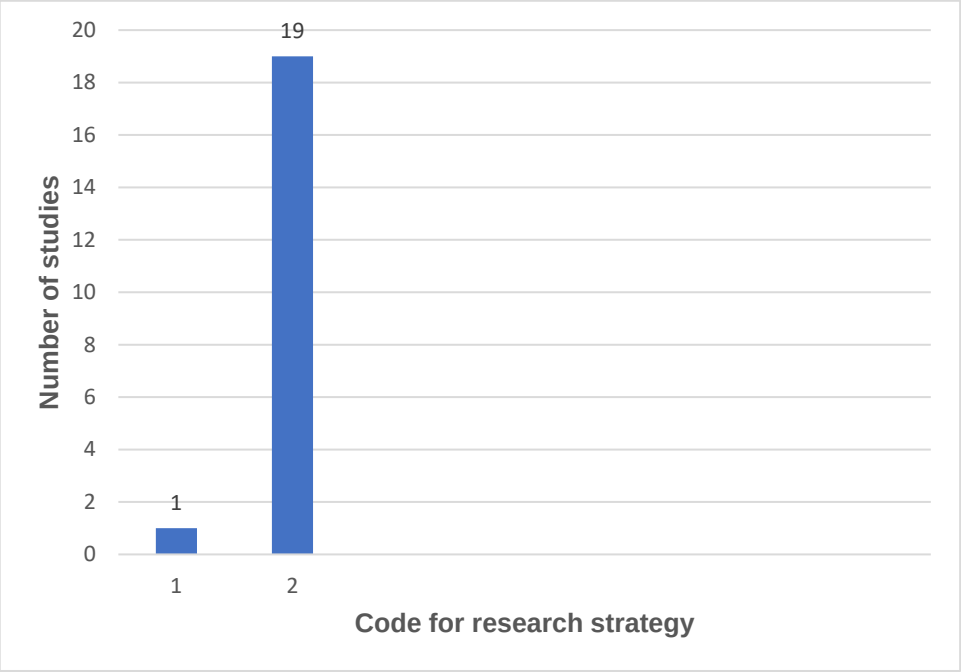

Figure 3.8: Number of studies for research strategies

3.2.3 Research data

Table 3.6 gives the codes for the research data of the twenty (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL. Figure 3.5 graphically represents Table 3.5 and indicates that the most frequently used research data is that with the code 1. Readers are reminded that according to Table 3.6, the code 1 represents secondary data. It is significant that this research data happens to be used in conjunction with the research data with code 2 (primary data) which is the combination of research data used by over three quarters of the studies which were reviewed.

Table 3.6: Codes of the research data for studies

Code	Research data
1	Primary data
2	Mixed (secondary & primary data)

It is noteworthy that all the reviewed studies by this literature review on the factors affecting language instructors' attitudes towards CALL stipulate what research data they employed.

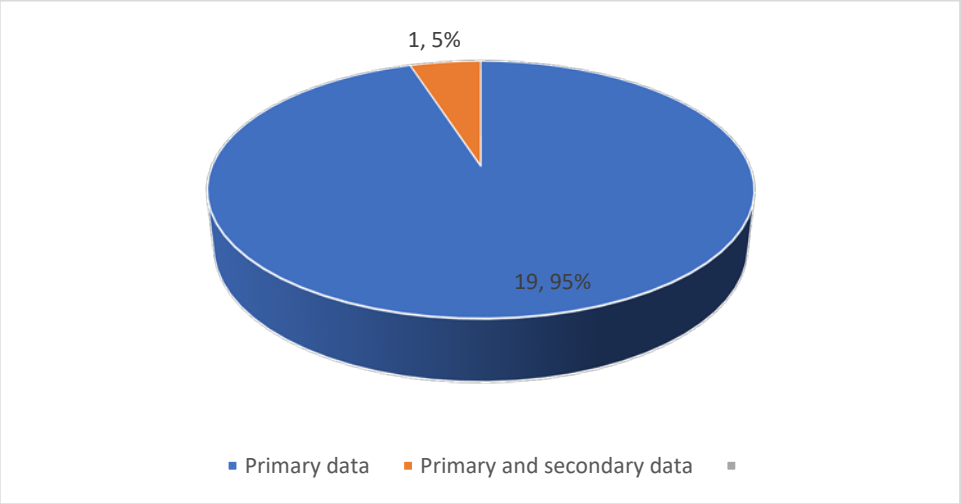

Figure 3.9: Distribution of research data for studies

Nineteen studies on the review of literature on the factors affecting language instructors' attitudes towards CALL utilise solely primary data and these studies account for 95 percent of the reviewed studies; they include: Alkahtani (2010); Mohammadi and Masoomi (2015); Basoz and Cubukcu (2013); Adalier (2012); Hafeez *et al*. (2011); Akcaoglu (2008); Jalali and Panahzade (2014); Razaee *et al*. (2012); Kirmizi (2014); Faghiharam *et al*. (2012); Saraji *et al*. (2017); Mahbudi and Rafabakhsh (2016); Shariatmadari and Mazandarani (2016); Ghafoor (2008); Kahraman *et al*. (2014); Albirini (2004); Hee Hong (2009); and Barak (2001). The use of both primary and secondary data was used by only one of the reviewed studies on the factors affecting language instructors' attitudes towards CALL and accounting for 5 percent of the review studies, and this was Arishi (2011). Primary data here can be described as "new or first-hand data collected for [a] study" (Adhiatma and Halim, 2019:68). Secondary data, by contrast, can be described as "any data that was collected by someone for some other purpose but is

being used by the researcher" (Wan *et al*. 2016:61). Mixed data is a combination of both primary and secondary data.

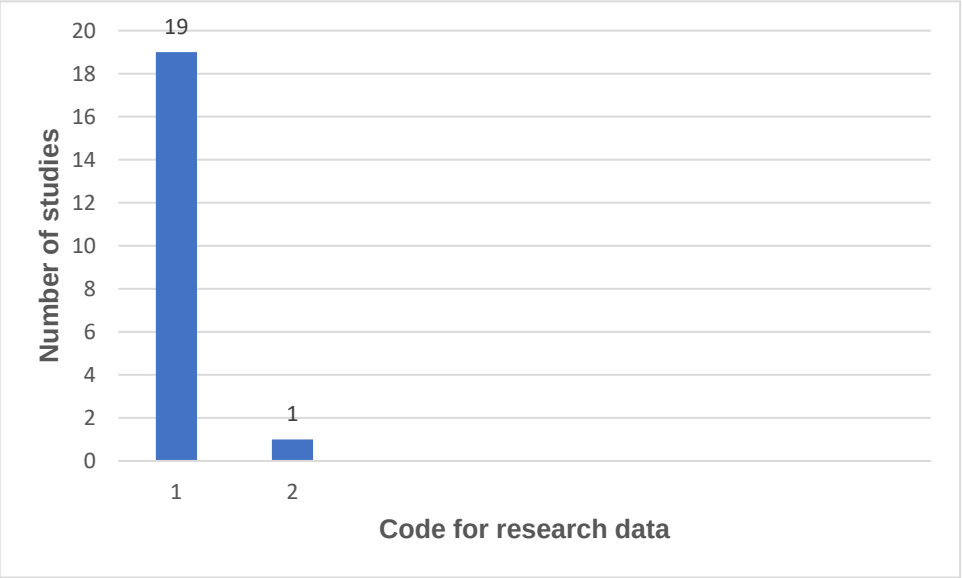

Figure 3.10: Number of research data for studies

It is noteworthy that none of the reviewed studies on the factors affecting language instructors' attitudes towards CALL exclusively made use of secondary data.

3.2.4 Data collection method

Table 3.7 is the codes of the data collection methods of the twenty (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL.

Table 3.7: Codes of the data collection methods for studies

Code	Data collection methods
1	Questionnaires
2	Questionnaires and observations

It is significant that all the reviewed studies by this literature review on the factors affecting language instructors' attitudes towards CALL stipulate the data collection methods they have employed.

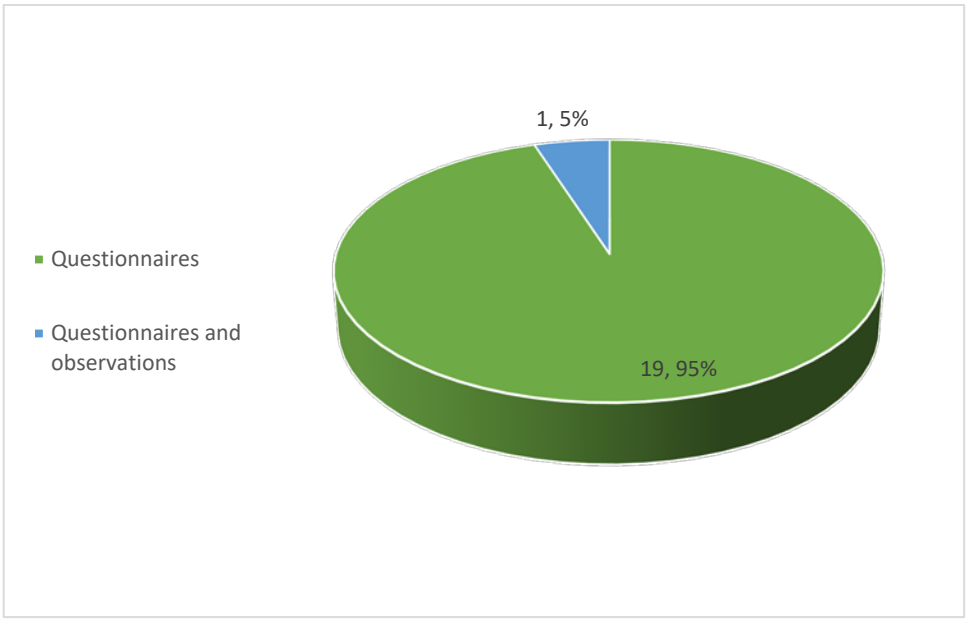

Figure 3.11: Distribution data collection methods for studies

The questionnaire data collection method is used by almost 95 percent of the reviewed studies on the factors affecting language instructors' attitudes towards CALL; these include: Alkahtani (2010); Genc (2011); Mohammadi and Masoomi (2015); Basoz and Cubukcu (2013); Adalier (2012); Hafeez *et al*. (2011); Akcaoglu (2008); Jalali and Panahzade (2014); Razaee *et al*. (2012); Kirmizi (2014); Faghiharam *et al*. (2012); Saraji *et al*. (2017); Mahbudi and Rafabakhsh (2016); Shariatmadari and Mazandarani (2016); Ghafoor (2008); Kahraman *et al*. (2014); Albirini (2004); Hee Hong (2009); and Barak (2001). On the other hand, only one (5 percent) of the reviewed studies made use of a combination of a questionnaire and observational data collection methods, which was Arishi (2011). A questionnaire, according to de Oliveira Cunha *et al*. (2012:3830), is "an instrument of research that contains an ordered series of questions related to a determined topic or problem, with the aim of obtaining information about behaviours, attributes and attitudes of the users of built environments".

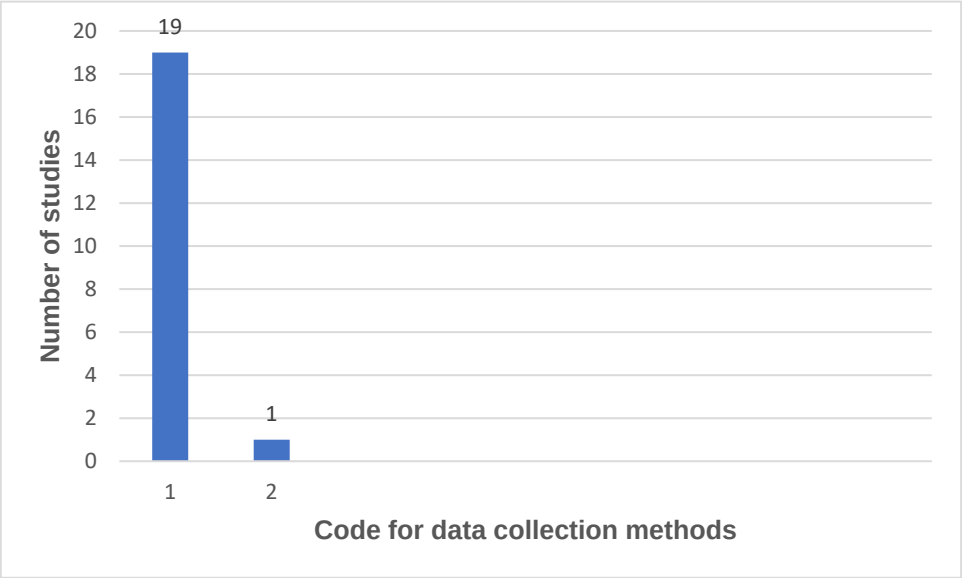

Figure 3.12: Number of data collection methods for studies

Contrarily, observation can be described as “a method of inquiry where the researcher studies the meanings of human activities through observing and participating in the contexts where the activities take place” (Brinkmann 2014:124).

3.2.5 Context

Table 3.8 shows the codes for the location context of the twenty (20) studies reviewed by the literature review conducted by the present study on factors affecting language instructors’ attitudes towards CALL. It is noteworthy that three (3) continents are represented in the location contexts on Table 3.8, whereas Africa, South America, Antarctica, and Australia did not feature in the location contexts of the reviewed studies on the factors affecting language instructors’ attitudes towards CALL.

Table 3.8: Codes of the location contexts of studies

Code	Location contexts
1	Asia
2	Europe
3	North America

Of the studies reviewed on the factors affecting language instructors' attitudes towards CALL it was found that Asia (60 percent) and Europe (35 percent) are the continents in which majority of studies were published. Hafeez *et al*. (2011); Akcaoglu (2008); Jalali and Panahzade (2014); Razaee *et al*. (2012); Kirmizi (2014), Faghiharam *et al*. (2012); Saraji *et al*. (2017); Mahbudi and Rafabakhsh (2016); and Shariatmadari and Mazandarani (2016) are some of the studies published in Asia and Europe.

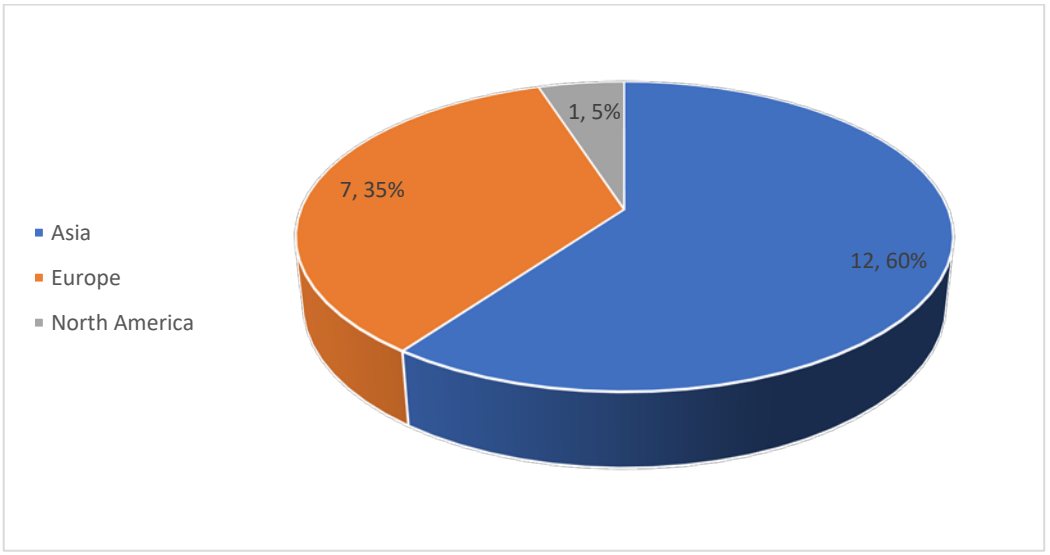

Figure 3.13: Distribution of location context for studies

The only study which was published in North America is that of Hee Hong (2009) and this represents 5 percent of the reviewed studies on the factors affecting language instructors' attitudes towards CALL.

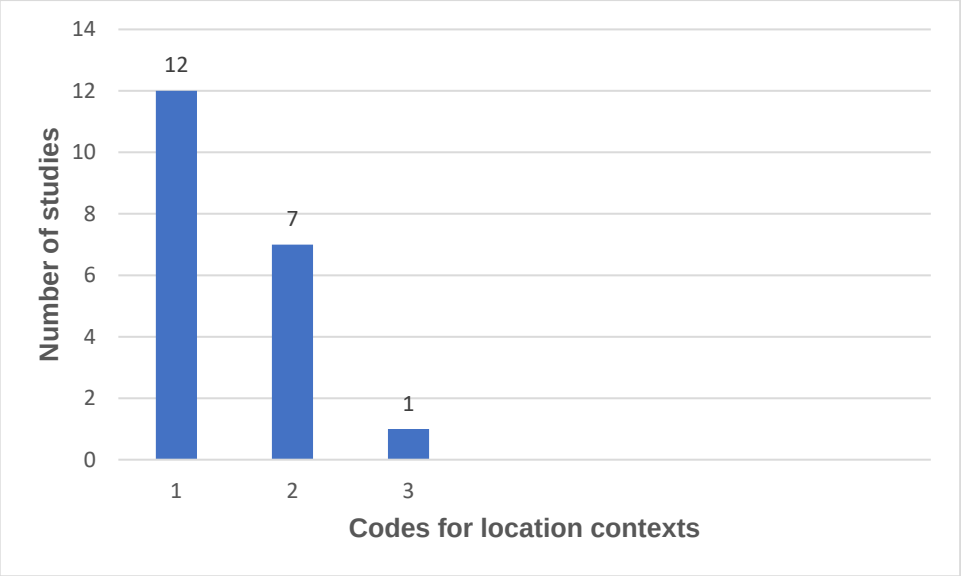

Figure 3.14: Number of location contexts for studies

With respect to the time context of the studies reviewed by this study on the factors affecting language instructors' attitudes towards CALL, the majority of the studies were published between the time interval between 2007 and 2012 (for instance: Alkahtani (2010); Adalier (2012); Hafeez *et al*. (2011); Akcaoglu (2008); Razaee *et al*. (2012); Faghiharam *et al*. (2012); Ghafoor (2008); and Hee Hong (2009). The above time interval is represented by 50 percent of the reviewed studies.

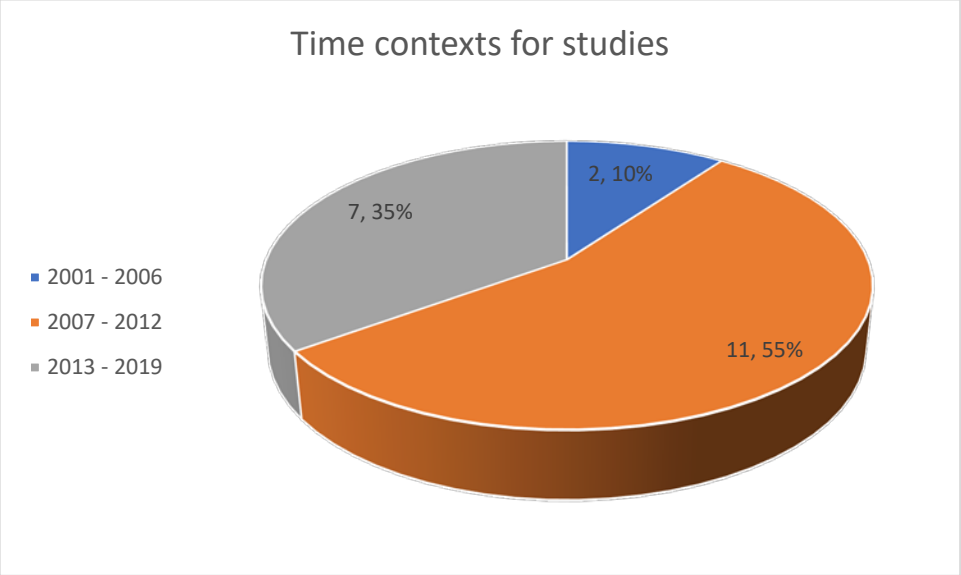

Figure 3.15: Distribution for time contexts for studies

The studies published in the time period between 2013 and 2019 is the next largest group, which represents 35 percent of the reviewed studies; for example: Mohammadi and Masoomi (2015); Basoz and Cubukcu (2013); Jalali and Panahzade (2014); Kirmizi (2014); Seraji *et al*. (2017); Mahbudi and Rafatbakhsh (2016); and Shariatmadari and Mazandarani (2016).

The rest of the studies were published between the time period of 2001 and 2006 which represent 10 percent of the reviewed studies. These studies include Albirini (2004) and Van Braak (2001).

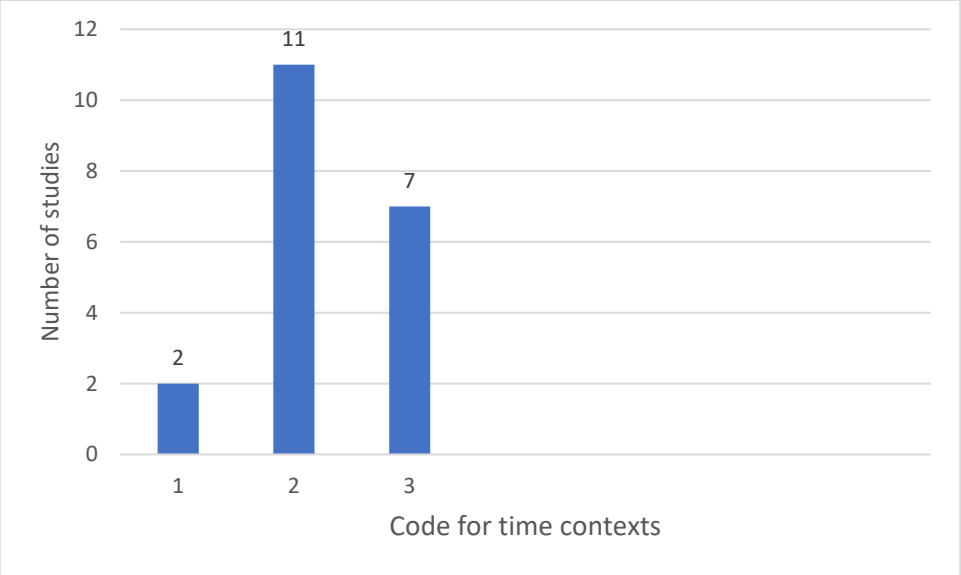

Figure 3.16: Number of time contexts for studies

Figure 3.16 above shows the three (3) time intervals of the (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL.

3.2.6 Research population

Table 3.9 gives the codes of the research population for the twenty (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL. Higher institution language instructors and the high school instructors constitute the research populations of all the studies on the factors affecting language instructors' attitudes towards CALL.

Table 3.9: Codes of the research population for studies

Code	Population
1	High school language instructors
2	Higher institution language instructors

The review of studies on the factors affecting language instructors' attitudes towards CALL found that exactly three-quarters (75 percent) have their research population as higher institution language instructors.

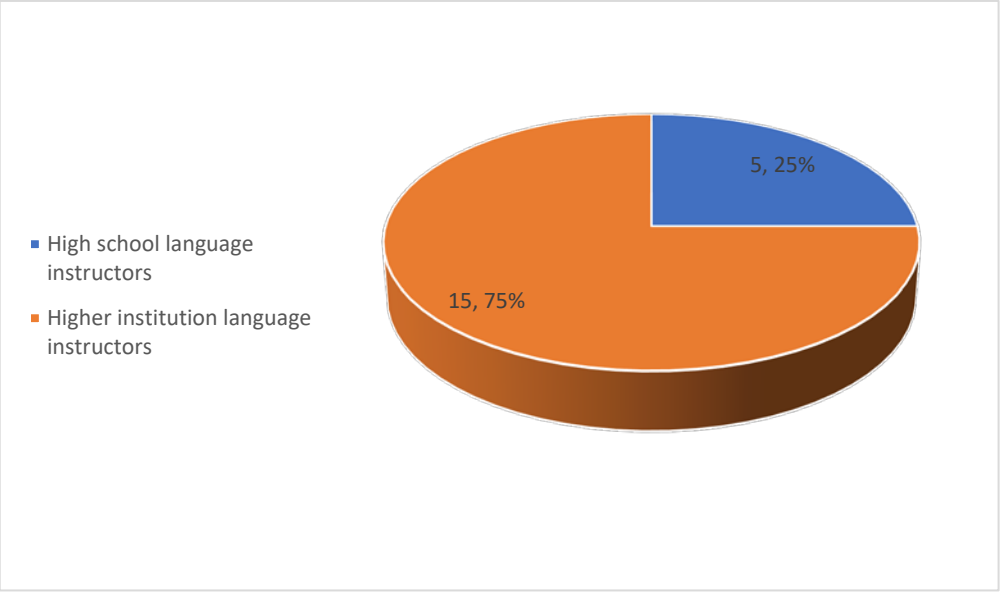

Figure 3.17: Distribution of research population for studies

The studies using higher institutions language instructors as research populations include: Alkahtani (2010); Arishi (2011); Genc (2011); Mohammadi and Masoomi (2015); Basoz and Cubukcu (2013); Adalier (2012); Hafeez *et al*. (2011); Akcaoglu (2008); Jalali and Panahzade (2014); Razaee *et al*. (2012); Kirmizi (2014); Faghiharam *et al*. (2012); Saraji *et al*. (2017); Mahbudi and Rafabakhsh (2016); and Shariatmadari and Mazandarani (2016).

On the other hand, the studies that have high school language instructors as their research population represents a quarter (25 percent) of the reviewed studies and these studies include:

Ghafoor (2008); Kahraman *et al*. (2014); Albirini (2004); Hee Hong (2009); and Van Braak (2001).

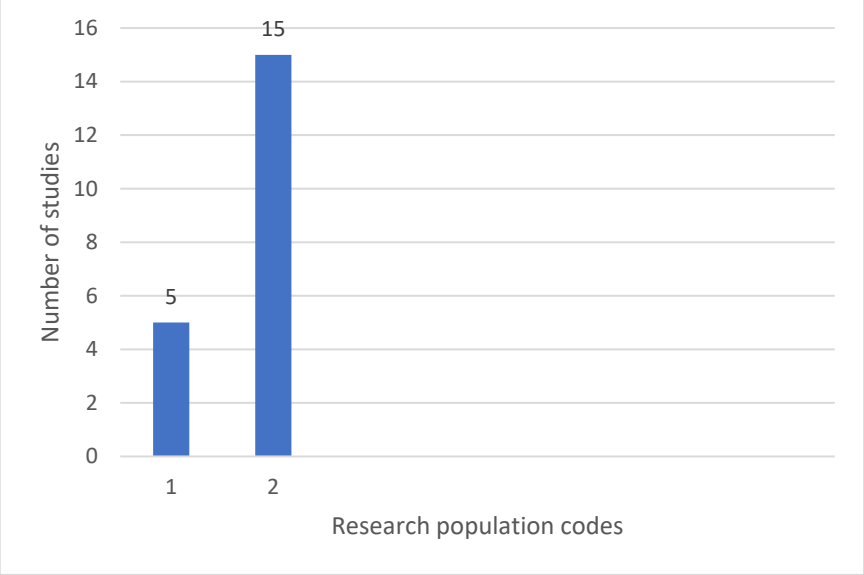

Figure 3.18: Number in research population for studies

Figure 3.17 above is a list of the two (2) research populations of the (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL.

3.2.7 Sample and sample size

Table 3.10 is the codes for the sample and sample sizes of the twenty (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL. The table indicates the ranges of sample sizes from 1 to over 300 language instructors. This review, however, made use of code 0 to signify an unspecified sample size in the reviewed studies.

Table 3.10: Codes of the research samples sizes for studies

Code	Sample sizes
0	Not specified
1	1-60 instructors
2	61-120 instructors

3	121-180 instructors
4	180-240 instructors
5	241-300 instructors
6	More than 300 instructors

The review of studies on the factors affecting language instructors' attitudes towards CALL found that the most apparent sample size is that between 61 and 120 instructors and this represent a quarter (25 percent) of the reviewed studies, including: Arishi (2011); Mohammadi and Masoomi (2015); Jalali and Panahzade (2014); Seraji *et al*. (2017); and Kahraman (2012).

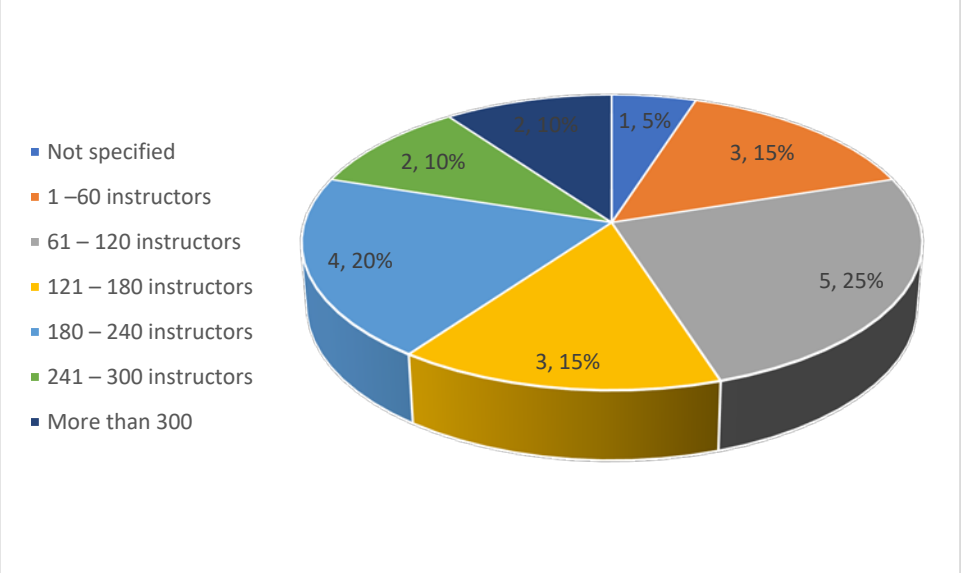

Figure 3.19: Distribution of sample and sample sizes for studies

The next sample sizes are those studies having between 180-240 language instructors, and these studies represents less than a quarter (20 percent) of the reviewed studies; these studies include: Hafeez *et al*. (2011); Akcaoglu (2008); Kirmizi (2014); and Hee Hong (2009). The following sample sizes are those studies having between 1-60 and 121-180 language instructors, and these studies represent 15% each of the reviewed studies; these studies include: Genc (2011), Rezaee *et al*. (2012), Shariatmadari and Mazandarani (2016); and Basoz and Cubukcu (2013); and Adalier (2012) and Mahbudi and Rafatbakhsh (2016) respectively.

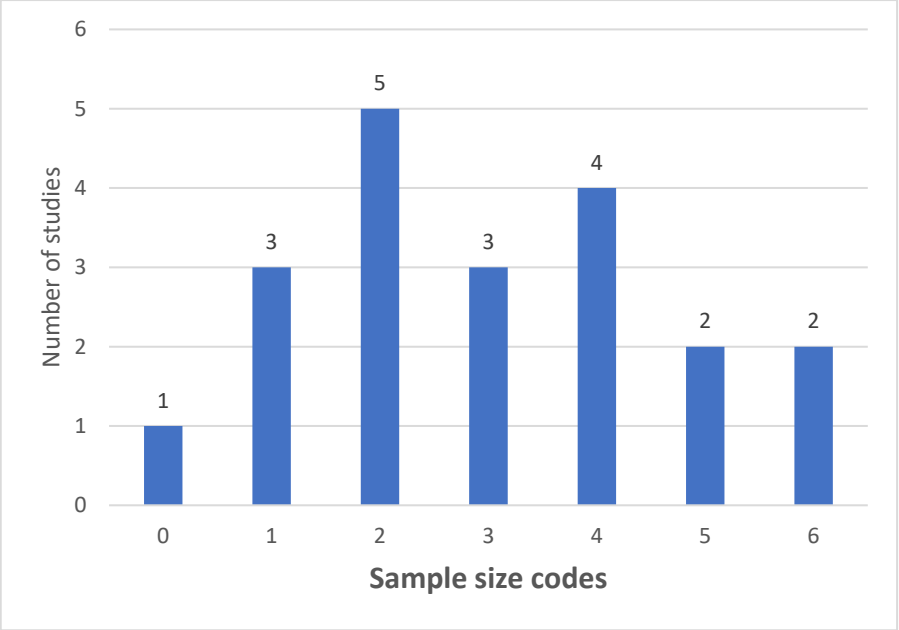

Figure 3.20: Number of sample sizes for studies

However, there are only a few of the studies reviewed having the sample sizes of between 180-240 and 241-300 language instructors. These studies represent 10 percent each respectively of the reviewed studies; these studies include: Faghiharam *et al*. (2012); and Ghafoor (2008), and Albirini (2004); and Van Braak (2001) respectively. It is also significant that only one study of the reviewed studies did not specify it sample size; this study represents 5 percent of the reviewed studies and was Alkahtani (2010).

3.2.8 Sampling methods

Table 3.11 gives codes for the sampling methods used by the twenty (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL. This review has made use of code 0 to signify an unspecified sampling method in the reviewed studies.

Table 3.11: Codes of the research sampling methods for studies

Code	Sampling methods
0	Not specified
1	Random sampling
2	Convenience sampling
3	Purposive sampling
4	Voluntary sampling

The review of studies on the factors affecting language instructors' attitudes towards CALL found that about a half (45 percent) of the studies reviewed on the factors affecting language instructors' attitudes towards CALL did not specify which sampling method was used; these studies include: Alkahtani (2010); Arishi (2011); Mohammadi and Masoomi (2015); Basoz and Cubukcu (2013); Kirmizi (2014)' Saraji *et al*. (2017); Mahbudi and Rafabakhsh (2016); Shariatmadari and Mazandarani (2016); and Hee Hong (2009).

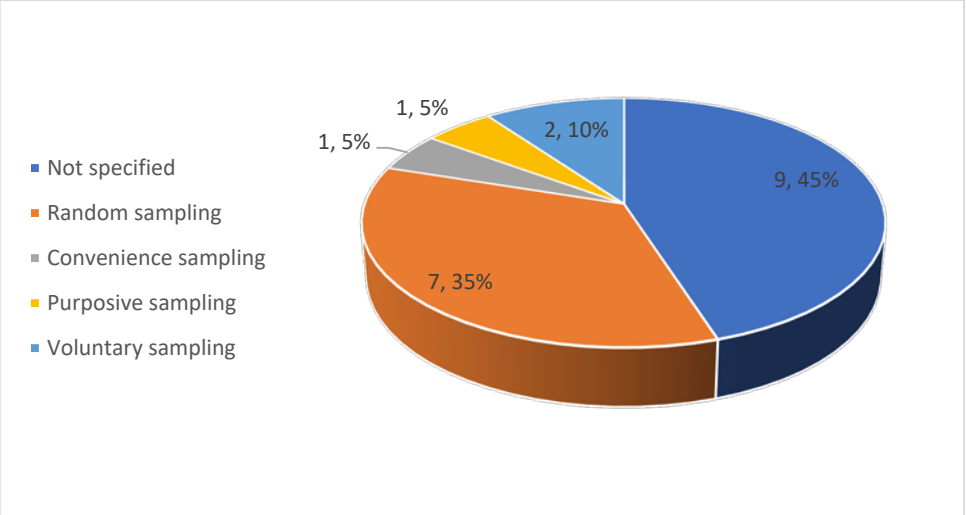

Figure 3.21: Distribution of sampling methods for studies

The random sampling method was used by seven (7) of the studies reviewed and this represents 35 percent of the studies reviewed on the factors affecting language instructors' attitudes towards CALL. Voluntary sampling was found to be used by two (2) of the reviewed studies, and this represents 10 percent of the reviewed studies on factors affecting language instructors' attitudes towards CALL.

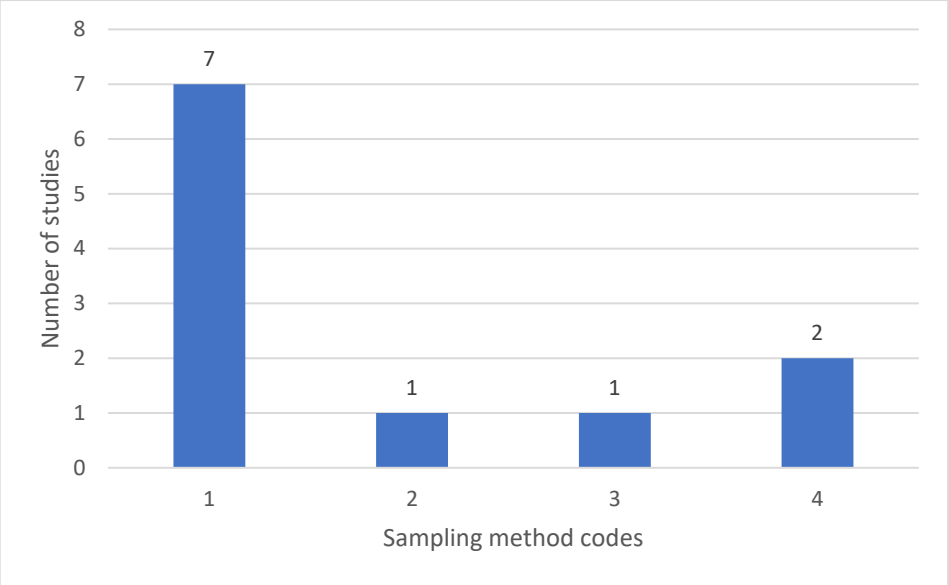

Figure 3.22: Number of sampling methods for studies

Figure 3.21 above also indicates that the studies which made use of convenience and purposive sampling represent 5 percent respectively of the studies reviewed on the factors affecting language instructors' attitudes towards CALL.

3.2.9 Research variables

Table 3.12 is the codes of the research variables of the twenty (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL.

Table 3.12: Codes of the research variables for studies

Code	Research variables
1	Demographics
2	Computer usage
3	CALL prior usage
4	TAM factors
5	Academic and Language Proficiency

Demographic factors here refer to instructors' age, gender, socio-economic level and monthly income.

Computer usage factors here refer to instructors' computer training, actual use of computers, computer competence, computer access, computer literacy, time spent on the computer, computer availability, computer usage, computer ownership and years of computer use.

CALL prior usage factors here refer to instructors' CALL training and cultural perception of CALL.

TAM factors here refer to instructors' perceived computer self-efficacy, attitude towards computer usage, liking of computers, personal thoughts on efficiency of computers, thoughts on usefulness of computers to students, cultural perceptions, perceived usefulness, perceived ease of use, behavioural intention, behavioural intention to use, computer anxiety and computer literacy skills.

Academic and Language Proficiency factors here refer to instructors' teaching experience, academic qualification, professional qualification, years of experience in teaching, educational level, and English proficiency level.

The findings from the review of studies on the factors affecting language instructors' attitudes towards CALL reveal that demographics, computer usage, CALL prior usage, TAM factors, academic and language proficiency each represent 25 percent, 30 percent, 28 percent, 4 percent, and 13 percent respectively (Figure 3.23).

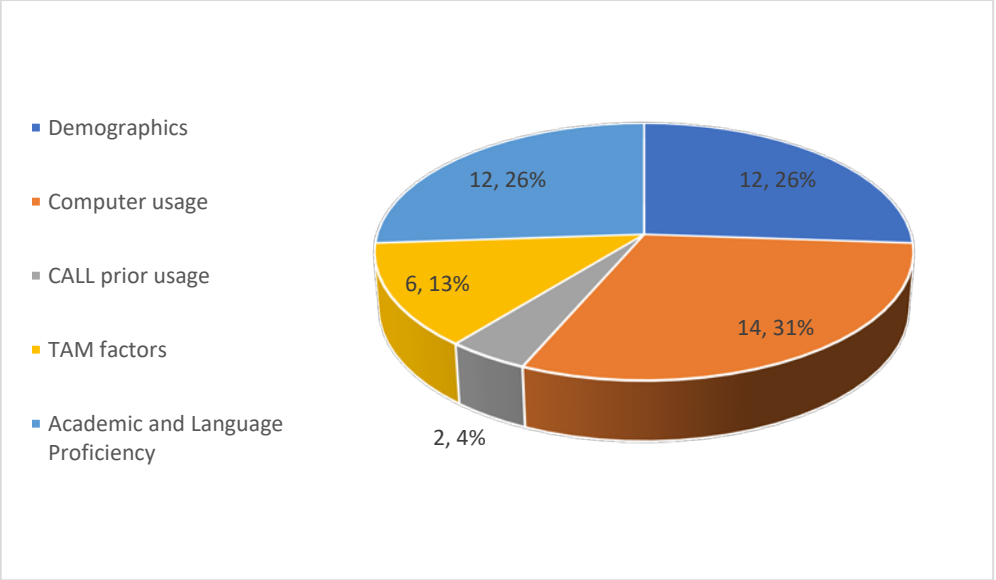

Figure 3.23: Distribution of research variables for studies

The effect of computer usage on the attitude of language academics towards CALL is shown by Figure 3.32 above as the most highly used reviewed studies variable and this represents 31 percent of the reviewed studies. For example: Genc (2011); Mohammadi and Masoomi (2015); Basoz and Cubukcu (2013); Adalier (2012)' Hafeez *et al*. (2011); Jalali and Panahzade (2014); Kirmizi (2014); Mahbudi and Rafabakhsh (2016); Shariatmadari and Mazandarani (2016); Ghafoor (2008); Kahraman *et al*. (2014); Albirini (2004); and Barak (2001). The effect of demographics and academic and language proficiency on the attitude of language academics towards CALL are the next highest. They are respectively represented by 26 percent each of the reviewed studies. For example: Alkahtani (2010); Arishi (2011); Genc (2011); Mohammadi and Masoomi (2015); Basoz and Cubukcu (2013); Adalier (2012); Hafeez *et al*. (2011); Akcaoglu (2008); Jalali and Panahzade (2014); Razaee *et al*. (2012); Faghiharam *et al*. (2012), Saraji *et al*. (2017); Mahbudi and Rafabakhsh (2016); Shariatmadari and Mazandarani (2016); Ghafoor (2008); Kahraman *et al*. (2014); Albirini (2004); and Barak (2001). The least represented variable from the findings of the reviewed studies is the effect of CALL prior usage on the attitude of language instructors towards CALL. This represents 4 percent of the reviewed studies; for example: Arishi (2011); and Mohammadi and Masoomi (2015).

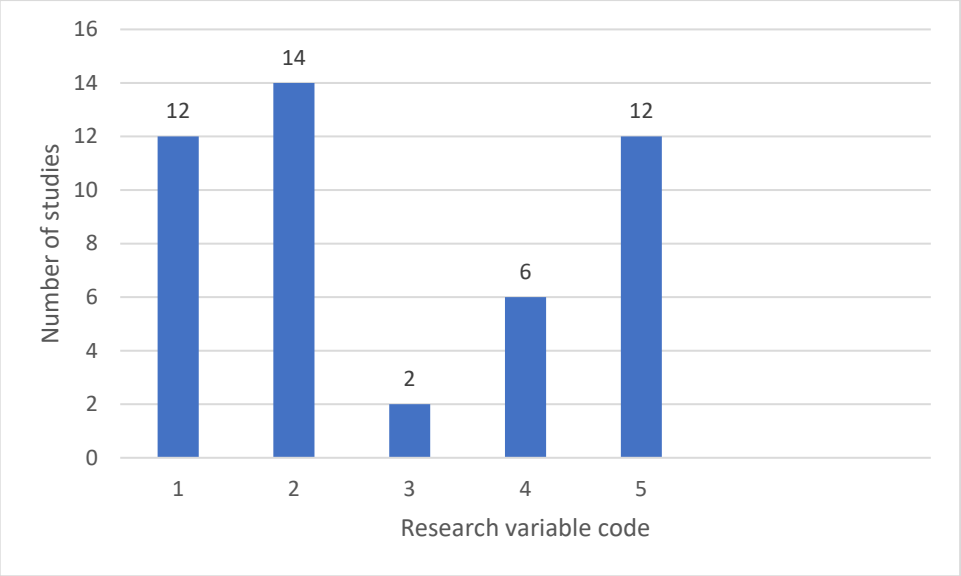

Figure 3.24: Number of research variables for studies

The effect of TAM factors on the attitude of language academics towards CALL such as found in Mohammadi and Masoomi (2015); Adalier (2012); Akcaoglu (2008); Razaee *et al*. (2012); Kirimzi (2014); and Hee Hong (2009) is represented by 13 percent of the reviewed studies.

3.2.10 Method of data analysis

Table 3.13 gives the codes for the methods of data analysis of the twenty (20) studies reviewed by the literature review conducted by the present study on factors affecting language instructors' attitudes towards CALL.

Table 3.13: Codes of the methods of data analysis for studies

Code	Methods of data analysis
1	Parametric
2	Non-parametric
2	Parametric and Non-parametric

The methods of data analysis for all the reviewed studies of the factors affecting language instructors' attitudes towards CALL were all specified.

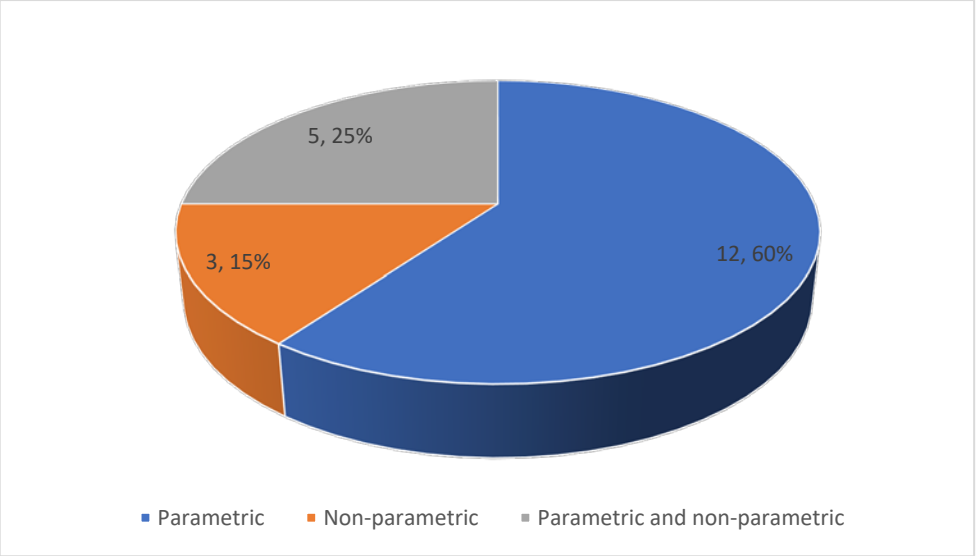

Figure 3.25: Distribution of method of data analysis for studies

The parametric method of data analysis is the most used (60 percent) method of data analysis by the reviewed studies; for example: Alkahtani (2010); Arishi (2011); Adalier (2012); Basoz and Cubukcu (2013); Akcaoglu (2008); Jalali and Panahzade (2014); Razaee *et al*. (2012); Kirmizi (2014); Faghiharam *et al*. (2012); Saraji *et al*. (2017); and Mahbudi and Rafabakhsh (2016). The least represented data analysis method as found in the reviewed studies is the non-parametric data analysis method (15 percent); for example: Genc (2011); Basoz and Cubukcu (2013); and Saraji *et al*. (2017) (Figure 3.25).

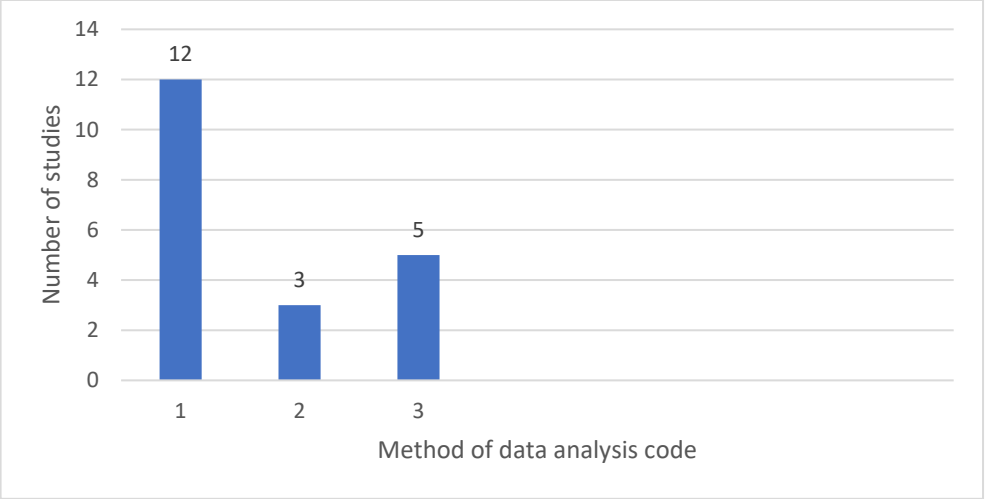

Figure 3.26: Number of methods of data analysis for studies

The mixture of both parametric and non-parametric methods of analysis is represented by 25 percent of the reviewed studies; for example: Adalier (2012); Shariatmadari and Mazandarani (2016); Ghafoor (2008); Kahraman *et al*. (2014); and Van Braak (2001).

3.2.11 Data validity and reliability tests

Table 3.14 and Table 3.15 respectively are the codes of the data validity and reliability tests of the twenty (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL. The code 0 has been used to represent the non-specified data validity and reliability tests.

Table 3.14: Codes of the data validity test of studies			Table 3.15: Codes of the data reliability test of studies	
Code	**Validity test**		**Code**	**Reliability test**
0	Not specified		0	Not specified
1	Pearson's correlation coefficient		1	Cronbach's alpha coefficient
2	Spearman's correlation		2	Chi-square
3	Mixed			

The studies that made use of Pearson's correlation coefficient and mixed methods as found in the reviewed studies on the factors affecting language instructors' attitudes towards CALL are each represented by 30%.

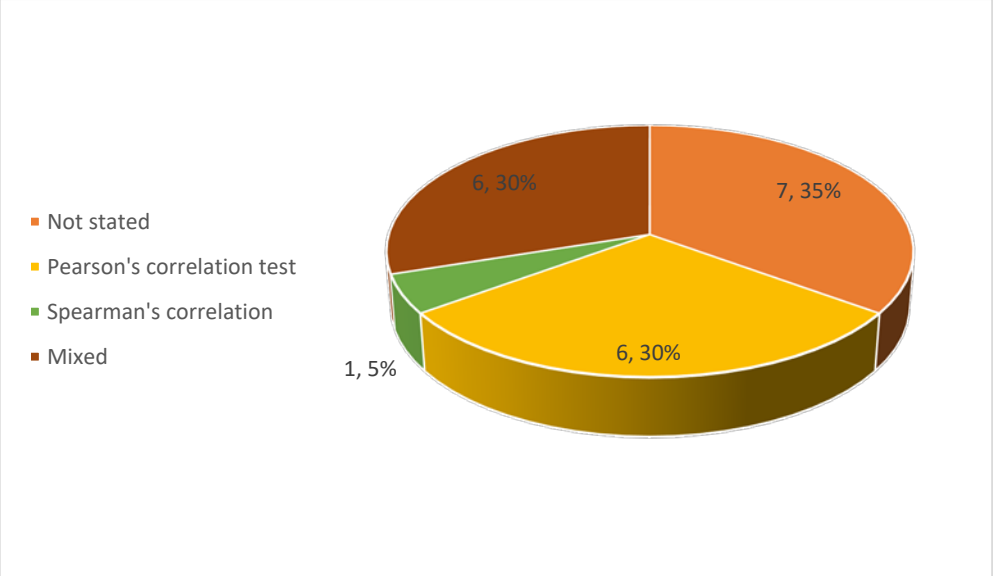

Figure 3.27: Distribution of validity test methods for studies

These studies include Arishi (2011); Adalier (2012); Akcaoglu (2008); Shariatmadari and Mazandarani (2016); Hee Hong (2009); Van Braak (2001); Jalali and Panahzade (2014); Razaee *et al*. (2012); Faghiharam *et al*. (2012); Ghafoor (2008); Kahraman *et al*. (2014); and Albirini (2004). The reviewed studies that did not specify the data validity test method used are represented by 35 percent (Alkahtani 2010; Genc 2011; Mohammadi and Masoomi 2015; Basoz and Cubukcu 2013' Hafeez *et al*. 2011; Kirmizi 2014; and Mahbudi and Rafabakhsh 2016).

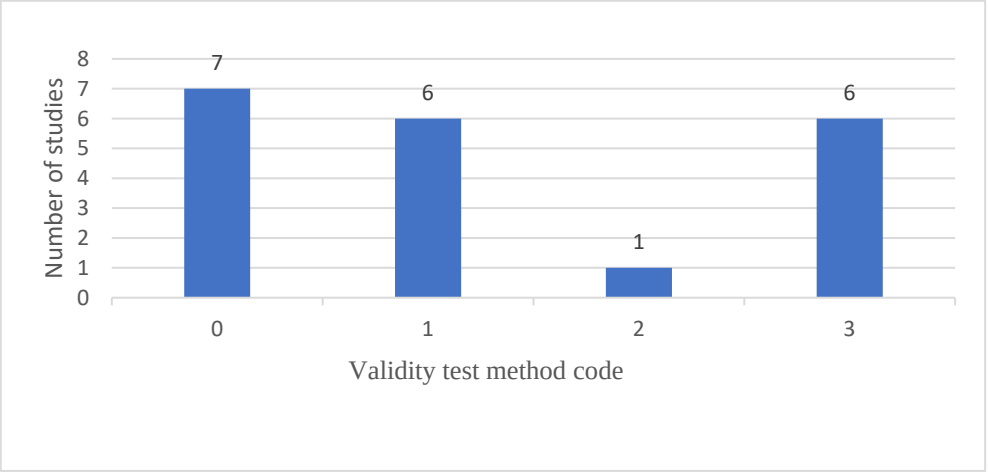

Figure 3.28: Number of methods of data analysis for studies

On the other hand, just one of the studies reviewed, Saraji *et al*. (2017), made use of Spearman's correlation methods. About a half (45%) of the reviewed studies on the factors affecting language instructors' attitudes towards CALL did not specify the reliability test that were used.

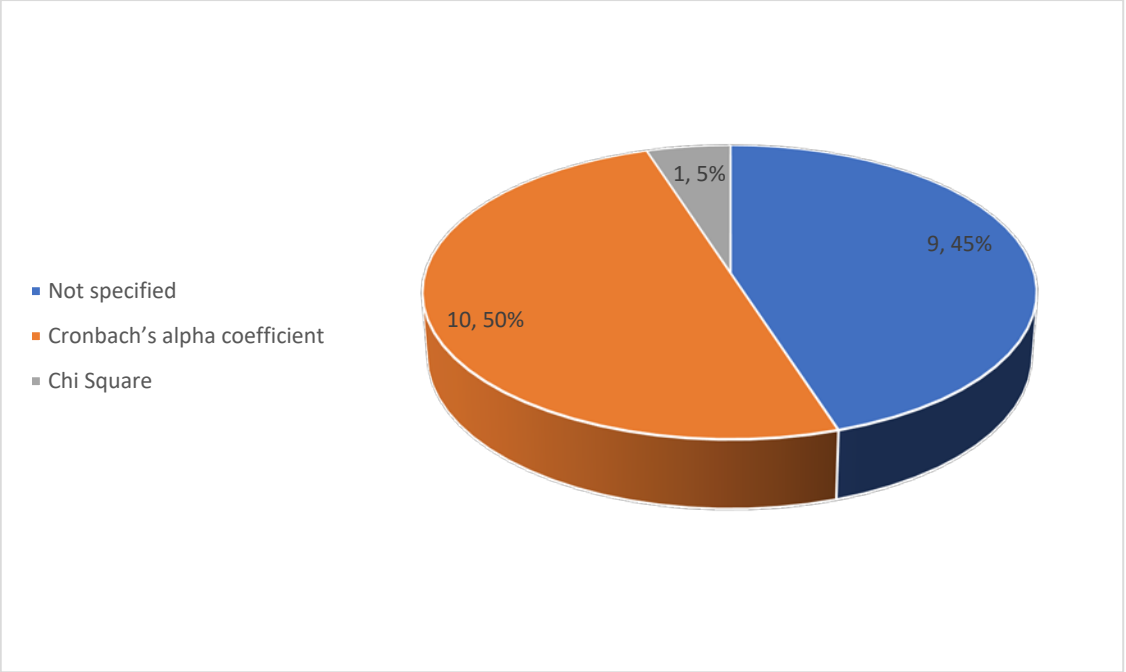

Figure 3.29: Distribution of reliability test methods for studies

Cronbach's alpha coefficient was used by half of the reviewed studies and this represent 50 percent of the reviewed studies; for example: Arishi (2011); Mohammadi and Masoomi (2015); Adalier (2012); Akcaoglu (2008); Jalali and Panahzade (2014); Razaee *et al*. (2012); Ghafoor (2008); Kahraman *et al*. (2014); Albirini (2004); and Hee Hong (2009). However, only one (5 percent) of the reviewed studies made use of the Chi-square reliability test method; for example; Genc (2011).

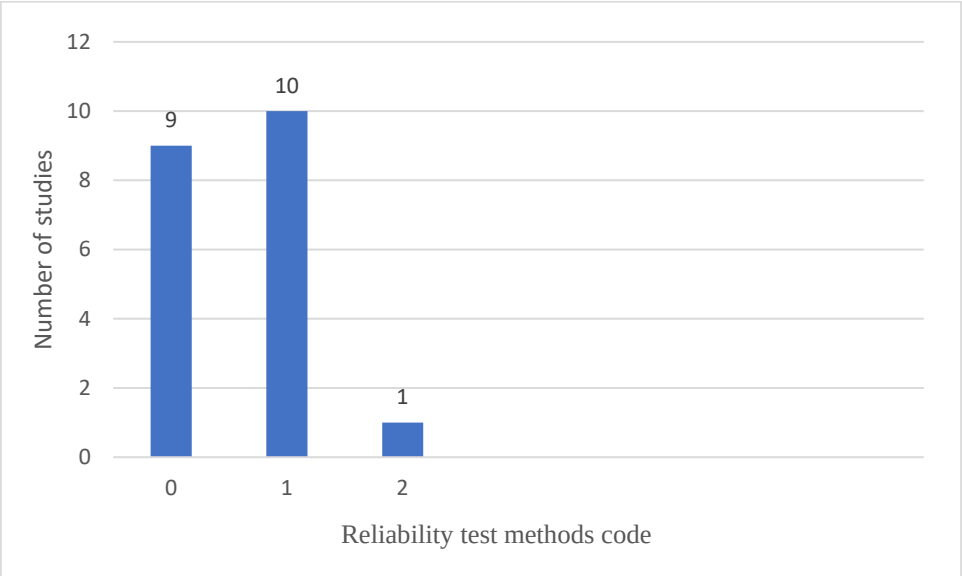

Figure 3.30: Number of reliability test methods for studies

3.2.12 Key research findings

Table 3.16 is the codes of the key research finding of the twenty (20) studies reviewed by the literature review conducted by the present study on the factors affecting language instructors' attitudes towards CALL.

Table 3.16: Codes of the key research findings for studies

Code	Key research findings
0	No correlation
1	Positive correlation
2	Negative correlation
3	Inconclusive

3.2.12.1 Findings on demographics

More than half (64 percent) of the reviewed studies found no relationships between language instructors' demographics and their attitudes towards CALL. For example: Alkahtani (2010); Arishi (2011); Genc (2011); Adalier (2012); Hafeez *et al*. (2011); Kahraman *et al*. (2014), and Hee Hong (2009).

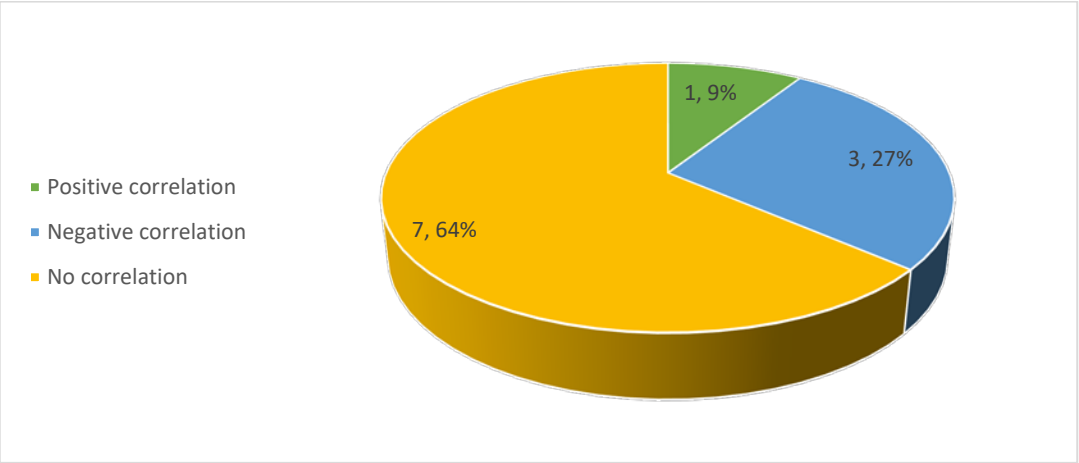

Figure 3.31: Distribution of findings on demographics

Conversely, only about a quarter (27 percent) of the reviewed studies found a negative relationship between language instructors' demographics and their attitudes towards CALL. For example: Jalali and Panahzade (2014); Ghafoor (2008); and Albirini (2004). However, the reviewed studies found only one study (9 percent) which discovered a positive relationship between language instructors' demographics and their attitudes towards CALL (Saraji *et al*. 2017).

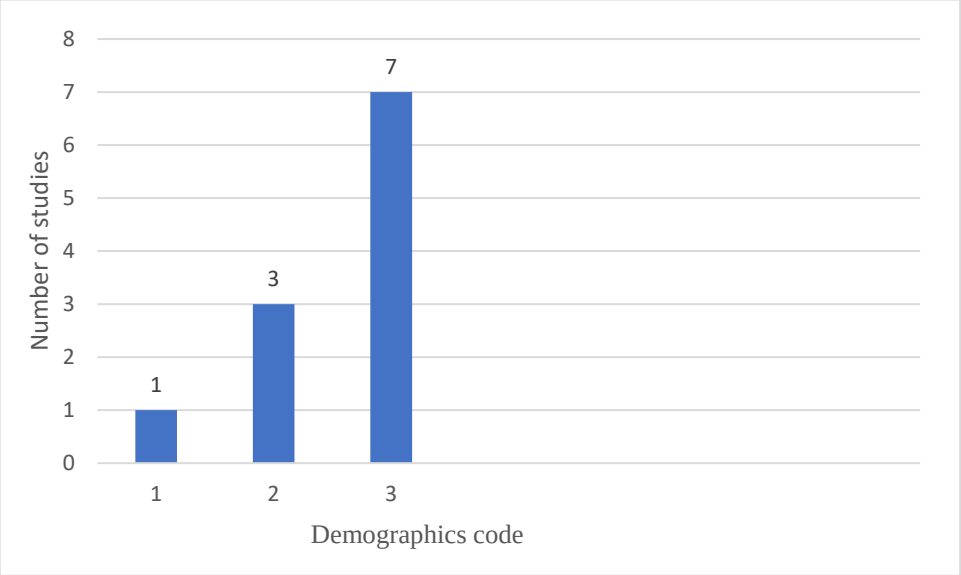

Figure 3.32: Number of findings on demographics

3.2.12.2 Findings on computer usage

Above half (56 percent) of the reviewed studies found a positive relationship between language instructors' computer usage and their attitudes towards CALL.

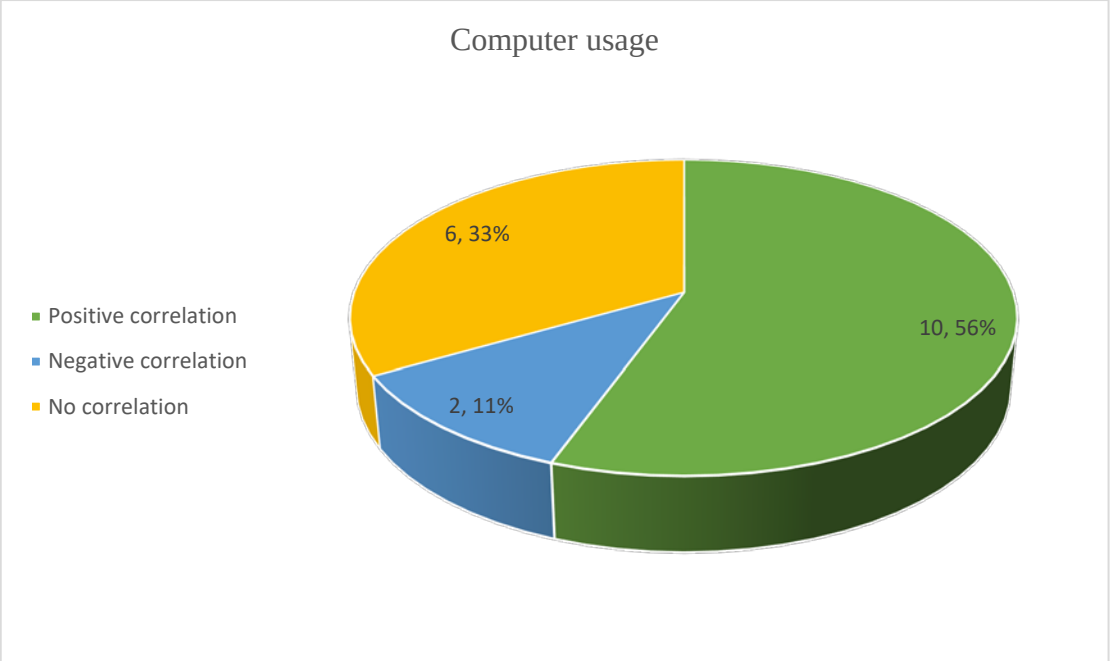

Figure 3.33: Distribution of findings on computer usage

These studies include: Mohammadi and Masoomi (2015); Basoz and Cubukcu (2013); Adalier (2012); Akcaoglu (2008); Razaee *et al*. (2012); Faghiharam *et al*. (2012); Mahbudi and Rafabakhsh (2016); Ghafoor (2008); Albirini (2004); and Hee Hong (2009). By contrast, the reviewed studies found that about a third (33 percent) found no relationship between language instructors' computer usage and their attitudes towards CALL. For example: Arishi (2011); Genc (2011); Basoz and Cubukcu (2013); Razaee *et al*. (2012), Kahraman *et al*. (2014), and Hee Hong (2009).

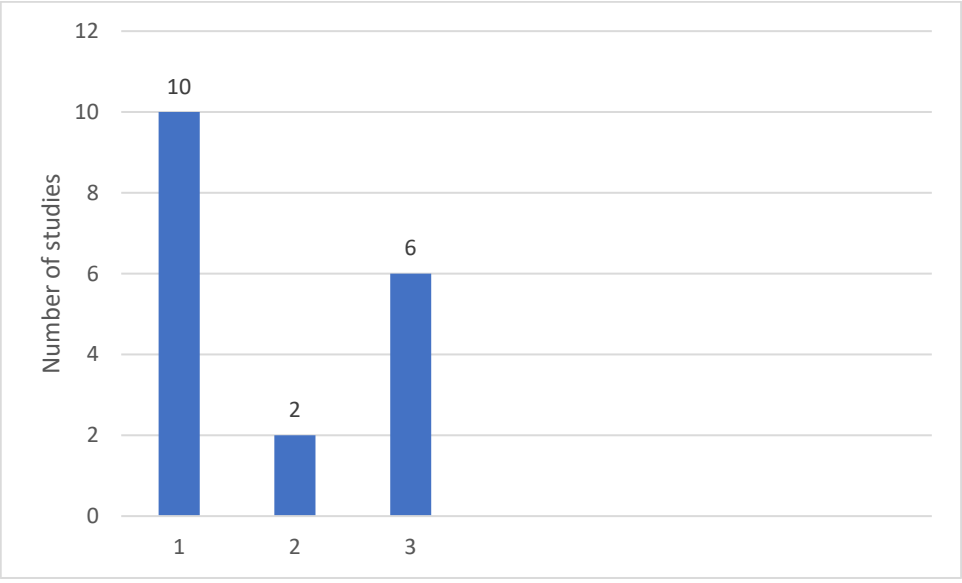

Figure 3.34: Number of findings on computer usage

It was found that only two (2) of the reviewed studies found a negative relationship between language instructors' computer usage and their attitudes towards CALL (Faghiharam *et al*. 2012; Shariatmadari and Mazandarani 2016).

3.2.12.3 Findings on CALL prior usage

Half (50 percent) of the reviewed studies found a positive relationship between language instructors' prior CALL usage and their attitudes towards CALL; for example: Mohammadi and Masoomi (2015).

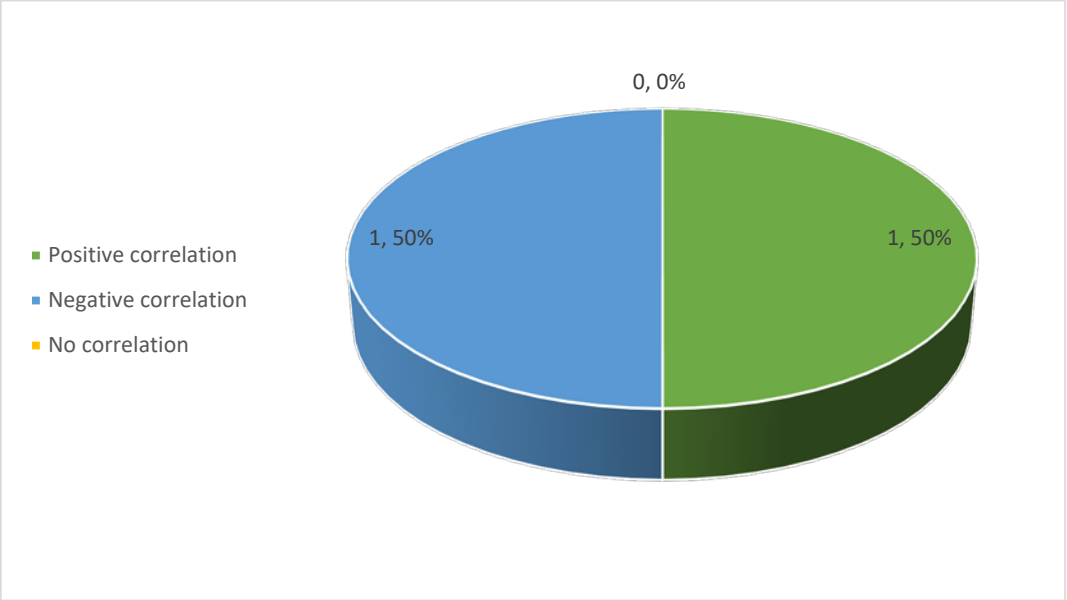

Figure 3.35: Distribution of findings on CALL prior usage

Likewise, half (50 percent) of the reviewed studies found a negative relationship between language instructors' prior CALL usage and their attitudes towards CALL; for example, Arishi (2011). Interestingly, no study was found amongst the reviewed studies to have no relationship between language instructors' prior CALL usage and their attitudes towards CALL.

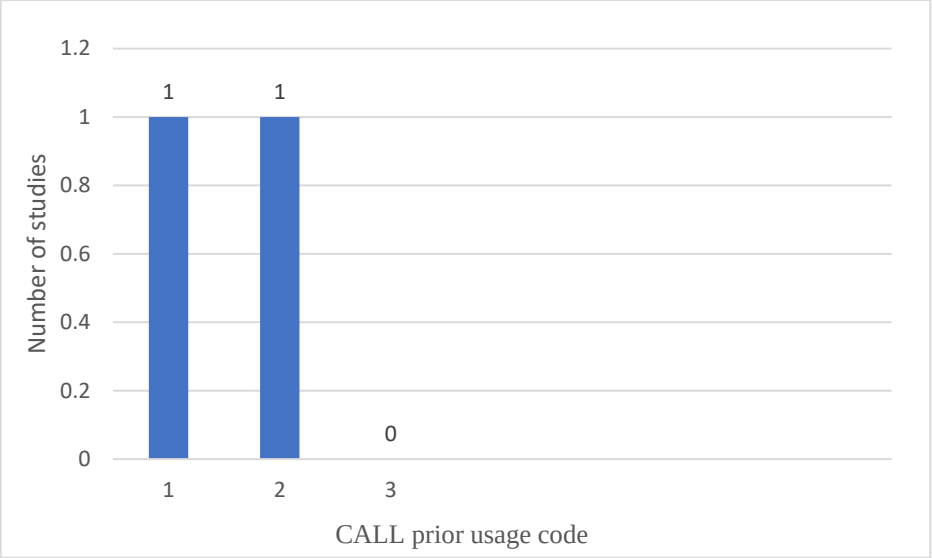

Figure 3.36: Number of findings on CALL prior usage

3.2.12.4 Findings on TAM factors

Above three quarters (80 percent) of the reviewed studies found a positive relationship between language instructors' TAM factors and their attitudes towards CALL.

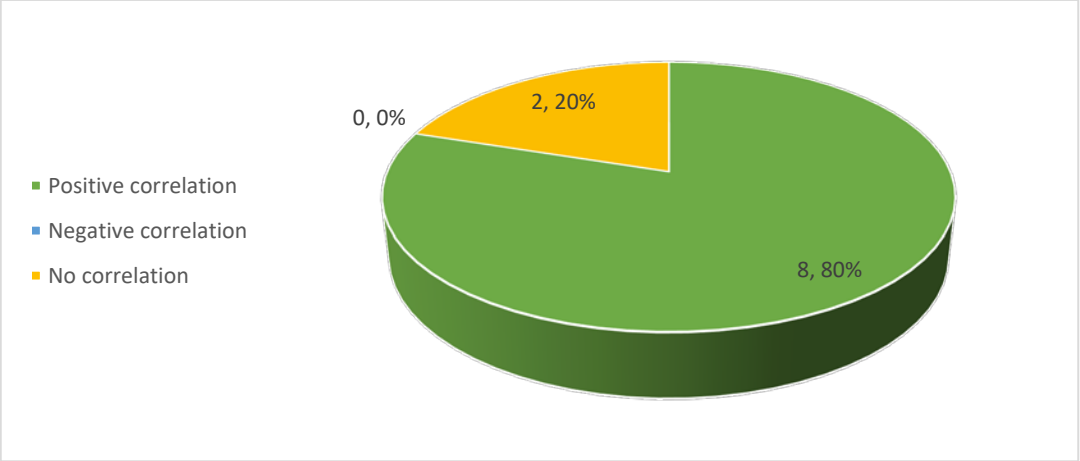

Figure 3.37: Distribution of findings on TAM factors

These studies include Mohammadi and Masoomi (2015); Adalier (2012); Akcaoglu (2008); Razaee *et al*. (2012); Kirmizi (2014); Faghiharam *et al*. (2012); Ghafoor (2008); and Albirini (2004). The reviewed studies found no negative relationship between language instructors' TAM factors and their attitude towards CALL.

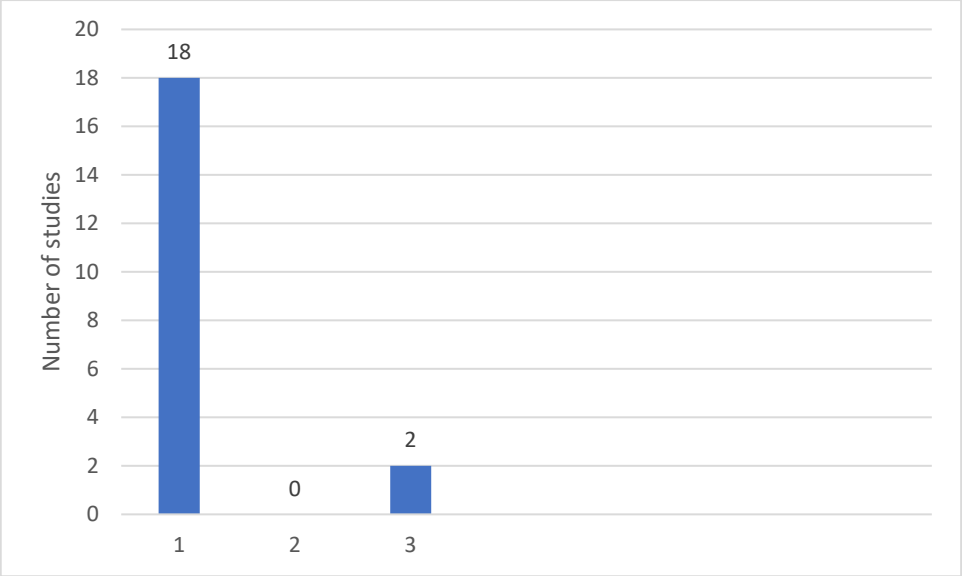

Figure 3.38: Number of findings on TAM factors

3.2.12.5 Findings on academic and language proficiency

About a third (31 percent) of the reviewed studies found positive relationships between language instructors' academic and language proficiency and their attitude towards CALL; for example: Faghiharam *et al*. (2012); Saraji *et al*. (2017); Mahbudi and Rafabakhsh (2016); Ghafoor (2008); and Albirini (2004).

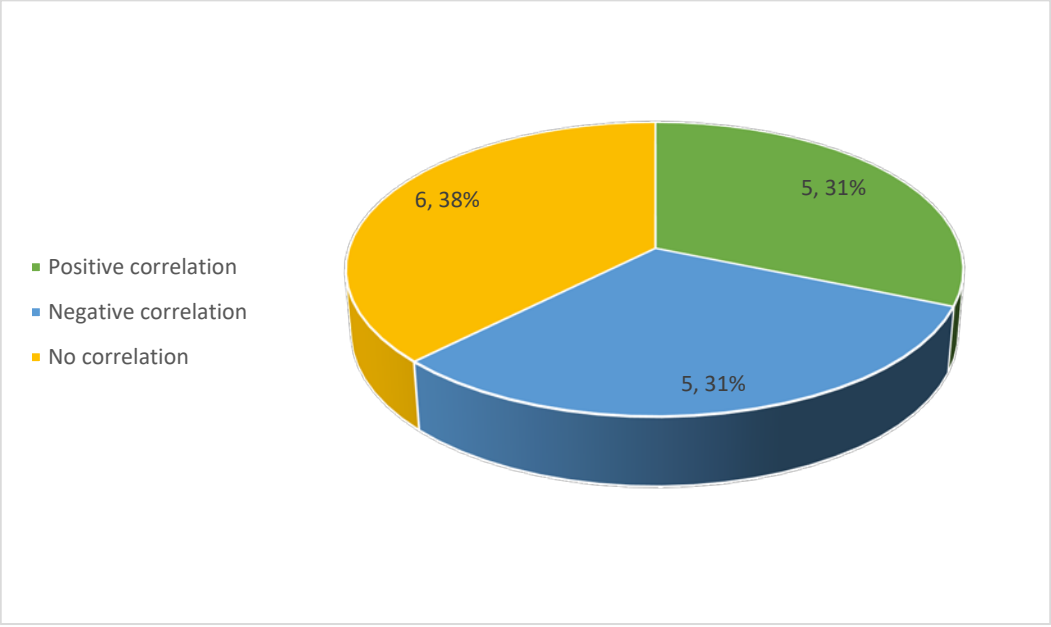

Figure 3.39: Distribution of findings on academic and language proficiency

Likewise, about a third (31 percent) of the reviewed studies found negative relationships between language instructors' academic and language proficiency and their attitudes towards CALL; for example: Hafeez *et al*. (2011), Jalali and Panahzade (2014); Shariatmadari and Mazandarani (2016); Ghafoor (2008); and Albirini (2004).

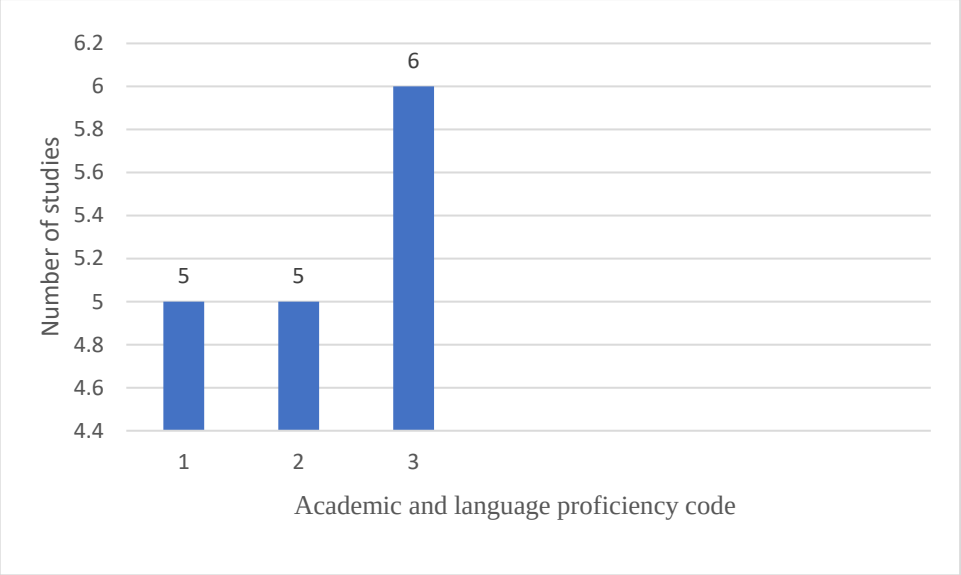

Figure 3.40: Number of findings on academic and language proficiency

Nevertheless, the reviewed studies found that more than one third (38 percent) discovered no relationship between language instructors' academic and language proficiency and their attitudes towards CALL; for example: Alkahtani (2010); Arishi (2011); Genc (2011); Adalier (2012); Hafeez *et al*. (2011); and Kahraman *et al*. (2014).

Table 3.17: Codes of the content analysis

CODE	Variables
V1	Studies
V2	Theories
V3	Research designs
V4	Research strategies
V5	Research data
V6	Data collection method
V7	Location context
V8	Time interval context
V9	Population
V10	Sample sizes
V11	Sampling methods
V12	Research variables
V13	Method of analysis
V14	Validity tests
V15	Reliability test
V16	Key research findings

Table 3.18: Coding of the entire studies under review

V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16
1	0	2	1	1	1	1	2	2	0	0	1,3	1	0	0	0, 0
2	0	1, 2	1, 2	1	1, 2	1	2	2	1	0	1, 2, 3, 4	1	1	1	0, 0, 0, 0, 0, 2
3	0	2	1	1	1	2	2	2	1	4	1, 2, 3	2	0	2	0, 0, 0
4	0	2	1	1	1	1	2	2	1	4	4, 5	1	0	1	1, 1, 1
5	0	2	1	1	1	2	3	2	1	0	2, 3, 5	2	0	0	0, 0, 0, 1
6	4	2	1	1	1	2	2	2	1	2	1, 2, 3	3	1	1	0, 0, 0, 0, 1
7	0	2	1	1	1	1	2	2	2	1	1, 3	1	0	0	0, 0, 2, 2
8	5, 6	2	1	1	1	2	2	2	2	1	2, 5	1	1	1	1, 1, 1, 1, 1, 1, 1
9	0	2	1	1	1	1	3	2	1	1	1, 3	1	2, 3	1	2, 2

10	1	2	1	1	1	1	2	2	1	3	2, 5	1	2, 3	1	0, 1, 1
11	3	2	1	1	1	2	3	2	2	0	5	1	0	0	1, 1, 1
12	1, 3, 5, 7, 8	2	1	1	1	1	2	2	2	1	1, 3	1	2, 3	0	1, 1, 1, 1, 1, 1, 1, 1, 2
13	0	2	1	1	1	1	3	2	1	0	2, 3	2	3	0	1, 1, 1
14	3	2	1	1	1	1	3	2	1	0	2	1	0	0	1, 1
15	0	2	1	1	1	1	3	2	1	0	1, 2, 3	3	1	0	2, 2
16	1, 2	2	1	1	1	1	2	1	2	1	1, 2, 3	3	1,2, 3	1	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2
17	0	2	1	1, 2	1	2	2	1	1	4	1, 2, 3	3	4, 5, 6	1	2, 2, 2, 2, 2, 2

18	1, 2	2	1	1	1	1	1	1	3	1	1, 2, 3	1	1, 2, 3	1	1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2
19	0	2	1	1	1	3	2	1	2	0	5	1	1	1	2, 2, 2, 2, 2, 2, 2, 2, 2, 1
20	1	2	1	1	1	2	1	1	3	1	1,2	3	1	0	1, 1, 1

Table 3.19: Number of studies per key research findings for each variable

	CORRELATIONS				
VARIABLES	**0**	**1**	**2**	**3**	**CONCLUSION**
1	7	0	4	0	0
2	6	12	0	0	3
3	0	1	1	0	1
4	0	5	0	0	1
5	8	6	4	0	0

3.3 CODING ACCURACY AND INTER-CODER RELIABILITY OF THE STUDIES UNDER REVIEW

The intra-class correlation method was used to assess the coding accuracy and the inter-coder reliability of the coding scheme of the content analysis conducted by this study. Table 3.19 presents the individual codes for all the variables of this content analysis. Furthermore, each of the individual variables has its equivalent sub-codes, as evident from Table 2.1 to Table 2.17. The suitability of the coding scheme for each of the sixteen variables of the content analysis of

this study was rated with the help of two PhD students. The next chapter presents the analysis of these ratings.

Table 3.20: Descriptive statistics of the content analysis

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Table 3.21: Cronbach's alpha coefficient of the content analysis

Cronbach's Alpha	N of Items
.717	14

Table 3.22: Intraclass correlation coefficient of the content analysis

		95% Confidence Interval		F Test with True Value 0			
	Intraclass Correlation[b]	Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.147[a]	.089	.228	3.500	58	751	.000
Average Measures	.717[c]	.572	.818	3.500	58	752	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

3.4 Summary and interpretation of the coded review

The key outcome of the content analysis which has been conducted by the present study is presented in this section by the means of two conceptual models:

(1) A conceptual model of the factors affecting language instructors' attitudes towards CALL; and

(2) a theoretically sound conceptual model of the factors affecting KwaZulu-Natal Universities' Language Academics towards CALLTAIL.

3.4.1 Conceptual model of the factors affecting language instructors' attitudes towards CALL

The above findings' summary as presented from this study's literature review on the factors that are assumed to affect language instructors' attitudes towards CALL is presented by Figure 3.17. The following five (5) factors, according to the Figure, affect language instructors' attitude towards Computer Assisted Language Academics: their demographics; their computer usage; their CALL prior usage; TAM factors; and their academic and language proficiency. The above-presented factors are defined in section 3.2.12 of this chapter.

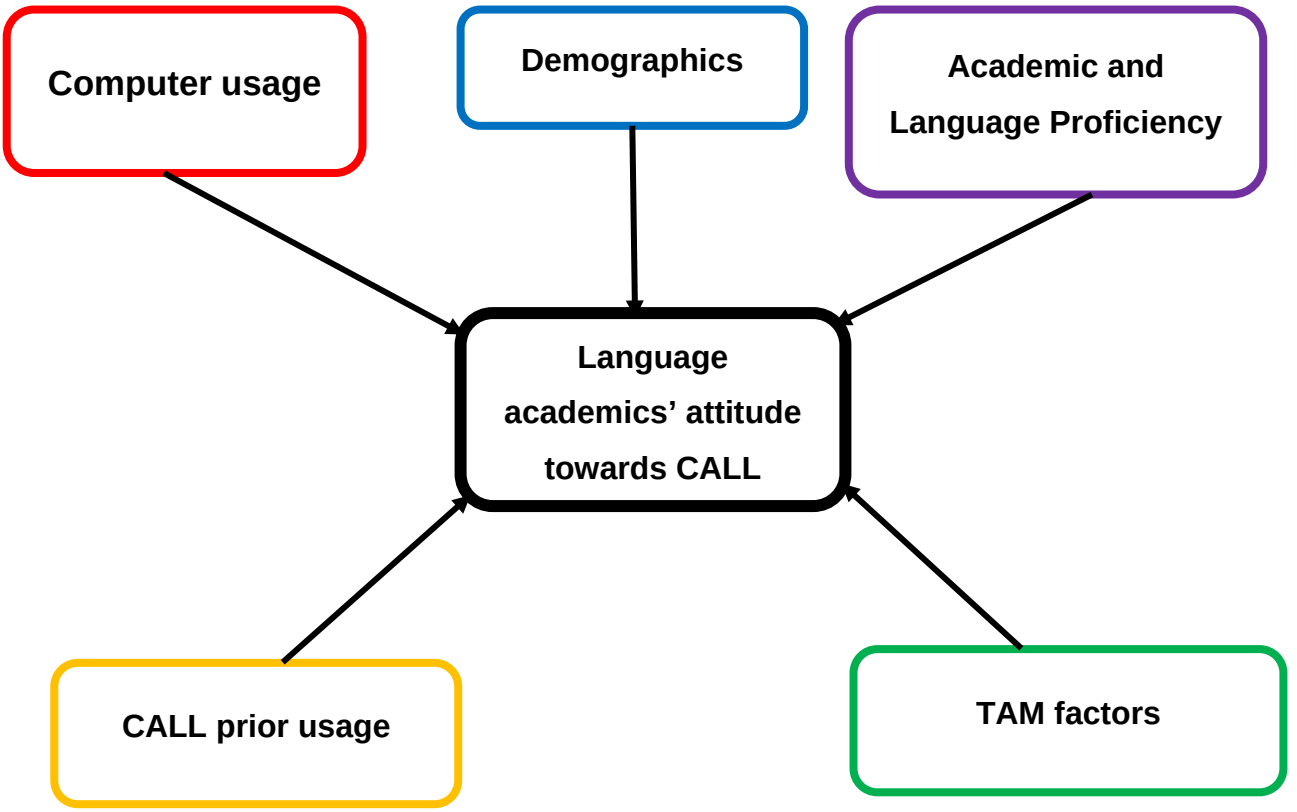

Figure 3.41: A conceptual model of the factors affecting language instructors' attitudes towards CALL

3.4.2 Theoretically supported conceptual model of the factors affecting KwaZulu-Natal Universities' Language Academics towards CALL Tools for African Indigenous Languages

The purpose of this section is to present appropriate key theories in support of each of the variables in the above conceptual model (Figure 3.41): demographics; computer usage; CALL prior usage; TAM factors; and academic and language proficiency. Existing theories in support of a direct relationship between CALL and other variables is presented first. The Theory of Planned Behaviour and the Theory of Reasoned Action are the two theories in support of a direct relationship between instructors' beliefs and instructors' attitudes towards CALL.

3.4.2.1 The Theory of Reasoned Action

The Theory of Reasoned Action (TRA) proposed by Fishben (1967) argues that behavioural intention beliefs, norms and attitudes affect the behaviour of people. The explicit identification of the relation of the above-identified TRA factors and attitude is necessary as a dependent variable for this study focussing on the attitudes of people. According to Anridho and Liao

(2013:270), the “theory of reasoned action proposed that individual's belief influences attitude”. Similarly, Fadzil *et al*. (2012:103) confirm that “TRA proposes that belief affects attitude”. The following quotations from Hartono *et al*. (2013), Latif *et al*. (2012), and Kim (2008) also support the existence of a relationship between the beliefs of people and people’s attitudes: “TRA posits that belief influences attitude”; “TRA proposes that belief affects attitude”; and “in TRA, an individual's belief influences attitude”.

3.4.2.2 The Theory of Planned Behaviour

Ajzen (1985) developed the Theory of Planned Behaviour (TPB) as an extension of the TRA. In the TPB, the “perceived behavioural control” factor may be said to be an auxiliary for the TRA’s “evaluations of action factor”, apart from the fact that the newly added factor is considered to have other consequences. Adedokun *et al*. (2019:302), citing Gudonis *et al*. (2014), posit that TPB “argues that a person's behaviour is determined by their intention to perform the behaviour and that this intention is, in turn, a function of their attitude towards the behaviour and their subjective norm”. The TPB is used in this paper to theorise the influence of attitude towards behaviour via subjective norms, though the original TPB model does not explicitly show the influence of attitude on subjective norm.

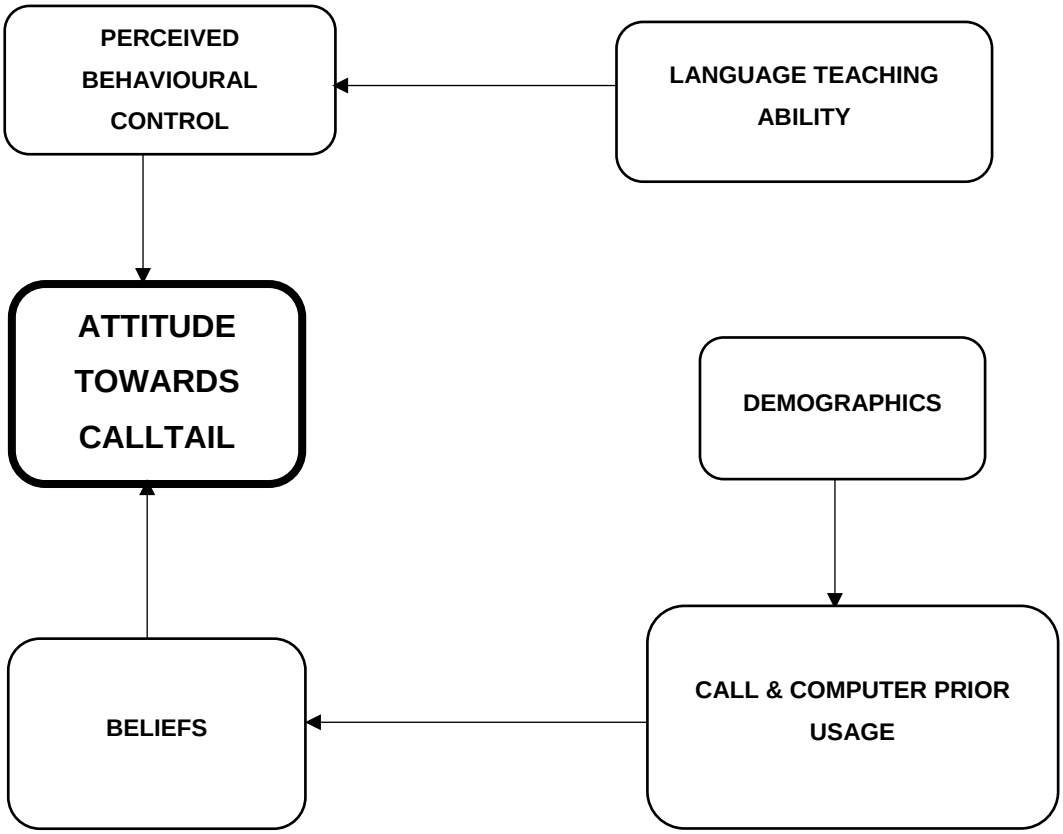

Figure 3.42: Theoretically supported conceptual model of the factors affecting KwaZulu-Natal Universities' language academics towards CALLTAIL

The section above presented the supporting theories on the influence of attitude towards behaviour based on beliefs. The theories presented are the TPB and the TRA. It should be recalled that Figure 3.41 contains other variables, such as academic and language proficiency, demographics, computer usage, CALL prior usage and TAM factors. The identification and presentation of the supporting theories linking the above-mentioned variables either to the TRA and TPB, or to belief constructs which directly link attitude to behaviour. The TPB, for instance, argues that attitude towards a behaviour is directly influenced by perceived behavioural control.

On the other hand, Armitage *et al*. (1999), as cited by Kidwell and Jewell (2010:2409), argue that an important aspect of the notion of perceived behavioural control, as postulated by the TPB, is that "a behaviour may be internally controllable when an individual perceives that he or she possesses control over personal resources, such as requisite skills, confidence, and ability to perform the behaviour". This indicates that one's abilities, skills, competencies and confidence to control that behaviour is influenced by perceived behavioural control of such behaviour. It can therefore be hypothesised that perceived behavioural control in the usage of CALL affects language teaching abilities. The TPB can therefore be considered as a supporting theory connecting language teaching abilities to perceived behavioural control.

3.4.2.3 Hume's Theory of Beliefs

Jones (1998) opines that Hume's Theory of Beliefs was proposed in 1975 and the theory maintains that "habitual or repeated experiences affect beliefs". The theory classifies beliefs in three categories: i) belief in the continuous existence of an external world independent of our perception of that world; ii) belief that the regularities which have occurred in our experience form a reliable guide to those which will occur (many locations); and iii) belief in the reliability of our senses qualified to take account of acknowledged and isolatable areas of deception and confusion (many locations) (Gaskin 1974). The second of Hume's category of beliefs is closely associates to this study, which Costa (1981: 222) also supports, by arguing that

> *"the paradigm or central case of belief formation is the case in which the belief follows involuntarily and immediately subsequent to some impression because of habit brought about by having experienced a large number of cases in which objects resembling those in the impression and belief have been associated as cause and effect".*

It therefore makes sense to consider the fact that the future is a product of the past. It is therefore safe to assume that the beliefs which are associated with CALL affect the prior usage of CALL and of computers. Hume's theory of beliefs can therefore be chosen as a supporting theory connecting the prior usage of CALL and computers to beliefs related to CALL.

3.4.2.4 Digital Divide Theory

According to Adedokun *et al*. (2019:305), citing Baxter-Webb (2015), "digital divide theory posits that society is becoming stratified based on patterns of technological ownership, access and use […] which are usually shaped by existing patterns of inequality with regards gender, class and ethnicity".

The theory makes it clear that the world has partitioned people into those who have and those who do not have access or ability to make use of modern-day ICTs (Gurstein, 2003). There is an indication that use and access to ICTs are greatly dependent on the social position of people in a society. It is therefore safe to say that the chance to access and use of CALL and computers is dependent on one's demographics. The Digital Divide Theory can therefore be chosen as a supporting theory linking demographics to the prior use of CALL and computers.

CHAPTER FOUR
RESEARCH FINDINGS

Chapter Four presents the findings of this study after conducting the various research procedures described in the previous chapter. This includes results on the instrument's validity and reliability, together with inferential and descriptive statistical results. The conclusion of the present chapter presents the validated empirical model proposed by the present study on the factors affecting language academic attitudes towards CALLTAIL.

4.1 INSTRUMENT'S VALIDITY AND RELIABILITY RESULTS

This section presents the Cronbach's alpha (α) coefficients obtained from the reliability testing of the instrument used by this study (questionnaire), together with the Pearson coefficients obtained from the validity testing.

4.1.1 Instrument's reliability

Table 4.1 illustrates the Cronbach's alpha (α) coefficients of the Likert-scale variables of the research for this study. All Cronbach's alpha (α) coefficients values are definitely greater than 0.7. This is a clear indication that the instrument for the present study was reliable.

Table 4.1 Reliability of data for research variables

Research Variable	No. of Items	Cronbach's Alpha
Computer experience	8	.778
Subjective norms	6	.825
Perceived usefulness of CALLTAIL	6	.941
Attitude towards CALLTAIL	8	.880

4.1.2 Validity of instrument

All the Likert-scale research variables of the present study have their subsection on the corresponding validity of its items in accordance to the Pearson correlation coefficients (r) values alongside their scales.

4.1.2.1 Validity of computer experience scale

Table 4.2 illustrates the Pearson correlation coefficients (r) amongst the respective computer experience items and the computer experience scale itself. All Pearson coefficients (r) values are definitely greater than 0.4. This is a clear indication that the computer experience scale for the present study is valid.

Table 4.2 Validity of data for research variables for computer experience (independent variables)

Correlations										
		B1	B2	B3	B4	B5	B6	B7	B8	Comp Expe
B1	Pearson Correlation	1	.153	.599**	.550**	.513**	.464**	.256	.297*	.612**
	Sig. (2-tailed)		.288	.000	.000	.000	.001	.073	.036	.000
	N	50	50	50	50	50	50	50	50	50
B2	Pearson Correlation	.153	1	.115	-.082	.026	.073	.423**	.486**	.561**
	Sig. (2-tailed)	.288		.426	.573	.859	.614	.002	.000	.000
	N	50	50	50	50	50	50	50	50	50
B3	Pearson Correlation	.599**	.115	1	.719**	.674**	.405**	.268	.174	.593**
	Sig. (2-tailed)	.000	.426		.000	.000	.004	.060	.227	.000
	N	50	50	50	50	50	50	50	50	50
B4	Pearson Correlation	.550**	-.082	.719**	1	.539**	.524**	.265	.179	.535**
	Sig. (2-tailed)	.000	.573	.000		.000	.000	.062	.213	.000
	N	50	50	50	50	50	50	50	50	50
B5	Pearson Correlation	.513**	.026	.674**	.539**	1	.580**	.385**	.315*	.648**
	Sig. (2-tailed)	.000	.859	.000	.000		.000	.006	.026	.000
	N	50	50	50	50	50	50	50	50	50

B6	Pearson Correlation	.464**	.073	.405**	.524**	.580**	1	.393**	.325*	.638**
	Sig. (2-tailed)	.001	.614	.004	.000	.000		.005	.021	.000
	N	50	50	50	50	50	50	50	50	50
B7	Pearson Correlation	.256	.423**	.268	.265	.385**	.393**	1	.697**	.797**
	Sig. (2-tailed)	.073	.002	.060	.062	.006	.005		.000	.000
	N	50	50	50	50	50	50	50	50	50
B8	Pearson Correlation	.297*	.486**	.174	.179	.315*	.325*	.697**	1	.785**
	Sig. (2-tailed)	.036	.000	.227	.213	.026	.021	.000		.000
	N	50	50	50	50	50	50	50	50	50
Comp Expe	Pearson Correlation	.612**	.561**	.593**	.535**	.648**	.638**	.797**	.785**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	
	N	50	50	50	50	50	50	50	50	50
**. Correlation is significant at the 0.01 level (2-tailed).										
*. Correlation is significant at the 0.05 level (2-tailed).										

4.1.2.2 Validity of subjective norms scale

Table 4.3 illustrates the Pearson correlation coefficients (r) between each subjective norm item and the subjective norms scale. All Pearson coefficients (r) values are definitely greater than 0.4. This is a clear indication that the subjective norms scale for the present study is valid.

Table 4.3 Validity of data for research variables for subjective norms (independent variables)

Correlations								
		C1	C2	C3	C4	C5	C6	SubNorms
C1	Pearson Correlation	1	.640**	.300*	.239	.430**	.391**	.705**
	Sig. (2-tailed)		.000	.034	.094	.002	.005	.000
	N	50	50	50	50	50	50	50
C2	Pearson Correlation	.640**	1	.444**	.436**	.388**	.533**	.782**
	Sig. (2-tailed)	.000		.001	.002	.005	.000	.000
	N	50	50	50	50	50	50	50
C3	Pearson Correlation	.300*	.444**	1	.782**	.462**	.303*	.686**
	Sig. (2-tailed)	.034	.001		.000	.001	.033	.000
	N	50	50	50	50	50	50	50
C4	Pearson Correlation	.239	.436**	.782**	1	.465**	.326*	.680**
	Sig. (2-tailed)	.094	.002	.000		.001	.021	.000
	N	50	50	50	50	50	50	50
C5	Pearson Correlation	.430**	.388**	.462**	.465**	1	.696**	.791**
	Sig. (2-tailed)	.002	.005	.001	.001		.000	.000
	N	50	50	50	50	50	50	50
C6	Pearson Correlation	.391**	.533**	.303*	.326*	.696**	1	.773**
	Sig. (2-tailed)	.005	.000	.033	.021	.000		.000
	N	50	50	50	50	50	50	50
SubNorms	Pearson Correlation	.705**	.782**	.686**	.680**	.791**	.773**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	

	N	50	50	50	50	50	50	50
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

4.1.2.3 Validity of perceived usefulness scale

Table 4.4 illustrates the Pearson correlation coefficients (r) between each perceived usefulness item and the perceived usefulness scale. All Pearson coefficients (r) values are definitely greater than 0.4. This is a clear indication that the Perceived Usefulness scale for the present study is valid.

Table 4.4 Validity of data for research variables for perceived usefulness (independent variables)

Correlations								
		D1	D2	D3	D4	D5	D6	PercUsefulness
D1	Pearson Correlation	1	.785**	.869**	.746**	.690**	.718**	.927**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	50	50	50	50	50	50	50
D2	Pearson Correlation	.785**	1	.792**	.637**	.592**	.656**	.865**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	50	50	50	50	50	50	50
D3	Pearson Correlation	.869**	.792**	1	.752**	.721**	.790**	.937**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	50	50	50	50	50	50	50
D4	Pearson Correlation	.746**	.637**	.752**	1	.619**	.768**	.856**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	50	50	50	50	50	50	50

D5	Pearson Correlation	.690**	.592**	.721**	.619**	1	.812**	.820**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	50	50	50	50	50	50	50
D6	Pearson Correlation	.718**	.656**	.790**	.768**	.812**	1	.850**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	50	50	50	50	50	50	50
PercUsefulness	Pearson Correlation	.927**	.865**	.937**	.856**	.820**	.850**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	50	50	50	50	50	50	50
** Correlation is significant at the 0.01 level (2-tailed).								

4.1.2.4 Validity of attitude scale

Table 4.5 illustrates the Pearson correlation coefficients (r) between each attitude item and the attitude scale. All Pearson coefficients (r) values are definitely greater than 0.4. This is a clear indication that the Attitude scale for the present study is valid.

Table 4.5 Validity of data for research variables for attitude (dependent variables)

Correlations										
		E1	E2	E3	E4	E5	E6	E7	E8	Attitude
E1	Pearson Correlation	1	.391**	.384**	.454**	.061	.466**	.315*	.378**	.534**
	Sig. (2-tailed)		.005	.006	.001	.675	.001	.026	.007	.000
	N	50	50	50	50	50	50	50	50	50
E2	Pearson Correlation	.391**	1	.818**	.365**	.639**	.556**	.640**	.360*	.827**
	Sig. (2-tailed)	.005		.000	.009	.000	.000	.000	.010	.000
	N	50	50	50	50	50	50	50	50	50
E3	Pearson Correlation	.384**	.818**	1	.465**	.635**	.681**	.726**	.505**	.891**
	Sig. (2-tailed)	.006	.000		.001	.000	.000	.000	.000	.000
	N	50	50	50	50	50	50	50	50	50
E4	Pearson Correlation	.454**	.365**	.465**	1	.415**	.518**	.482**	.385**	.660**
	Sig. (2-tailed)	.001	.009	.001		.003	.000	.000	.006	.000
	N	50	50	50	50	50	50	50	50	50
E5	Pearson Correlation	.061	.639**	.635**	.415**	1	.383**	.542**	.349*	.725**
	Sig. (2-tailed)	.675	.000	.000	.003		.006	.000	.013	.000

	N	50	50	50	50	50	50	50	50	50
E6	Pearson Correlation	.466**	.556**	.681**	.518**	.383**	1	.790**	.454**	.785**
	Sig. (2-tailed)	.001	.000	.000	.000	.006		.000	.001	.000
	N	50	50	50	50	50	50	50	50	50
E7	Pearson Correlation	.315*	.640**	.726**	.482**	.542**	.790**	1	.591**	.848**
	Sig. (2-tailed)	.026	.000	.000	.000	.000	.000		.000	.000
	N	50	50	50	50	50	50	50	50	50
E8	Pearson Correlation	.378**	.360*	.505**	.385**	.349*	.454**	.591**	1	.667**
	Sig. (2-tailed)	.007	.010	.000	.006	.013	.001	.000		.000
	N	50	50	50	50	50	50	50	50	50
AttitudeTowardsCALLTAIL	Pearson Correlation	.534**	.827**	.891**	.660**	.725**	.785**	.848**	.667**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	
	N	50	50	50	50	50	50	50	50	50
**. Correlation is significant at the 0.01 level (2-tailed).										
*. Correlation is significant at the 0.05 level (2-tailed).										

4.2 DESCRIPTIVE STATISTICS

This section is a presentation of the means and frequency descriptive statistics of the research variables for the present study. This specifically provides a general explanation of the demographics of the respondents of the current study.

4.2.1 Descriptive statistics of demographics

Table 4.6 illustrates the distribution of the participants of the present study according to their age, their gender, their ethnic group, their citizenship, and their rank in academics.

Table 4.6 Demographics descriptive statistics

Demographics Items		Percentage (%)
Institution	DUT	16
	UKZN	40
	UNIZULU	44
Department	African Languages and Culture	46
	isiZulu	2
	Language and Arts	28
	Media, Language, and Communication	24
Language specialisation	Afrikaans	2
	Afrikaans and English	2
	English	20
	French and English	2
	isiSwati	2
	isiZulu	58
	IsiZulu, Afrikaans and English	4
	isiZulu and English	2
	isiZulu and SA Sign Language	2
	isiZulu and Sesotho	2
	Swahili	2
Age	U30 years	12

	30-40 years	30
	41-50 years	18
	51-60 years	36
	Above 60 years	4
Gender	Female	52
	Male	48
Ethnic Group	Black	80
	Coloured	6
	White	2
	Indian	12
Citizenship	South African	96
	Expatriate	4
Rank	Junior Lecturer	10
	Lecturer	48
	Senior Lecturer	28
	Associate Professor	10
	Full Professor	4

There were more female respondents (52 percent) by comparison to male respondents (48 percent). Most of the respondents' ages range between under 30 and 60 years old, with the most of them as what could be referred to as being aging academics between 50 and 60 (36 percent). More than three quarters of the respondents were Black, and less than a quarter of them were Indians, Coloured and White (12 percent, 6 percent, and 2 percent respectively). A clear majority of the proportion of Black employees were South African by nationality (96 percent), while only a few of the respondents could be considered as expatriates (4 percent). The vast majority of language academics were from African Languages and Culture departments (46 percent). Close to half of the respondents could be considered as holding lecturer position (48 percent).

4.2.2 Descriptive statistics for computer experience

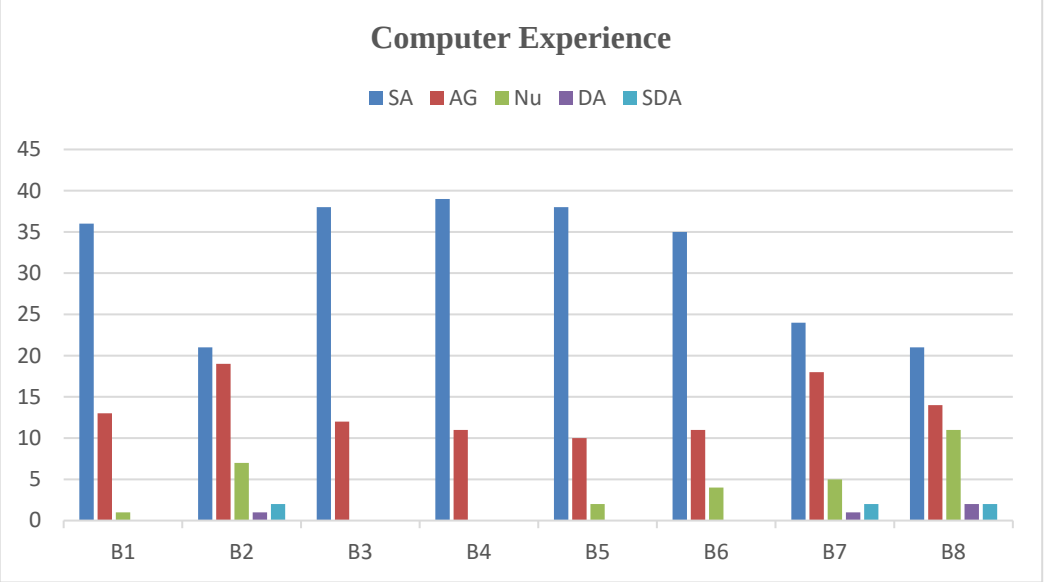

Figure 4.1 Descriptive statistics for computer experience

Table 4.7 illustrates the mean values on the respondents' perceptions of their Computer Experience. According to these mean values, their computer experience of desktop publishing (Item B8) was rated the lowest by the respondents of this study (4.00 out of 5). Conversely, their computer experience of email (Item B4) was rated highest by the respondents of this study (4.78 out of 5). The mean value also shows that, on the average, overall computer experience is evaluated as being considerably beyond average by the respondents of this study (4.49 out of 5).

Table 4.7 Descriptive statistics for computer experience

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
B1	50	3.00	5.00	4.7000	.50508
B2	50	1.00	5.00	4.1200	1.00285
B3	50	4.00	5.00	4.7600	.43142
B4	50	4.00	5.00	4.7800	.41845
B5	50	3.00	5.00	4.7200	.53605
B6	50	3.00	5.00	4.6200	.63535

B7	50	1.00	5.00	4.2200	.99571
B8	50	1.00	5.00	4.0000	1.08797
Valid N (listwise)	50				

4.2.3 Descriptive statistics for subjective norms

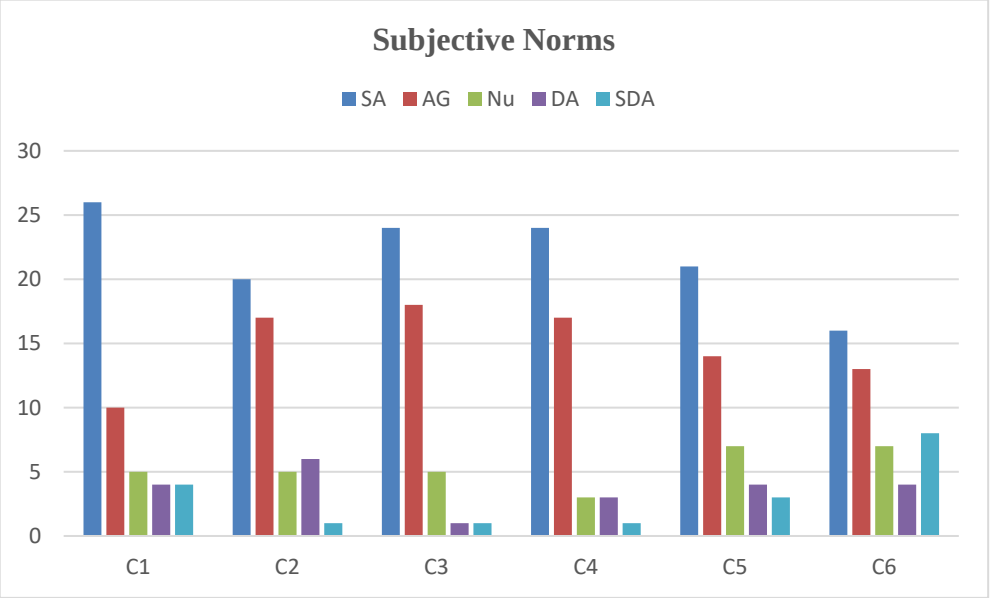

Figure 4.2 Descriptive statistics for subjective norms

Table 4.8 illustrates the mean values on the respondents' subjective norms. According to these mean values, their subjective norm for government officials (Item C6) was rated lowest by the respondents of this study (3.52 out 5). Conversely, their subjective norms of their colleagues (Item C3) was rated the highest by the respondents of this study (4.28 out of 5). The mean values also show that, on the average, overall subjective norms are evaluated as being slightly above average by the respondents of this study (3.98 out of 5).

Table 4.8: Descriptive statistics for subjective norms

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
C1	50	1.00	5.00	3.9800	1.33233
C2	50	1.00	5.00	3.9600	1.12413
C3	50	1.00	5.00	4.2800	.88156
C4	50	1.00	5.00	4.2200	.97499
C5	50	1.00	5.00	3.9200	1.20949
C6	50	1.00	5.00	3.5200	1.43200
Valid N (listwise)	50				

4.2.4 Descriptive statistics for perceived usefulness

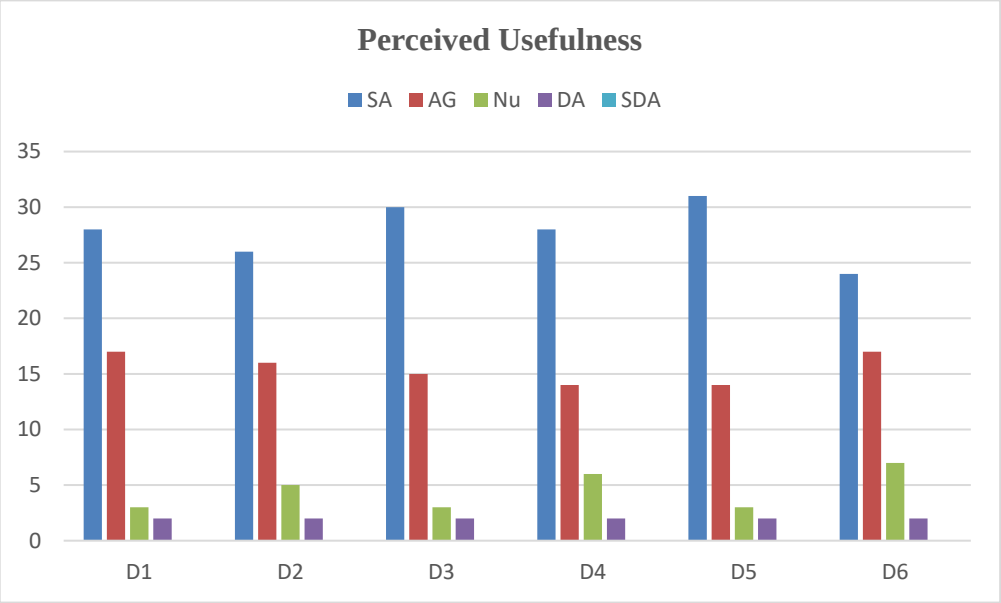

Figure 4.3 Descriptive statistics for perceived usefulness

Table 4.9 illustrates the mean values for the respondents' perceived usefulness of CALLTAIL. According to these mean values, their perception of the usefulness of CALLTAIL for pragmatics or use of sentences (Item D5) was rated lowest by the respondents of this study (4.26 out 5). Conversely, their perception of the usefulness of CALLTAIL for grammar (Item D5) was rated highest by the respondents of this study (4.48 out of 5). The mean values also show that, on

the average, the overall perceived usefulness of CALLTAIL was evaluated as being above average by the respondents of this study (4.39 out of 5).

Table 4.9: Descriptive statistics for perceived usefulness

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
D1	50	2.00	5.00	4.4200	.78480
D2	50	2.00	5.00	4.3400	.82338
D3	50	2.00	5.00	4.4600	.78792
D4	50	2.00	5.00	4.3600	.85141
D5	50	2.00	5.00	4.4800	.78870
D6	50	2.00	5.00	4.2600	.85261
Valid N (listwise)	50				

4.2.5 Academic Attitude toward CALLTAIL

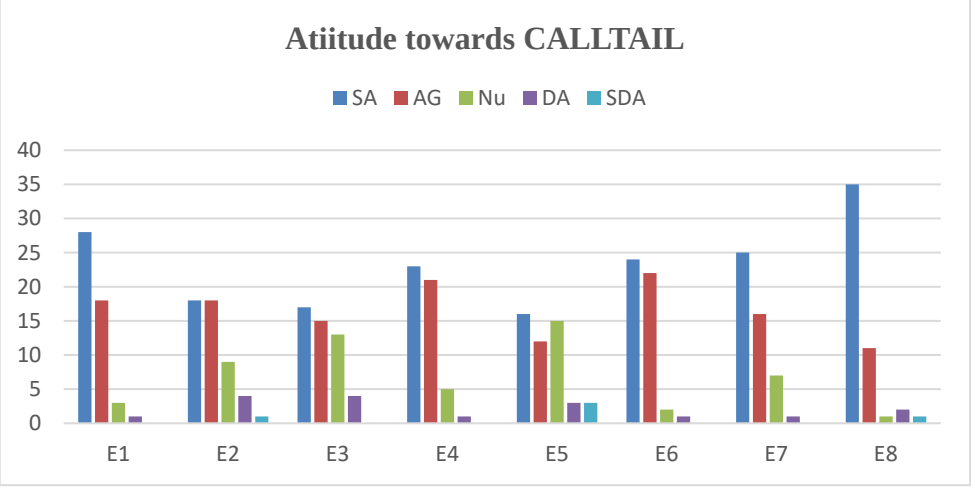

Figure 4.4 Descriptive statistics for attitude towards CALLTAIL

Table 4.10 illustrates the mean values for this study's respondents on their attitude towards CALLTAIL. In accordance with the mean values, the respondents of the present study are of the belief that they have a significantly positive attitude towards CALLTAIL.

Table 4.10: Descriptive statistics for attitude towards CALLTAIL

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
E1	50	2.00	5.00	4.4600	.70595
E2	50	1.00	5.00	3.9600	1.02936
E3	50	2.00	5.00	3.9200	.96553
E4	50	2.00	5.00	4.3200	.74066
E5	50	1.00	5.00	3.7200	1.16128
E6	50	2.00	5.00	4.4000	.67006
E7	50	2.00	5.00	4.3200	.79385
E8	50	1.00	5.00	4.5400	.88548
Valid N (listwise)	50				

4.3 INFERENTIAL STATISTICS (CORRELATIONS)

This segment is a presentation of the ANOVA and the Pearson correlation tests results conducted by the present study.

4.3.1 ANOVA test results

ANOVA tests were conducted between each demographic item against the Likert-scale variables of research for the present study. The above-mentioned results are thus presented in two groups: there are results without a correlation; and there are results with a correlation.

4.3.1.1 ANOVA results without a correlation: language specialisation, age, gender, ethnic group and citizenship

The following tables show the ANOVA results between the Language specialisation item (Table 4.11), the academic age (Table 4.12), the academic gender item (Table 4.13), the ethnic group item (Table 4.14), and the citizenship item (Table 4.15) against the individual Likert-scale variables of research for the present study. The results clearly indicated that these demographic items do not correlate with any of the Likert-scale research variables for this study (None of their significant level is equal to or less than 0.05).

Table 4.11: ANOVA test results for language specialisation

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
CompExpe	Between Groups	168.180	11	15.289	1.114	.377
	Within Groups	521.500	38	13.724		
	Total	689.680	49			
SubNorms	Between Groups	346.180	11	31.471	1.255	.287
	Within Groups	953.100	38	25.082		
	Total	1299.280	49			
PercUsefulness	Between Groups	53.480	11	4.862	.327	.975
	Within Groups	565.340	38	14.877		
	Total	618.820	49			
AttitudeTowardsCALLTAIL	Between Groups	172.560	11	15.687	.515	.881
	Within Groups	1156.960	38	30.446		
	Total	1329.520	49			

Table 4.12: ANOVA test results for academic age

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
CompExpe	Between Groups	73.280	4	18.320	1.337	.271
	Within Groups	616.400	45	13.698		
	Total	689.680	49			
SubNorms	Between Groups	155.213	4	38.803	1.526	.211
	Within Groups	1144.067	45	25.424		
	Total	1299.280	49			
PercUsefulness	Between Groups	89.087	4	22.272	1.892	.128
	Within Groups	529.733	45	11.772		
	Total	618.820	49			
AttitudeTowardsCALLTAIL	Between Groups	26.753	4	6.688	.231	.920
	Within Groups	1302.767	45	28.950		
	Total	1329.520	49			

Table 4.13: ANOVA test results for gender

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
CompExpe	Between Groups	23.376	1	23.376	1.684	.201
	Within Groups	666.304	48	13.881		
	Total	689.680	49			
SubNorms	Between Groups	23.485	1	23.485	.884	.352
	Within Groups	1275.795	48	26.579		
	Total	1299.280	49			
PercUsefulness	Between Groups	2.371	1	2.371	.185	.669
	Within Groups	616.449	48	12.843		
	Total	618.820	49			
AttitudeTowardsCALLTAIL	Between Groups	5.982	1	5.982	.217	.643
	Within Groups	1323.538	48	27.574		
	Total	1329.520	49			

Table 4.14: ANOVA test results for ethnic group

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
CompExpe	Between Groups	21.705	3	7.235	.498	.685
	Within Groups	667.975	46	14.521		
	Total	689.680	49			
SubNorms	Between Groups	22.805	3	7.602	.274	.844
	Within Groups	1276.475	46	27.749		
	Total	1299.280	49			
PercUsefulness	Between Groups	34.445	3	11.482	.904	.447
	Within Groups	584.375	46	12.704		
	Total	618.820	49			
AttitudeTowardsCALLTAIL	Between Groups	49.245	3	16.415	.590	.625
	Within Groups	1280.275	46	27.832		
	Total	1329.520	49			

Table 4.15: ANOVA test results for academic citizenship

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
CompExpe	Between Groups	.368	1	.368	.026	.874
	Within Groups	689.312	48	14.361		
	Total	689.680	49			
SubNorms	Between Groups	49.613	1	49.613	1.906	.174
	Within Groups	1249.667	48	26.035		
	Total	1299.280	49			
PercUsefulness	Between Groups	12.403	1	12.403	.982	.327
	Within Groups	606.417	48	12.634		
	Total	618.820	49			
AttitudeTowardsCALLTAIL	Between Groups	7.208	1	7.208	.262	.611
	Within Groups	1322.313	48	27.548		
	Total	1329.520	49			

4.3.1.2 ANOVA results with a correlation: Institution of teaching, department and academic rank items

The tables below illustrate the ANOVA test results between the institution of teaching items (Table 4.16), the department item (Table 4.17), and the academic rank item (Table 4.18) against the individual Likert-scale variables of research for the present study. There was an indication from the results that a correlation exists between the institution of teaching item and the subjective norm Likert-scale variable (p= .001). Indeed, Table 4.21 indicates that UNIZULU language academics tend to make use of CALLTAIL based on what other people think about it more than other language academics from other institutions. A correlation also exists between the Institution item and the perceived usefulness of CALLTAIL Likert-scale variable (p=.018), and between the institution item and the attitude towards CALLTAIL Likert-scale variable (p=.010). This can be seen on Table 4.19 and this table indicates that language academics from UNIZULU perceived the use of CALLTAIL greater than other institutions. Likewise, according to Table 4.22, UNIZULU language academics seem to possess a more positive attitude towards CALLTAIL in relation to other institutions.

A correlation also exists between the academic department item and the subjective norm Likert-scale variable (p=0.16), between academic department item and perceived usefulness Likert-scale variable (0.017), and between academic department item and the attitude towards CALLTAIL Likert-scale variable (0.014) (Table 4.16). Certainly, there is an indication in Table 4.16 that the Academics from the department of IsiZulu perceived their use of CALLTAIL to be influenced by other people around them or what could be referred to as significant others compared to other departments. In the same vein, Table 4.16 further indicates that academics from the department of IsiZulu have a greater perceived use of CALLTAIL than other departments across the three institutions. Obviously, Table 4.16 also indicates that the department of African Languages and Culture possesses a positive attitude towards CALLTAIL compared to other departments across all three of the institutions.

Lastly in this section, it is worthy of note that a correlation exists between Academic rank item and the subjective norms Likert-scale variable (0.004) (Table 4.17). Apparently, academic staff members who fall into the rank of junior lecturers (compared to other academic ranks) perceived that their use of CALLTAIL is greatly influenced by other people around them, or what could be referred to as significant others.

Table 4.16: ANOVA test results for institution of teaching

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
CompExpe	Between Groups	15.982	2	7.991	.557	.576
	Within Groups	673.698	47	14.334		
	Total	689.680	49			
SubNorms	Between Groups	314.207	2	157.104	7.496	.001
	Within Groups	985.073	47	20.959		
	Total	1299.280	49			
PercUsefulness	Between Groups	97.654	2	48.827	4.403	.018
	Within Groups	521.166	47	11.089		
	Total	618.820	49			
AttitudeTowardsCALLTAIL	Between Groups	237.277	2	118.638	5.105	.010
	Within Groups	1092.243	47	23.239		
	Total	1329.520	49			

Table 4.16 above indicates the ANOVA test results of language academics' institution of teaching in relation to other research variables of this study.

Table 4.17: ANOVA test results for academic department

ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
CompExpe	Between Groups	20.783	3	6.928	.476	.700
	Within Groups	668.897	46	14.541		
	Total	689.680	49			
SubNorms	Between Groups	258.396	3	86.132	3.806	.016
	Within Groups	1040.884	46	22.628		
	Total	1299.280	49			
PercUsefulness	Between Groups	121.634	3	40.545	3.751	.017
	Within Groups	497.186	46	10.808		
	Total	618.820	49			
AttitudeTowardsCALLTAIL	Between Groups	271.238	3	90.413	3.930	.014
	Within Groups	1058.282	46	23.006		
	Total	1329.520	49			

Table 4.17 above indicates the ANOVA test results of language academics' departments in relation to other research variables of this study.

Table 4.18 ANOVA test results for academic rank

ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
CompExpe	Between Groups	68.693	4	17.173	1.244	.306
	Within Groups	620.987	45	13.800		
	Total	689.680	49			
SubNorms	Between Groups	369.441	4	92.360	4.470	.004
	Within Groups	929.839	45	20.663		
	Total	1299.280	49			
PercUsefulness	Between Groups	73.133	4	18.283	1.508	.216
	Within Groups	545.687	45	12.126		
	Total	618.820	49			
AttitudeTowardsCALLTAIL	Between Groups	73.805	4	18.451	.661	.622
	Within Groups	1255.715	45	27.905		
	Total	1329.520	49			

Table 4.18 above indicates the ANOVA test results of language academics' ranks in relation to other research variables of this study.

Table 4.19: Academic rank and subjective norms

Descriptive								
Subjective Norms								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Junior Lecturer	5	27.6000	2.60768	1.16619	24.3621	30.8379	24.00	30.00
Lecturer	24	21.1250	5.26937	1.07561	18.8999	23.3501	12.00	30.00
Senior Lecturer	14	25.6429	4.32537	1.15600	23.1455	28.1402	15.00	30.00
Associate Professor	5	27.2000	2.28035	1.01980	24.3686	30.0314	24.00	30.00
Full Professor	2	27.0000	.00000	.00000	27.0000	27.0000	27.00	27.00
Total	50	23.8800	5.14936	.72823	22.4166	25.3434	12.00	30.00

Table 4.19 above indicates the descriptive statistics test results of the relationship between language academics' ranks and their subjective norms.

Table 4.20: Academic department and subjective norms

Descriptive								
Subjective Norms								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
African Languages and Culture	20	25.9500	4.43046	.99068	23.8765	28.0235	15.00	30.00
IsiZulu	3	26.0000	2.64575	1.52753	19.4276	32.5724	24.00	29.00
Language and Arts	14	23.7143	5.26861	1.40810	20.6723	26.7563	12.00	30.00
Media, Language, and Communication	13	20.3846	4.94197	1.37066	17.3982	23.3710	13.00	28.00
Total	50	23.8800	5.14936	.72823	22.4166	25.3434	12.00	30.00

Table 4.20 above indicates the descriptive statistics test results of the relationship between language academics' departments and their subjective norms.

Table 4.21: Institution and subjective norms

Descriptive								
Subjective Norms								
					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
DUT	8	18.5000	5.47723	1.93649	13.9209	23.0791	13.00	28.00
UKZN	20	23.9000	4.57568	1.02315	21.7585	26.0415	12.00	30.00
UNIZULU	22	25.8182	4.23856	.90366	23.9389	27.6975	15.00	30.00
Total	50	23.8800	5.14936	.72823	22.4166	25.3434	12.00	30.00

Table 4.21 above indicates the descriptive statistics test results of the relationship between language academics' institutions and their subjective norms.

Table 4.22: Institutions and perceived usefulness

Descriptive							
Perceived Usefulness							
	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
				Lower Bound	Upper Bound		
DUT	19.3750	4.77905	1.68965	15.3796	23.3704	10.00	25.00
UKZN	21.7000	3.77108	.84324	19.9351	23.4649	10.00	25.00
UNIZULU	23.3636	2.08271	.44403	22.4402	24.2871	18.00	25.00
Total	22.0600	3.55373	.50257	21.0500	23.0700	10.00	25.00

Table 4.22 above indicates the descriptive statistics test results of the relationship between language academics' institutions and their perceived usefulness of CALLTAIL.

Table 4.23: Departments and perceived usefulness

Descriptive								
Perceived Usefulness								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
African Languages and Culture	20	23.2500	2.14905	.48054	22.2442	24.2558	18.00	25.00
IsiZulu	3	24.6667	.57735	.33333	23.2324	26.1009	24.00	25.00
Language and Arts	14	22.0000	3.98072	1.06389	19.7016	24.2984	10.00	25.00
Media, Language, and Communication	13	19.6923	4.11065	1.14009	17.2083	22.1763	10.00	25.00
Total	50	22.0600	3.55373	.50257	21.0500	23.0700	10.00	25.00

Table 4.23 above indicates the descriptive statistics test results of the relationship between language academics' departments and their perceived usefulness of CALLTAIL.

Table 4.24: Academic departments and attitude towards CALLTAIL

Descriptive								
Attitude towards CALLTAIL								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
African Languages and Culture	20	36.4500	3.60519	.80614	34.7627	38.1373	31.00	40.00
IsiZulu	3	32.3333	.57735	.33333	30.8991	33.7676	32.00	33.00
Language and Arts	14	31.2143	6.48286	1.73262	27.4712	34.9574	16.00	40.00
Media, Language, and Communication	13	32.2308	4.69315	1.30165	29.3947	35.0668	20.00	40.00
Total	50	33.6400	5.20894	.73666	32.1596	35.1204	16.00	40.00

Table 4.24 above indicates the descriptive statistics test results of the relationship between language academics' departments and their attitude towards CALLTAIL.

Table 4.25: Institutions and attitude towards CALLTAIL

Descriptive								
Attitude towards CALLTAIL								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
DUT	8	31.3750	5.12522	1.81204	27.0902	35.6598	20.00	37.00
UKZN	20	31.8500	5.76993	1.29020	29.1496	34.5504	16.00	40.00
UNIZULU	22	36.0909	3.62411	.77266	34.4841	37.6978	31.00	40.00
Total	50	33.6400	5.20894	.73666	32.1596	35.1204	16.00	40.00

Table 4.25 above indicates the descriptive statistics test results of the relationship between language academics' institutions and their attitude towards CALLTAIL.

4.3.2 Pearson correlation test results

Table 4.26 illustrates the results of the Pearson correlation of each the research variable alongside the other Likert-scale research variables for the present study, with a significant level of 0.05 (single asterisk *) also a significant level of 0.01 (double asterisk **). Looking closely at the results, there is also an indication that all Likert-scale variables for the present study inter-correlate with Pearson correlations.

Table 4.26: Research variables without demographics

Correlations					
		CompExpe	SubNorms	PercUsefulness	AttitudeTowardsCALLTAIL
CompExpe	Pearson Correlation	1	.404**	.085	.141
	Sig. (2-tailed)		.004	.559	.330
	N	50	50	50	50
SubNorms	Pearson Correlation	.404**	1	.229	.197
	Sig. (2-tailed)	.004		.110	.170
	N	50	50	50	50
PercUsefulness	Pearson Correlation	.085	.229	1	.581**
	Sig. (2-tailed)	.559	.110		.000
	N	50	50	50	50
AttitudeTowardsCALLTAIL	Pearson Correlation	.141	.197	.581**	1
	Sig. (2-tailed)	.330	.170	.000	
	N	50	50	50	50
**. Correlation is significant at the 0.01 level (2-tailed).					

4.4 THE EMPIRICALLY VALIDATED MODEL

The results of the inferential statistical investigation conducted by the present section of this study is summarised by an empirically validated model of the factors which affect the attitudes of language academics towards CALLTAIL (Figure 4.5).

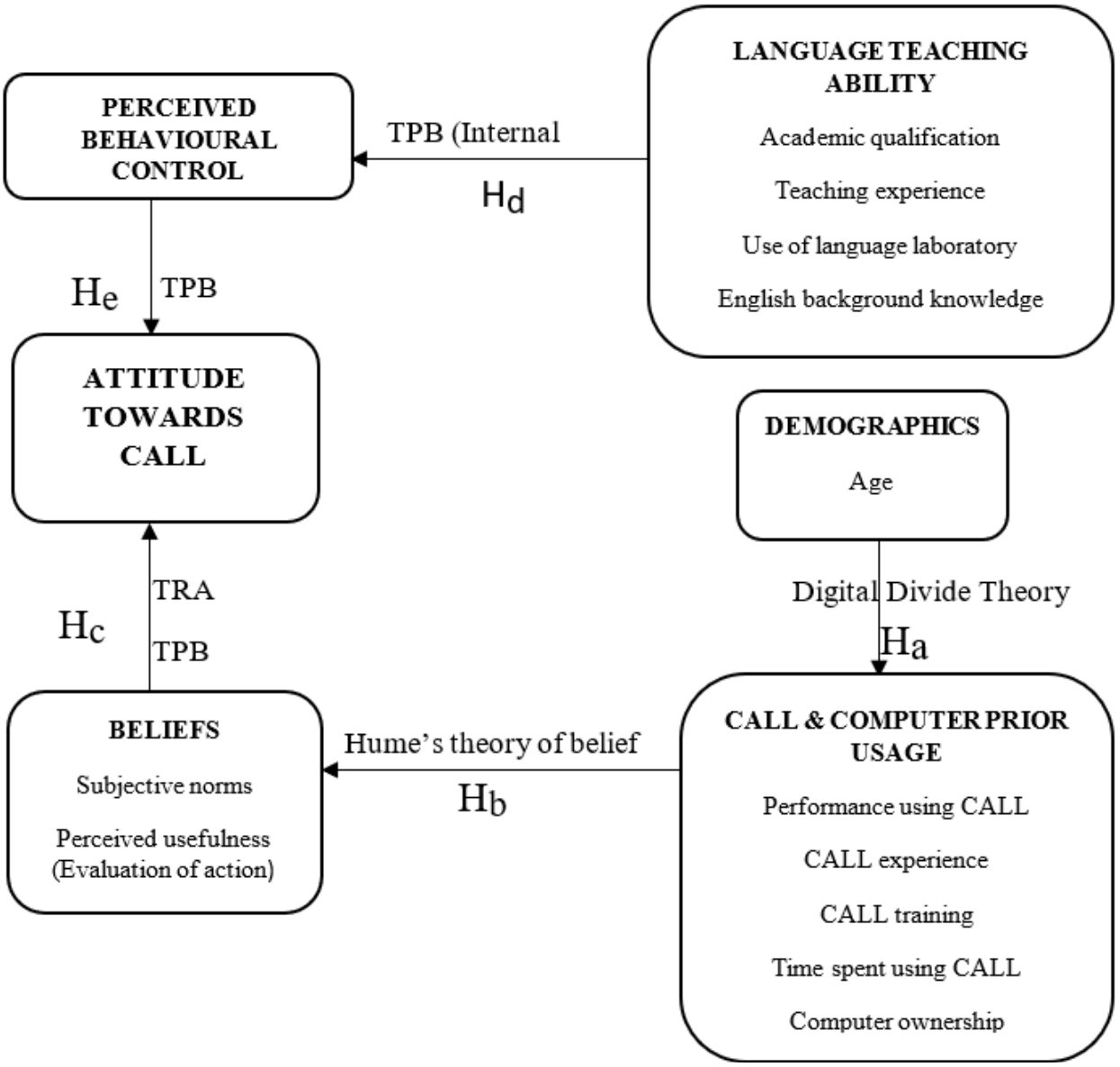

Figure 4.5 The empirical validated model of factors the factors that affect the attitudes of language academics towards CALLTAIL

4.4.1 Linear regression table results

Table 4.27 Linear regression table

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.566	6.857		1.541	.130
	CompExpe	.109	.181	.078	.601	.551
	SubNorms	.036	.135	.036	.267	.791
	PercUsefulness	.830	.179	.566	4.627	.000
a. Dependent Variable: AttitudeTowardsCALLTAIL						

Table 4.28: Linear regression table

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	13.722	4.377		3.135	.003
	SubNorms	.068	.123	.067	.554	.582
	PercUsefulness	.829	.178	.566	4.654	.000
a. Dependent Variable: Attitude towards CALLTAIL						

4.5 CONCLUSION

The current chapter has established the reliability and the validity of the instrument of this study, which was a survey questionnaire. A breakdown of the results obtained from this chapter is: the dominant majority of the research participants comprised of black academics whereas only a few are from other races. There is also an indication from the ANOVA results of this study that language academics from the department of African Languages and Culture at the University of Zululand exhibit a more positive attitude towards CALLTAIL when compared to language academics from the other two institutions. The results of the Pearson correlation test for this study also indicated that not all the Likert-scale variables for the present study were inter-correlated to one another; some variables are connected through other variables to the dependent variable. The next chapter is devoted to the discussion of the findings of this study comparing them with the findings from existing literature on the factors affecting language academics' attitude towards CALL.

CHAPTER FIVE
DISCUSSION, RECOMMENDATION, AND CONCLUSION

The findings of this study were presented in the previous chapter with regard to the validity and reliability of its data, along with an analysis of its descriptive and inferential statistics, as drawn from the survey of KwaZulu-Natal universities' language academics on the factors affecting their attitudes towards CALLTAIL. The discussion of the findings from the existing literature on the attitude of instructors towards CALL was presented in Chapter Three. This chapter presents the observed gaps in research and then provides recommendations on improvements of the attitude by language academics to CALLTAIL in terms of future research and for future practice.

5.1 DISCUSSION OF THIS STUDY'S FINDINGS IN RELATION TO THE REVIEWED STUDIES' FINDINGS

The literature review of this study found that out of the 100 variables on the factors affecting the attitude of language instructors towards CALL, 67 of the variables had either a negative or a positive relationship, while 33 of the variables were found to have no relationship with the attitude of language instructor towards CALL. One can therefore conclude that three-quarters of the studies reviewed establish that the use of CALL impacts or has an effect on the attitude of language instructors towards it. The present study, on the other hand, found that language academics believe that their use of CALLTAIL greatly affects their attitude towards language teaching and learning. We can say that the findings of the reviewed studies and those of the present study mutually agree in that the use of CALLTAIL affects attitudes towards the language teaching and learning.

5.2 RECOMMENDATIONS FOR FUTURE RESEARCH AND FOR PRACTICE

The last objective of this study is presented in this section. The last objective has to do with suggesting recommendations on ways to improve the perception of language academics on their attitude towards CALLTAIL in the light of the present study. The results of this study found that language academics' computer experience, their subjective norm, and their perceived usefulness all have a positive effect on their attitude towards CALLTAIL. This is contrary to the view of language instructors from the literature review of this study, who possess an inconclusive (neither positive nor negative) attitude towards CALL.

5.3 RECOMMENDATIONS FOR FUTURE RESEARCH AND FOR PRACTICE ON LANGUAGE ACADEMICS' COMPUTER EXPERIENCE

The present study reveals that there is a positive effect of computer experience on the attitude of language academics towards CALLTAIL, whereas the literature review which was on CALL found an inconclusive relationship. It is therefore recommended by the present study that future research should undertake studies on the relationship between language academics' computer experience and their attitude towards CALLTAIL. Despite the fact that the present study found that the language academics who happen to be in the sample see themselves as highly proficient in computer use as regards CALLTAIL, this is contrary to the obvious indications from the literature review of this study. This study therefore advocates for increased computer experience for language academics where and when possible using the below approaches proposed by Jacko *et al*. (2004).

According to Jacko *et al*. (2004), computer experience can be a predictor of attitude change. Computer-related tasks are said to be affected by the previous computer experience of users. The attitude of users is also dependent on the quantity and quality of computer experience they have had in the past. The quantity of computer experience has to do with experience with certain computer applications, for example, Word, PowerPoint, Excel, Access, and so forth. The quantity of experience of users in the above-mentioned computer applications thus affects their attitude. On the other hand, the quality of computer experience has to do with the manner in which computers are used for a specific task and in a particular field. The computer experience of users in terms of quantity and quality should be developed in order to improve the attitude towards CALLTAIL.

5.4 RECOMMENDATIONS FOR FUTURE RESEARCH AND FOR PRACTICE ON LANGUAGE ACADEMICS' SUBJECTIVE NORMS

The present study reveals that there is a positive effect of subjective norms on the attitude of language academics towards CALLTAIL, while the literature review which was on CALL found no relationship. It is therefore recommended by the present study that future research should undertake studies on the relationship between language academics' subjective norms and their attitude towards CALLTAIL in a bid to validate whether language academics' subjective norms have an influence on their attitude towards CALLTAIL. Despite the fact that the present study found that the language academics who happen to be in the sample are a little above average

in term of their subjective norms with regard to CALLTAIL, this is contrary to the obvious indications from the literature review of this study. This study, therefore, advocates an improvement in subjective norms for language academics where and when possible, using the below methods proposed by Change Factory.

Change Factory (2014) suggests three (3) methods to improve people's subjective norms. The first is change the exposure to referent groups, such as: i) increasing the degree of interaction between staff members and their senior colleagues in order to improve the knowledge of people on the things that really matter; ii) having staff members be responsible for any errors occurring by taking responsibility; iii) getting staff members to experience situations first-hand rather than narrating experiences to them; iv) having staff members addressed regularly by senior colleagues on what they care about; and v) training staff members explicitly in the desired behaviours. The second method is to introduce people to new referent groups, such as: i) exposing staff members to "experts" in the business and inculcate in them the do's and don'ts of successful behaviours; ii) exposing staff members to the competition's approach to certain behaviours; and iii) getting staff members to meet the General Manager for the first time. The third method is to change the motivation of staff members to comply, such as: i) measure the level of errors in exhibiting the behaviour and publish an error rate league table; ii) building a reward and recognition scheme around the fulfilment of the desired behaviours; iii) explicitly including the desired behaviours in the appraisal process; and iv) coaching and counselling those who do not exhibit the desired behaviours.

5.5 RECOMMENDATIONS FOR FUTURE RESEARCH AND FOR PRACTICE ON PERCEIVED USEFULNESS

The present study revealed that there is a positive effect of perceived usefulness on the attitude of language academics towards CALLTAIL, while the literature review which was on CALL found no relationship. It is therefore recommended by the present study that future research should undertake studies on the relationship between language academics' perceived usefulness and their attitude towards CALLTAIL in a bid to validate if language academics' perceived usefulness has an influence on their attitude towards CALLTAIL. Despite the fact that the present study found that the language academics who happen to be in the sample are slightly above average in terms of their perceived usefulness with regard to CALLTAIL, this is contrary to the obvious indication from the literature review for this study. This study therefore

advocates for an improved perceived usefulness for language academics where and when possible, using the methods proposed below by Mitchell *et al*. (2005).

Mitchell *et al*. (2005) propose two methods to be used in improving people's perceived usefulness: i) giving more practical examples; and ii) offering fewer navigation tools.

5.6 CONCLUSION

The first chapter of the present study discussed the omnipresence of ICTs. Thereafter a brief history of CALL was discussed with other synonymous variations of CALL. Subsequently, the advantages and disadvantages of CALL to instructors and students were presented. Thereafter, this chapter emphasised the negative attitude that language instructors seem to have towards CALL in spite of its enormous benefits to both language instructors and students, and consequently presented the aim of the present study which was to investigate factors affecting the attitude of language instructors towards CALLTAIL. Chapter One then presented the study's problem statement, its aim and objectives, its research question, and its sub-research questions. In conclusion, the structure of the dissertation was presented.

Chapter Two of this study presented the research strategies used for this study. These were survey and content analysis. The processes used in conducting this study were described by the survey method as regards sample and sampling methods, population and population sizes, the scale and the research instruments methods as well as the analysis method.

Chapter Three of this study presented the literature review in terms of the selection criteria, the sample selection, the authors, the theories, the research design, the research strategies, the research data, the data collection methods, the time and location contexts, the research populations, the sample and sample sizes, the sampling methods, the research variables, the methods of analysis, the data validity and reliability test methods, and the key research findings. The chapter therefore, presented that the attitudes of language instructors are affected by their demographics, their computer usage, their CALL prior usage, TAM factors and their academic and language proficiency.

Chapter Four presented the results of the present study derived from the survey conducted by this study on 50 language academics at three (3) universities from the province of KwaZulu-

Natal in South Africa. This chapter also presented the descriptive and statistical results from the survey conducted. The ANOVA results showed that a correlation exists between the institution of teaching of the language academics and their attitude towards CALLTAIL and between their academics' departments and their attitudes towards CALLTAIL. This chapter also presented Pearson correlation tests which revealed that there is an inter-correlation between the Likert-scale variables for the study. Likewise, this chapter presented a validated model for the results of the Pearson correlation tests.

In conclusion, Chapter Five discussed the findings of the survey and made a comparison with the findings of the literature review, thereafter, concluded that language academics believe that their use of CALLTAIL greatly affects their attitude towards language teaching and learning. Therefore, this study recommends that: (i) there is a need for an increased computer experience for language academics where and when possible, (ii) there is a need for an improvement in the subjective norms of CALLTAIL for language academics where and when possible, and (iii) there is a need for an improvement in the perceived usefulness of CALLTAIL for language academics where and when possible.

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Appendix A: Letter of Information

LETTER OF INFORMATION

Title of the Research Study: Surveying KwaZulu-Natal Universities' Language Academics for the Modelling of Factors Affecting their Attitudes towards Computer Assisted Language Learning Tools for African Indigenous Languages

Principal Investigator/s/researcher: Theophilus Adedayo Adedokun (BA, English Education)

Co-Investigator/s/supervisor/s: Dr SP Zulu (Phd:), Prof. S.D. Eyono Obono (PhD: Computer Science)

Brief Introduction and Purpose of the Study: CALL (Computer Assisted Language Learning) has been proven to be of immense benefit to the teaching and learning of language at all levels of education. However, it is interesting that university language academics seem to have a negative attitude towards Computer Assisted Language Tools for African Indigenous Languages (CALLTAIL). This negative attitude towards CALLTAIL by language academics is central to this study; therefore, the aim of this study is to design a conceptually sound model of the factors affecting the attitudes of language academics towards CALLTAIL.

Outline of the Procedures: The aim of this research will be achieved through a literature review, and through a questionnaire based survey of language academic from the language departments of the universities of the KwaZulu-Natal province of South Africa The population of this survey will be made up language academic from the language departments of the three universities in the KwaZulu-Natal province of the Republic of South Africa (DUT, UKZN, and UniZulu). The choice of these three universities is justified by their close proximity to the geographical location of the researcher. A simple random sampling method will be applied to this population according the availability of language department in the selected universities. The data for this survey will be gathered by means of a questionnaire (See Appendix B). This survey data will first be tested for reliability using Cronbach's alpha coefficient, and for validity using construct validity. It will then be subjected to a descriptive analysis using means and proportions, and to a quantitative analysis using inferential statistical methods such as means analysis, frequency analysis, ANOVA, ANCOVA, MANOVA, etc.

Risks or Discomforts to the Participant: The participants of the survey of this study are not expected to be subjected to any risk or discomfort.

Benefits: The results of this study will be published.

Reason/s why the Participant May Be Withdrawn from the Study: There are no foreseeable reasons to why the participants may withdraw from the study.
Remuneration: There are no financial incentives or remuneration for the participants of this study.

Costs of the Study: The participants are not expected to cover any costs towards the study.

Confidentiality: The questionnaire is anonymous and its confidential data will be stored for five (5) years after the conduction of study and it will be subsequently shredded.

Research-related Injury: In the event of any research-related injury or adverse reaction, the participants (s) of this study will be compensated with the aid of the DUT research indemnity cover.

Persons to Contact in the Event of Any Problems or Queries:
Please contact the researcher (Tel No.: +27616152580.), my supervisors (Tel No: +27313735692) or the Institutional Research Ethics Administrator on +2731 373 2900. Complaints can be reported to the Director: Research and Postgraduate Support, Prof K. Duffy on +2731 373 2577 or kevind@dut.ac.za

General:
Potential participants must be assured that participation is voluntary and the approximate number of participants to be included should be disclosed. A copy of the information letter should be issued to participants. The information letter and consent form must be translated and provided in the primary spoken language of the research population e.g. isiZulu.

Appendix B: Consent letter

CONSENT

Statement of Agreement to Participate in the Research Study:

I hereby confirm that I have been informed by the researcher, _____ (name of researcher), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: ____,

I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.

I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.

In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.

I may, at any stage, without prejudice, withdraw my consent and participation in the study.

I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.

I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature/Right Thumbprint**

I, _____ (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

_____	_____	_____
Full Name of Researcher	**Date**	**Signature**
_____	_____	_____
Full Name of Witness (If applicable)	**Date**	**Signature**
_____	_____	_____
Full Name of Legal Guardian (If applicable)	**Date**	**Signature**

Please note the following:

Research details must be provided in a clear, simple and culturally appropriate manner and prospective participants should be helped to arrive at an informed decision by use of appropriate language (grade 10 level - use Flesch Reading Ease Scores on Microsoft Word), selecting of a non-threatening environment for interaction and the availability of peer counselling (Department of Health, 2004)

If the potential participant is unable to read/illiterate, then a right thumb print is required and an impartial witness, who is literate and knows the participant e.g. parent, sibling, friend, pastor, etc. should verify in writing, duly signed that informed verbal consent was obtained (Department of Health, 2004).

If anyone makes a mistake completing this document e.g. a wrong date or spelling mistake, a new document has to be completed. The incomplete original document has to be kept in the participant's file and not thrown away, and copies thereof must be issued to the participant.

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Appendix C: Questionnaire

A. Demographics (Independent Variable)

A.1. Institution | DUT | | UKZN | | UNIZULU | |

A.2. Department | |

A.3. Language specialization | | Others | |

A.4. Age | Under 30 years | | 30-40 years | | 41-50 years | | 51-60 years | | Above 60 years | |

A.5 Gender | Male | | Female | | Other | |

A.6. Ethnic group | Black | | Coloured | | White | | Indian | | Other (specify) | |

A.7. Citizenship | South Africa | | Expatriate | |

A.8. Rank | Junior Lecturer | | Lecturer | | Senior Lecturer | | Associate Professor | | Full Professor | |

Other (specify)	

B.	**Computer experience** I believe that I am proficient in the use of:	**Strongly Disagree**	**Fairly Disagree**	**Weakly Agree**	**Fairly Agree**	**Strongly Agree**
B.1	DVDs/CD-ROMs/USBs					
B.2	Simulation and games					
B.3	Internet					
B.4	E-mails					
B.5	Word processing (e.g. Microsoft Word)					
B.6	Presentations (e.g. PowerPoint)					
B.7	Spreadsheets (e.g. Microsoft Excel)					
B.8	Desktop publishing(e.g. Microsoft Publisher)					

C.	**Subjective norms** I believe that the following people have an influence on my behaviour with regards to the use of Computer Assisted Language Learning Tools for African Indigenous Languages (CALLTAIL)	**Strongly Disagree**	**Fairly Disagree**	**Weakly Agree**	**Fairly Agree**	**Strongly Agree**
C.1	My family members					
C.2	My friends					
C.3	My colleagues					
C 4	My cluster/department officials					
C.5	My university management officials					
C.6	Government officials					

D.	**Perceived usefulness of CALLTAIL** I believe that using Computer Assisted Language Learning Tools for African Indigenous Languages (CALLTAIL) will improve the mastering of African languages for me in terms of their:	**Strongly Disagree**	**Fairly Disagree**	**Weakly Agree**	**Fairly Agree**	**Strongly Agree**
D.1	Lexicons or dictionaries					
D.2	Phonology or words' sounds for listening					
D.3	Phonology or words' sounds for speaking					
D.4	Graphology or words' writings					

D.5	Grammar or sentences structures					
D.6	Pragmatics or use of sentences					

E.	**Attitude towards CALLTAIL** I perceive the use of Computer Assisted Language Learning Tools for African Indigenous Languages (CALLTAIL) as:	**Strongly Disagree**	**Fairly Disagree**	**Weakly Agree**	**Fairly Agree**	**Strongly Agree**
E.1	Cool and Trendy					
E.2	Easy					
E.3	Safe					
E.4	Exciting					
E.5	Financially affordable					
E.6	Motivating					
E.7	Time saving					
E.8	Academically valuable					