

# **Student Satisfaction with the University Shared Service Operating Model in Australia**

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## Abstract

This study investigates the effectiveness of shared services practices in Australian universities within the context of the digital economy. With a focus on the unique challenges faced by universities in Australia, particularly due to a smaller population of students for the universities available, the research explores the pressure on institutions to differentiate themselves and attract students. In response to the evolving landscape accelerated by the pandemic, universities must be strategic in providing diverse, market-valued services. The study specifically examines the level of satisfaction among students with university contact centres in a virtual online environment, emphasising the importance of operational efficiency, technology integration, and overall student satisfaction.

A comprehensive theoretical conceptual framework was developed to examine the impact of contact centre service quality, online servicescapes, customer support, and engagement on student satisfaction. Within this conceptual framework, each factor plays a critical role in shaping student satisfaction, encompassing elements such as efficient service delivery, the online environment and infrastructure, resolution of technical issues, and multi-channel communication.

The study used an online survey for data collection, employing a non-probability quota sampling technique to ensure representativeness of students studying at Australian universities, this resulted in a usable sample size of 429.

Existing reliable and valid scales were used to test the model. Data analysis included a profile of respondents, structural equation modelling (SEM) to examine relationships and validate hypotheses, and multi-group analysis to explore demographic variations.

Key findings indicate that contact centre service quality, online servicescapes, and the level of customer support significantly influence student satisfaction. Factors such as waiting time, website usability, financial security, and personalisation emerge as crucial determinants in shaping student satisfaction. The study also reveals that contact centre service significantly impacts student satisfaction among both domestic and international students, with differences varying among undergraduate and postgraduate students and between genders.

The theoretical contribution of this study is its examination of the realms of digital customer satisfaction to understand service delivery and what factors influences student satisfaction. The study used the general online social interaction propensity (GOSIP) construct, as student experience with interacting with online systems may contribute to their positive satisfaction with service centres.

The findings of this research have important implications for university administration, employers, and the national government in reshaping the education sector as a unique market proposition globally. Aligning with the commitment to transformative reform outlined in the Australian University Accord, the research emphasises the need for a targeted online approach with digital delivery, utilising shared resources and content repositories. This research enhances our knowledge by providing a comprehensive understanding of factors influencing student satisfaction with university contact centres, integrating marketing concepts to form a nuanced theoretical framework that challenges the efficacy of existing national surveys.

In conclusion, this study offers comprehensive insight into the satisfaction of students engaging with contact centre services in Australian universities, providing actionable recommendations for improving overall student satisfaction and contributing to the growth and competitiveness of the education sector.

## Statement of Declaration

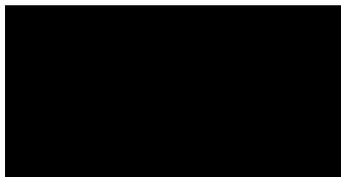
I, Sohail Hashmi Khan, declare that the Doctor of Business Administration thesis entitled *Student Satisfaction with the University Shared Service Operating Model in Australia* is no more than 65,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

I have conducted my research in alignment with the [Australian Code for the Responsible Conduct of Research](#) and [Victoria University's Higher Degree by Research Policy and Procedures](#).

## Ethics Declaration

All research procedures reported in the thesis were approved by the Human Research Ethics Committee, approval number HRE21-171.

Signature:



Date: 28/02/2024

## Preface

“Student Satisfaction with the University Shared Service Operating Model in Australia” is the outcome of several years of research. Inspiration was gained from various elements in my personal and professional life. After working in various industries over 22 years, including banking, community services, tourism and the tertiary education sector, I have cultivated a rich tapestry of insights and knowledge.

While working in the tertiary education sector, I have witnessed firsthand how:

- Universities have transformed their contact centres through a shared service model, creating a one-stop shop for students.
- Shared services came into practice when enquiries moved from faculties to centralised contact centres. This has led to the centralisation of other functions across the organisation.
- Government surveys, such as Quality Indicators for Learning and Teaching (QILT), have provided universities with a benchmarking opportunity to gain insights into student perceptions of university services, allowing them to improve various aspects of those services, from learning and teaching to support services.
- Student satisfaction has become part of the university culture for attracting more students and building the university brand.

To date, there is limited academic research on student perceptions and evaluation of university contact centres in Australia, despite the integral role such centres play in students’ lives. When I worked in student services, I became more curious to explore student satisfaction as I could sense there was some form of disconnection with the university. During COVID-19 and lockdowns, where the only contact with the university was through digital platforms, I witnessed the crucial roles performed by university contact centres with students, the university environment and, ultimately, the Australian economy. Consequently, this thesis was written to shed light on and explore this largely unknown territory.

My personal inspiration to write this thesis came from my cultural heritage. I am a proud fourth generation Girmitya living in Australia. My ancestors were indentured labourers in the Fiji Islands. My great grandma used to tell us stories of her sufferings

and those of my ancestors who slaved away as indentured labourers and were deprived of education and the opportunity to go to school. They roamed around the farms and started to work at tender age of 14. So, my ancestors fought hard for their rights and against their ill treatment. One of the outcomes was to form associations, which later became a way to open education access for our communities. Because of this, many in my generation have been educated. However, the fight for our existence continues. I am a survivor of four big political coups and during the year 2000 coup, I experienced the worst of humanity, from racial tensions to violence to homophobic attacks. This is my untold story, and it is worth sharing in this thesis as it required perseverance, resilience, and sacrifices to get to this point. As a child of Girit, like my ancestors, I have learnt to be strong no matter how challenging this doctoral project became, especially during COVID-19 when we all faced great hardship and suffering. I witnessed firsthand how our education sector was deeply affected and how people's lives turned upside down. So, no matter how the wind of adversity blew, I continued marching on. As St Jeanne d'Arc once said "Go forward bravely. Fear nothing. Trust in God; all will be well".

I recognise that there may be many aspects of Australian Indigenous culture that are outside my area of knowledge, but I acknowledge and understand the benefits, values and realities of Indigenous people and communities, including similarities to my own cultural heritage. So, I am blessed to be standing on the lands of the Boonwurrung and Wurundjeri people of the Kulin and proudly share that our ancestors are like diamonds. They made lives better for us and our future generations, for they empowered us with the power of education.

I believe, through inspiration from my personal and work life, that this thesis contributes to a better understanding of the tertiary sector operating in a shared service environment. It adds to our knowledge and stands as a foundation for future researchers, industries, and policymakers to explore further, so this legacy can carry on and empower many generations to continue contributing to our education sector.

## Acknowledgements

First, I wish to acknowledge, recognise, and respect the Elders, families and forebears of the Boonwurrung and Wurundjeri of the Kulin who are the traditional owners of Victoria University land.

The journey to completing this thesis is undoubtedly the toughest, especially because the main parts were written during COVID-19 pandemic, a time when our existence as humans was challenged. So, writing this thesis during such difficult times became a source of motivation with the help and support of various formal and informal teachers in my life, including my ancestors.

Very special gratitude goes to my principal supervisor, Associate Professor Romana Garma, for continuous support, encouragement, knowledge and expertise in the area, and for calming me down. You have a special way of making magic happen. To my co-supervisor, Dr. Thu-Huong Nguyen, for continuous support, knowledge, expertise and always being available whenever I needed you. A colossal thank you to both my supervisors for guiding me throughout this long journey, challenging my thinking in the best possible way, uplifting my vision to see things differently and most of all for the time you both devoted for my academic development. I became a better researcher through the guidance, advice and patience you have both given me. I am blessed to have two prominent research supervisors at Victoria University who provided great input and inspiration in this research journey based on their expertise in my field.

I would also like to thank the administration staff of Victoria University's Institute for Sustainable Industries & Liveable Cities (ISILC), Victoria University Business School, the Graduate Research Centre, and VU HQ for their continuous support. You are the heroes working behind the scenes to enable a better student experience. Also, I would like to thank all the panel committee members and chairs during all my milestones for your time and feedback, which has been invaluable in shaping this thesis.

I am also deeply grateful to my ancestors, who worked hard for us and prioritised education, which paved the way for us. I am proud of and blessed by that fact that Australia welcomed me with open arms as a skilled migrant to demonstrate my skills in a professional environment setting and I am proud of the opportunity given by

Victoria University for me to study this Doctoral degree, through which I can translate my work experience in academia.

With so many friends, it is hard to name them all, but I thank all my formal and informal teachers in life, including people from work and friends I came across during this study. Thank you all for constantly pushing me, providing me insights into my research and for words of encouragement.

To my family, thank you all so much for all the support. To my mum, who constantly checks on me at odd hours to ensure I am doing okay. Even though we live so far, with the power of the digital network we can connect.

Thank you to all my managers (past and present) for approving my study leave and allowing me to study, attend important classes and workshops, as well as providing me some industry insights and passing on knowledge. Your support in this has been very valuable.

And finally, to my partner, a huge thank you for your continuous encouragement and support, unconditional care throughout this journey. You make everything in life better and I would not have been able to complete this journey without you. I have become a better person through you.

Once again, I thank you all very much for your unwavering support. I wish you all happy reading!!

## **Dedication**

This thesis is dedicated to all the formal and informal teachers in my life and to my ancestors for their perseverance, hardship and sacrifices. They rose through injustice and brutalities and gave priority to education.

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## **List of Abbreviations**

ACT	Australian Capital Territory
AGFI	Adjusted Goodness-of-Fit Index
AHT	Average Handling Time
AI	Artificial Intelligence
AMOS	Analysis of a Moment Structures
ASS	Accessibility
AUSTRADE	The Australian Trade and Investment Commission
AVE	Average Variance Extracted
CEQ	Course Experience Questionnaire
CES	Customer Effort Score
CF	Customer Focus
CFA	Confirmatory Factor Analysis
CFI	Comparative Fix Index
CMIN	Chi-Square Fit Statistic
COVID-19	Coronavirus Disease of 2019
CR	Composite Reliability
CRM	Customer Relationship Management
CS	Customer Support
CSAT	Customer Satisfaction
CSI	Customer Social Interaction
DET	Department of Education and Training
DF	Degrees of Freedom

DFAT	Australian Government Department of Foreign Affairs and Trade
DIY	Do-It-Yourself
EFA	Exploratory Factor Analysis
EMP	Empathy
EPY	Ease of Payment
FAQs	Frequently Asked Questions
FCR	First Call Resolution
GDP	Gross Domestic Product
GFI	Goodness-of-Fit Index
GOSIP	General Online Social Interaction Propensity
HTMT	Heterotrait-Monotrait
ICE	Integrated Client Enquiry
ICEF	International Consultants for Education and Fairs
IDT	Innovation Diffusion Theory
IVR	Interactive Voice Response
KMO	Kaiser-Meyer-Olkin Measure
KNC	Knowing the Customer/Customer Relationship
MBA	Master of Business Administration
MRS	Market Research Society
NSW	New South Wales
NT	Northern Territory
OECD	Organisation for Economic Co-operation and Development
PE	Perceived Expectation

PEOU	Perceived Ease of Use
PERS	Customisation/Personalisation
PG	Postgraduate
PP	Perceived Performance
PS	Perceived Security
PU	Perceived Usefulness
QILT	Quality Indicators for Learning and Teaching
QLD	Queensland
QQ	Quantile–Quantile
REL	Reliability
RINF	Relevance of Information
RMSEA	Root Mean Square Error of Approximation
SA	South Australia
SB	Service Benefit
SEM	Structural Equation Modelling
SERVQUAL	Service Quality
SFL	Standardised Factor Loading
SINT	Support Interaction
SMC	Squared Multiple Correlation
SPSS	Statistical Package for the Social Sciences
SQ	Service Quality
SRC	Social Research Centre
SRMR	Standardised Root Mean Square Residual
SYS	System Support

TAFE	Technical and Further Education
TAM	Technology Acceptance Model
TAS	Tasmania
TEQSA	Tertiary Education Quality and Standards Agency
TLI	Tucker-Lewis Index
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UG	Undergraduate
UK	United Kingdom
US	United States
USAB	Usability
VET	Vocational Education and Training
VIAS	Visual Appeal
VIC	Victoria
VIF	Variance Inflation Factor
VRU	Voice Response Unit
WA	Western Australia
WAI	Waiting

## **CHAPTER 1: INTRODUCTION**

### **1.0 Chapter Overview**

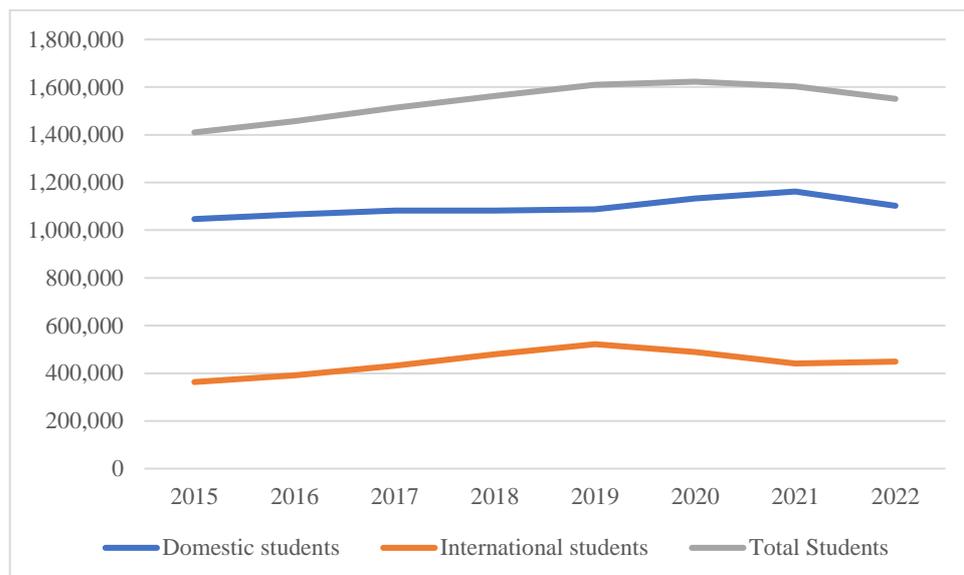
This chapter introduces the research topic and examines the research background, research justification, and study gaps. Further, the chapter presents the research question, research objectives, contributions and significance, followed by an outline of the thesis structure.

### **1.1 Overview of the University Sector in Australia**

The tertiary education sector in Australia has become increasingly important due to its contribution to the national economy. This section first details the overall enrolment of students in the higher education sector, followed by the importance of the sector, the significance of which is categorised into three facets: revenue, growth, and jobs due to international export earnings.

In terms of overall student enrolment in tertiary education in Australia, domestic students make up the majority. In 2015, for example, there were 1,046,835 domestic students and 363,298 international students, resulting in a total enrolment of 1,410,133. Over the years, both domestic and international student numbers increased. Domestic enrolment peaked in 2021 at 1,162,260, and international enrolment peaked in 2019 at 521,948. The overall highest enrolment occurred in 2020, reaching 1,622,867 students. However, there was a decline in the total enrolment in 2022 due to the pandemic, dropping to 1,551,399 (see Figure 1).

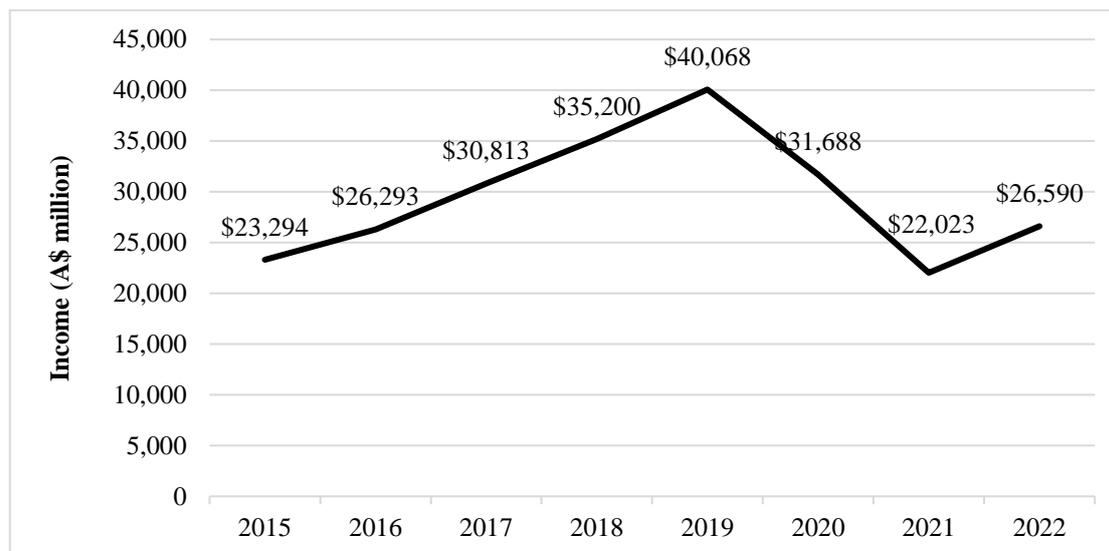
**Figure 1: Chart Summarising Student Enrolment by Cohort Type**



Source: Department of Education (2023b)

When it comes to revenue, according to the Australian Government Department of Foreign Affairs and Trade (2015-2022), education was worth \$40.1 billion to the Australian economy (in 2019), being the fourth largest export earner behind iron ore, coal, and natural gas. When analysing the data from 2015 to 2022, the important role educational exports play in our economy is evident (see Figure 2). It is also clear that education export income experienced fluctuations over the years. This income increased steadily from 2015 to 2019, reaching its peak at \$40.1 billion in 2019. However, in 2020, there was a notable decrease to \$31.7 billion and a further decline to \$22.0 billion in 2021. The income showed signs of recovery in 2022, rising to \$26.6 billion, but still below the peak observed in 2019. The pandemic reduced its growth, but education export income has begun to bounce back, contributing \$26.6 billion to the economy in 2022, 43% of which was derived purely from paid tuition fees, while 57% was directly attributed to students' living expenses.

**Figure 2: Chart Summarising Australia’s Education Export Income**



Source: Australian Government Department of Foreign Affairs and Trade, 2015-2022

In addition, the education industry in Australia contributed \$18 billion towards Gross Domestic Product (GDP) in 2014 through education and \$140 billion to GDP in 2014-2015 from research-related activities. This contribution makes the education sector in Australia the largest *service* export earner (Australian Bureau of Statistics [ABS], 2015; Universities Australia, 2016). Universities are instrumental in the facilitation of the nation’s largest service export, international education, with recent revenue data showing that prior to the pandemic in 2019, international education earnings were worth \$40.3 billion (Business Insider Australia, 2022). International students also drive the tourism economy as their families and friends visit them in Australia, contributing an additional \$369 million towards the tourism sector (Business Insider Australia, 2022; Grozinger & Parsons, 2020).

In terms of its growth in the sector, an Organisation for Economic Co-operation and Development (OECD) report stated that Australia has become the third most popular destination for international education after the United States (US) and the United Kingdom (UK) (OECD, 2015). According to the International Consultants for Education and Fairs (ICEF), Australia’s international market has grown tremendously. By the end of 2019 it experienced double-digit growth, with international enrolments increasing by 10% to 758,154 international students. This deemed Australia the world’s second-leading study destination after only the US, with students from China and India

continuing to drive the strong growth at 212,264 and 115,607 enrolments, respectively (ICEF Monitor, 2020).

With regard to jobs, the education sector supports around 250,000 Australian jobs (Business Insider Australia, 2022). It also produces university graduates who are employed in the Australian economy and contribute towards the growth of national productivity levels and living standards (Foster, 2018). For instance, in 2018, 325,171 students completed their university course and were ready to enter the workforce (Universities Australia, 2018). In terms of present value, the average bachelor's degree graduate earns an extra \$142,000 in post-tax earnings over their lifetime (\$674,000 when undiscounted) when compared to those with no post-secondary education (Deloitte Access Economics, 2020).

## **1.2 University Profiles in Australia**

In terms of the tertiary sector structural landscape, data from the Social Research Centre (SRC) reveals that there are 41 locally-owned universities operating in Australia, consisting of 37 public and three private universities and a diverse range of vocational education and training (VET) providers (Quality Indicators for Learning and Teaching [QILT], 2012-2022). Most universities and VET providers have more than one campus, providing students with a range of choices. The *Commonwealth Higher Education Support Act 2003* sets out three main groups of Australian higher education providers, categorised as follows:

- Section A—Self-accrediting bodies that are eligible for all funding under the Act.
- Section B—Self-accrediting bodies that are not eligible for all funding under the Act can only get Commonwealth research funding based on national priorities, such as in the fields of nursing and education.
- Section C—State- and territory-accredited higher education institutions that can be allocated national priority student places in fields of nursing and education.

In the context of this research, 41 universities were considered for analysis. In relation to student enrolment, according to the Department of Education (2020), there were 1,445,172 students in Australia in 2019, consisting of domestic (71%) and international

(29%) students, and much of the university student population was concentrated around two main states, namely Victoria and New South Wales.

### **1.3 Challenges in Australian Universities**

According to Universities Australia (2016), with increasing global challenges in the education sector, the Australian education industry faces various threats. This includes financial reforms in the sector and the rise of online education in global competitive markets. In 2012, the Australian government uncapped the number of subsidised course places that universities could offer, consequently introducing a system that responded to market demands (Favaloro, 2015). This demand-driven system operated between 2012 and 2017 and meant that higher education institutions could enrol as many students as they wanted, securing government funding for each domestic student in the process. This situation changed in 2017 with the Australian government suspending the demand-driven system in favour of a funding cap that provides each university with a fixed sum of money for teaching (Norton et al., 2018). This reduced the income for universities. Furthermore, competitive pressure and a decrease in the income of tertiary institutions led many universities to increase student enrolments, giving rise to more competition in the current market economy. In summary, the traditional funding mechanisms of student fees and government subsidies were insufficient, (Karami & Vafaei, 2014).

This competitive environment has necessitated the use of business models and operating systems within universities to ensure financial sustainability. This includes a focus on treating students as customers. Students can be considered strategic assets that can be retained, their numbers increased, or possibly transferred to courses to gain more funds from government that transfer resources, which can also be based on the number of enrolments (Neves & Nick, 2017). The challenges highlighted above have a direct impact on the sustainability and profitability of universities, thus demanding operational efficiencies to meet financial objectives while attempting to deliver exceptional service to their students. Consequently, in order to reduce operational costs, many universities are now implementing a one-size-fits all model (Guilfoyle et al., 2012) with respect to student service provisions, namely the shared service provision model (Bennington et al., 2000). The shared service model provides a contact centre to assist faculties and universities in handling student enquiries, from prospective to

current students, even alumni and internal staff enquiries (Harryba & Knight, 2013). Such centres are often branded as “Connect Services”, “Student Central”, “Student Hubs” or “Student Service Centres”. These centres resemble customer service centres found in the telecommunications, banking and retail sectors.

The shared service model plays a pivotal role in the seamless integration of businesses into the digital economy, fostering efficiency, innovation, and collaborative synergy. In an era in which digital transformation is the cornerstone of economic growth, shared services act as a linchpin by providing centralised support functions such as finance, IT, and human resources. This model optimises resource allocation, enhances agility, and enables organisations to respond swiftly to the dynamic demands of the digital landscape. As businesses rely increasingly on data-driven insights and technology-driven solutions, shared services become instrumental in harnessing the power of automation, artificial intelligence (AI), and cloud computing. By facilitating streamlined processes and cost-effective solutions, the shared service model becomes not just a support mechanism but a strategic enabler, positioning enterprises to thrive in the digital era in which connectivity, innovation, and adaptability are paramount.

#### **1.4 Current Student Satisfaction**

To date, the most detailed way of understanding student experience from their perspective is through the student satisfaction survey using quality indicators for learning and teaching (QILT). This nation-wide survey is coordinated by the SRC for the Australian Government Department of Education and Training (DET). According to the SRC (2016), QILT identifies five dimensions that revolve around a student’s life in university. These are as follows:

- **Skills development:** this represents the percentage of students who rated their skills development experienced through their studies positively. This includes communication skills (both written and verbal), work-related skills, team-work and problem-solving skills.
- **Learning engagement:** this represents the percentage of students who rated learner engagement at their institution positively. This includes students’ ability and preparedness for university life, their sense of belonging in the university

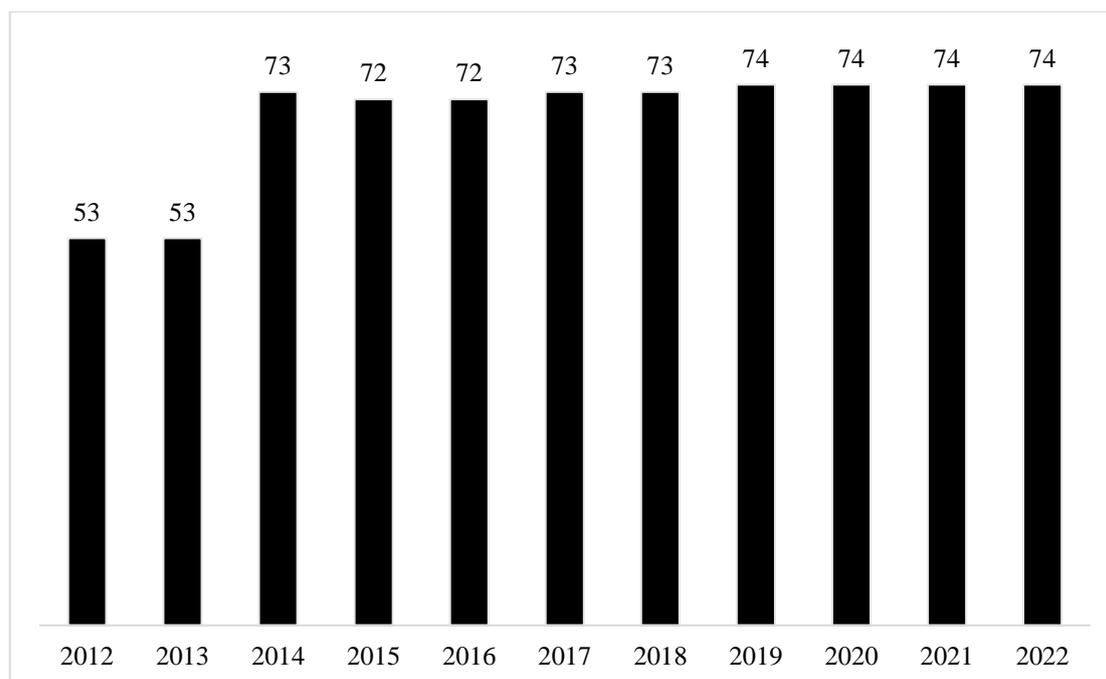
environment and being engaged in university life (e.g., effective participation in class and socialising within university surroundings).

- Teaching quality: this represents the percentage of students who rated the quality of teaching they experienced positively. This includes effective teaching that promotes excellence and student learning outcomes (e.g., feedback provided to students on their academic work), and a stimulating class environment that encourages learning.
- Student support: this represents the percentage of students who rated the support they received at their institution positively. This includes counselling, career and academic advice, as well as the availability of staff to assist the students, efficiency in enrolment and ease of admission processes and ongoing systems.
- Learning resources: this represents the percentage of students who rated the learning resources provided by their institution positively. This includes teaching facilities and resources such as online classes, physical teaching spaces and the quality of library and lab facilities.

It is important for universities to use a combination of these dimensions to obtain a comprehensive understanding of student satisfaction, with feedback collection and analysis used for continuous improvement and to ensure a positive learning environment for students (Gray & Diloreto, 2016).

As a baseline approach to gathering current insights on the student experience at Australian universities, annual data through student surveys conducted by the SRC highlights that students seemed on average less satisfied over the years (2012 to 2022) with the support services provided by universities in Australia. Figure 3 provides a summary of how students around Australia rated support services from 2012 to 2022. The student support indicator is rated on a 100 percent scale (QILT, 2012-2022). As evident in Table 1, the average score for the past 11 years equates to 69.5% (on a scale of 100). It can be noted that from 2012 to 2013, the satisfaction score was 53% and this later increased. This is most likely due to increased sample sizes and an increased response rate as student satisfaction scores gained importance in the education sector.

**Figure 3: Summary of Student Support Satisfaction Scoring (in %), 2012-2022**



Source: QILT report by the SRC, 2012-2022

**Table 1: Past 11 Years Overall Average Student Support Satisfaction Level**

Years	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Overall Average %
<b>Student Support</b>	53	53	73	72	72	73	73	74	74	74	74	69.5

Source: QILT report by the SRC, 2012-2022

A deeper examination of the dimensions from the QILT data reveals that the satisfaction rate was low during this period, mainly attributed to staff (either academic or professional staff) who were not helpful and a lack of personalised service provided to specific situations faced by students (QILT, 2012-2022). The highest satisfaction level related to the enrolment and admission process, which was deemed efficient, with an average satisfaction rate of 71%. The lowest rating was for English support services, which averaged a satisfaction rate of 41%, followed by relevant support for circumstances faced by students, which averaged around 45%. The specific concerns raised by students through this mechanism become a reference point for evidencing the pain points of the student life cycle journey in student support. The evidence gathered also exposes issues in the current service provision model, such as the lack of

availability of administrative staff or systems (63%) or staff and systems that are not helpful (61%), as shown in Table 2.

However, in order to compete globally, Australian universities need to explore student satisfaction issues more deeply, going beyond the limitations of the current satisfaction survey. These limitations are:

- It neglects to explore satisfaction with digital support services (e.g., self-service online platforms or university websites in general, security aspects when students pay their fees and how safe they feel about their university online fee systems) (Biswas et al., 2023; Matthews et al., 2022).
- It also neglects the fact that the university sector has transformed services in the way students interact with the digital platforms, from chatbots and Zoom meetings for course advice to online self-service assistance.
- It fails to acknowledge the existence of shared services at universities, and the poll results in a general view of things such as “administrative staff helpful”. It is unclear which areas of the university's administrative staff are helpful or not. In such cases, it is difficult for the university sector to use such generalised data to make business improvements.
- Comparing institutions based solely on QILT data may not be fair due to differences in student populations; each university is different, so a one-size-fits-all approach might not capture the unique challenges and strengths of different universities (Smith et al., 2020).
- Some questions (e.g., whether administrative staff are helpful) mask the fact that universities have reduced their staff numbers due to budget cuts and have adopted centralised options. This means some questions in the survey may not fully capture or reveal the challenges or changes happening within the university's staffing structure (ABC News, 2014; Campus Morning, 2019).

Prior to the development of the student satisfaction survey using QILT, another way of measuring student satisfaction was through the Course Experience Questionnaire (CEQ). This student evaluation instrument was designed to measure teaching performance in academic units (Ramsden, 1991). It became a national survey from 1992, collecting information from university students about their experiences within higher education (Talukdar et al., 2013). This indicated a shift in the method of

measuring student satisfaction from a localised to a national approach. The CEQ scale consisted of five key features: good teaching, clear goals, appropriate workload, appropriate assessment, and emphasis on independence (Ramsden, 1991). The CEQ has faced criticism for its narrow definition of ‘good teaching’ and the expectation that students make average judgements across a degree program. It has also had lower response rates and been criticised for outdated results. Furthermore, as the data was collected nationally and took time to analyse, it was difficult for universities to implement changes to improve satisfaction (Talukdar et al., 2013).

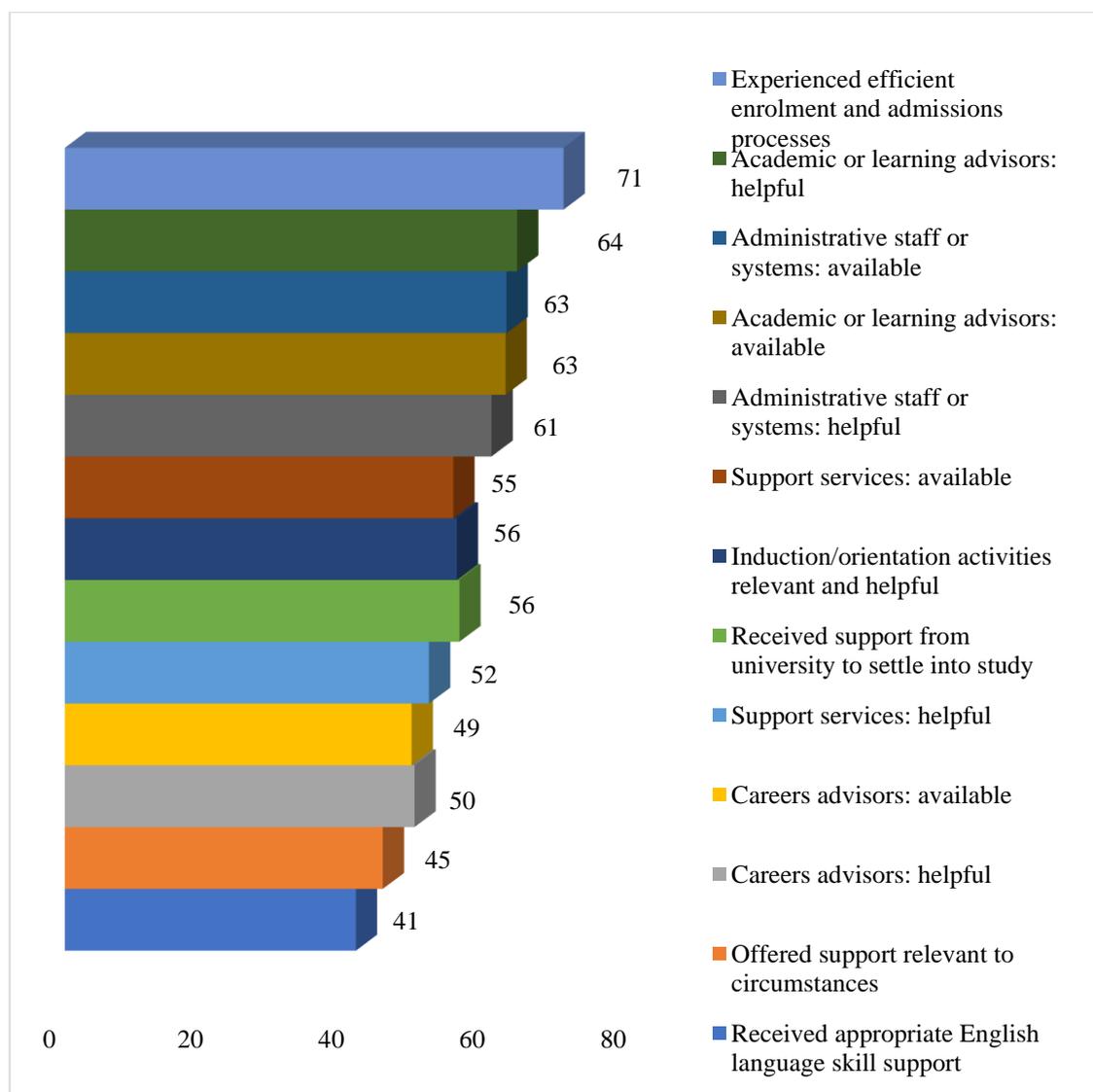
In the context of this research, Table 2 and Figure 4 provide valuable insights into the nuanced aspects of student satisfaction with contact centres; the longitudinal aspect (2012-2022) of the QILT data allows for a comprehensive understanding of trends and changes over time.

**Table 2: Summary of Student Support Satisfaction Scores by Specific Concerns (in %)**

<b>Student support</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Average</b>
Received appropriate English language skill support	36	18	35	39	42	44	45	49	48	48	51	41
Offered support relevant to circumstances	22	26	46	47	44	50	51	53	54	51	53	45
Careers advisors: helpful	45	44	47	48	49	49	52	51	52	54	55	50
Careers advisors: available	47	45	47	48	50	49	50	50	51	52	53	49
Support services: helpful	22	53	56	54	53	55	56	57	56	51	56	52
Received support from university to settle into study	36	47	58	58	60	58	57	61	62	59	60	56
Induction/orientation activities relevant and helpful	42	48	56	57	58	57	58	61	59	57	59	56
Support services: available	54	52	55	53	53	54	55	61	62	54	54	55
Administrative staff or systems: helpful	59	58	60	59	59	60	61	63	63	63	62	61
Academic or learning advisors: available	58	59	62	61	62	61	64	64	65	66	66	63
Administrative staff or systems: available	64	61	63	62	62	62	63	65	65	61	61	63
Academic or learning advisors: helpful	60	62	65	63	63	63	66	65	65	67	67	64
Experienced efficient enrolment and admissions processes	59	66	72	71	72	72	71	75	75	73	73	71
Average Student Support over the Years	46	49	56	55	56	56	58	60	60	58	59	56

Source: QILT report by the SRC, 2012-2022

**Figure 4: Summary of Average Student Support Satisfaction Scoring (in%), 2012-2022**



Source: QILT report by the SRC, 2012-2022

From 2012 to 2022, there have been consistent improvements in various aspects of student support services at the university; however, overall, the average satisfaction score rose very little over 10 years, from 46% to 59%, which does indicate satisfaction improvement is slow (see Table 2). The findings provide a clear mandate for improvement, particularly in addressing the shortcomings related to staff unhelpfulness and lack of personalised services. The positive feedback on enrolment and admission processes should be acknowledged and potentially used as a model for improving other aspects of contact centre services. The identified pain points, such as administrative

staff or systems being unavailable or unhelpful, should be prioritised in improvement initiatives and this could involve technological upgrades to create better communication strategies with students.

### **1.5 Digital Economy**

The internet's rapid growth since the mid-1990s has significantly impacted business operations, consumer transactions, and the economy, making computers increasingly prevalent and nations reliant on digital technology (Barefoot et al., 2018). According to Deloitte Malta (2023), digital economics is economic activity created by human and technological links by means of online mechanisms through the internet. Digital technology is important in organisations for competitiveness, team cooperation, and omnichannel marketing, which fosters meaningful customer interactions (Bai, 2021).

The COVID-19 pandemic and need for isolation further boosted the digital economy. This resulted in most businesses engaging with their customers virtually and gave rise to digital services through which business employees worked from home and communicated and dealt with their customers from home. Internet services rose from 40% to 100% capacity when compared to pre-lockdown (De et al., 2020). The lockdowns in various countries across the world and the extensive use of information systems and networks created a shift in the usage behaviour of both consumers and employees. This is also evidenced by the rise of contact centres across the world, even in government bodies, especially with the COVID-19 help line. This behaviour change came suddenly, with very little time for businesses and people to plan and prepare new set-up arrangements and to experiment with and adapt to something that is now the new normal (Prasetyo et al., 2021). In the context of this research project, the pandemic year of 2020 demonstrated that the world had undergone a massive digital transformation as information systems enabled businesses to continue with their operations. For example, traditional restaurants had to convert to takeaway food through the use of online food delivery apps, while some brick-and-mortar stores started to sell their products online (Prasetyo et al., 2021). The education sector also had to pivot their operations and were forced to migrate to e-learning teaching as well as providing necessary student support services online (Zamora-Ramos, 2023).

### **1.5.1 Digitalisation and Student Satisfaction**

The growth of the university sector brings about increased scale, diversity, technological demands, and regulatory requirements, contributing to the added complexities in university administration, particularly in student services. Managing these complexities requires strategic planning, investment in infrastructure, and a commitment to adapt to the evolving landscape of higher education. According to Krishnaveni and Meenakumari (2010), the integration of the digital economy has significantly reduced complexity and enhanced the overall administration of the university sector. Digitalisation is revolutionising teaching and learning in universities, enhancing knowledge transfer, assessment, student assistance, and administration processes (Auricchio & Káganer, 2015). It is evident that digitalisation increases student satisfaction (Faize & Nawaz, 2020; Holbeck & Hartman, 2018; Latip et al., 2019; Nortvig et al., 2018; Yousaf et al., 2022). Furthermore, universities have started to offer various services to different cohorts of students to help students survive and thrive in the university environment (Mountz et al., 2022). While this may be complex services, they are made possible by digitalisation. Hence, over time, student services have undergone a massive transformation. For instance, student enrolment used to be all paper-based, with students lining up to be served, and it could take an entire day to get the enrolment process completed. Now, students do not need to queue up to get enrolled as everything is online, thereby requiring less help from specialists (Isa & Usmen, 2015).

Universities have faced challenges in adopting technologies due to differing demands from different stakeholder groups, including their students. These challenges can impede the university digitalisation process (Reid, 2014). Despite the significant investment made by the university sector in digitalisation to enhance student satisfaction, there is a lack of awareness about understanding student satisfaction from student's perspective (Qiao et al., 2023). Despite the current students (millennials) being considered digitally savvy, students often face barriers when using technology, leading to frustration. Most lack experience with instructional technologies like library databases and learning materials like smartboards. Access to appropriate technologies and learning environments can also be limited (Yousaf et al., 2022). As institutions

continue to embrace and optimise digital tools (Auricchio & Káganer, 2015), the positive correlation between digitalisation and heightened student satisfaction becomes increasingly evident, marking a pivotal era in the evolution of the university sector (Bonfield et al., 2020).

### **1.5.2 Digitalisation and Contact Centres**

The origins of contact centres started with the formation of a call centre, which was founded in 1973 by Continental Airlines, established by Rockwell Galaxy. The developments in communication technology have resulted in call centres growing into contact centres. As such, digitalisation in contact centres is not new, and advances in computing power have enabled them to provide real-time information quickly. Furthermore, contact centres offer different communication channels such as telephones, emails, web-based online enquiries, online live chat, and social media (Saber et al., 2017).

Contact centres were designed to facilitate exceptional consumer service and have become an important feature of consumer interactions with organisations. They are the main touchpoints for consumers in an organisation, and they contribute towards building a better relationship with consumers as enquiries can be resolved efficiently (Saber et al., 2017). Such centres are responsible for at least 70 percent of all contact between businesses and consumers (Cheong et al., 2008) and they complement traditional business contact points such as postal services.

A contact centre can be described as an office that receives a high volume of telephone calls and where calls can be inbound or outbound (Bennington et al., 2000). Contact centres provide a variety of service offerings, whether via telephone, face-to-face, or online (Holman, 2013). These centres have four basic features:

- Workers are in a specialist role that combines telecommunication and information system technologies.
- The workflow is automatically distributed through systems managing phone enquiries, which thereby control and monitor the speed and efficiency of the centre.

- Workers are in direct contact with consumers through outbound or inbound calls or online messaging such as chats.
- The contact centre also deals with online enquiries such as emails (Holman, 2013).

Contact centres are established in a variety of models of different sizes and with different values (Holman, 2013). They can range from 50 to 75 contact staff in a standalone building to ten staff in a shopping mall; some operate under shared services across companies (Bennington et al., 2000). Their values can depend on the nature of business and the type of information they provide (Holman, 2013).

It is very important that businesses that have contact centres have effective and smart systems to interact with their consumers, such as Customer Relationship Management (CRM) software (e.g., Zoho, Salesforce, and Really Simple Systems). It has been revealed that 70 percent of business interactions are handled by contact centres, and researchers have stated that a good experience needs to be developed in every stage of the consumer process. This can contribute to overall consumer satisfaction (Sabeti et al., 2017). Overall, digitalisation in contact centres has proven to have a positive correlation with customer satisfaction (Al-Shorman et al., 2021; Gimpel et al., 2016). The transition towards digital technologies in contact centres has been instrumental in enhancing the overall customer satisfaction through various innovative solutions and streamlined processes. Al-Shorman et al. (2021) emphasised the positive impact of digitalisation on customer satisfaction, highlighting the role of advanced technologies in reducing response times, increasing accessibility, and optimising service delivery. Their study underscores how these digital advancements empower contact centre agents to provide more efficient and tailored support, thereby fostering positive interactions with customers. Additionally, Gimpel et al. (2016) contributed to the discourse by emphasising the significance of digitalisation in cultivating a seamless and omnichannel customer service journey. Their research underscores the importance of leveraging digital channels, such as chatbots, social media platforms, and self-service portals, to meet the evolving expectations of modern consumers. By embracing these digital tools, contact centres can not only address customer queries more effectively but also offer a consistent and integrated service across multiple touchpoints.

## 1.6 Research Problem Identification

In an increasingly competitive higher education market, universities in Australia are striving to differentiate themselves and expand their global presence by enhancing student satisfaction with their services. While existing research on student satisfaction in universities is abundant, there is a notable gap in understanding the factors influencing student satisfaction specifically within the domain of university contact centres, particularly in the context of digitalized services. Therefore, this research seeks to investigate the impact of service quality, online service environment, customer engagement, and level of customer support on student satisfaction with university contact centres.

As discussed previously, many institutions of higher education are seeking ways to understand and improve student satisfaction, as they are under pressure to differentiate themselves from competitors to avoid being seen as close substitutes (Norton et al., 2018). This is particularly true for Australia, given the small population, as the domestic market for higher education is limited and spread across 41 universities. Thus, it is vital for universities to create a unique market to expand their global presence. To attain strategic competitiveness, universities must provide a variety of distinctive and market-valued services and programs. As the higher education market becomes increasingly competitive and consumer-driven, it becomes vital to continue to measure student satisfaction. This can assist universities in modifying their current services and marketing strategies promptly or to develop new marketing strategies in order to strategically position themselves in the market (Šimić & Čarapić, 2008). The pandemic has accelerated technology innovation in shared services; lessons have been learned, and now it is time to reflect on what this means for the future. This research explores the level of student satisfaction with digitalised services, which can assist universities in designing differentiating strategies.

Research on student satisfaction in universities continues to be a significant area of study (Dunn & Hansford, 1997; Kornpitack & Sawmong, 2022; Sakthivel & Raju, 2006; Stamelos & Bartzakli, 2013). However, the existing literature lacks a commensurate emphasis on the specialised domain of contact centres within the university environment. A review of the literature has identified potential research gaps

in the field of student satisfaction with digitalised services. These gaps are summarised in the subsections below.

### **1.6.1 Student Satisfaction with Contact Centres in Australia**

Existing research has focused predominantly on overarching educational themes, overlooking the specific dynamics and effectiveness of contact centre services within the Australian higher education context. Notably, limited attention has been paid to exploring the intricacies of student interactions with contact centre services and the associated online platforms, as evidenced by the lack of dedicated studies in this area (Ivana et al., 2019). While studies in other sectors, such as healthcare, banking, insurance, public and social services, transportation, telecommunication, and hospitality, regularly assess customer satisfaction within the contact centre environment, a noticeable gap remains within the higher education landscape (Kang et al., 2007). The current body of research inadequately addresses the unique nuances and challenges posed by contact centre services in Australian universities (Fares et al., 2016).

The continued integration of digital technologies in the university sector is anticipated to enhance the student-centred approach, personalised learning experiences, and heightened engagement (Haleem et al., 2022). Nevertheless, the human aspect of the digital experience, including emotions and distractions, poses challenges, as students have expressed reservations about the adverse effects of digital technology on their studies, advocating for reduced usage in their courses (Alenezi et al., 2023). As already noted, while there is existing literature on enhancing student engagement in specific contexts related to teaching and learning (Haleem et al., 2022), limited attention has been directed towards shared services, particularly within university contact centres.

Parasuraman et al. (1991) laid a foundation for understanding the significance of combining various service quality factors to enhance customer satisfaction, but a void exists in applying these integrated approaches within university contact centres. This research gap underscores the need for further investigation into the multifaceted dimensions of student satisfaction (Winstone et al., 2022). Furthermore, despite the increasing importance of student satisfaction with university contact centres, there is a noticeable void in the existing research landscape regarding students' perceptions of

privacy and security (Saa et al., 2017). This limited research scope, as highlighted by Balash et al. (2021), underscores the need for a more comprehensive investigation into students' perspectives on privacy and security when sharing sensitive information with academic support centres.

These research gap underscores the pressing need for a dedicated examination of student perspectives on contact centre utilisation and engagement. A comprehensive study in this domain will not only fill the existing void in the literature but also provide valuable insights into enhancing the effectiveness of contact centre services within the Australian higher education context. Such an investigation is crucial for informed decision-making and the continuous improvement of student support services in universities. The research objectives align with this goal by focusing on the relationship between contact centre service quality, the online environment (servicescape), customer support, and the role of customer engagement in enhancing student satisfaction. Additionally, the study aims to assess and compare satisfaction levels among different student groups, including domestic versus international students, undergraduate versus postgraduate students, and gender-based variations.

### **1.6.2 Multidimensional factors Impacting of Student Satisfaction**

Despite extensive research on student satisfaction within Australia's educational system, studies often lack depth, primarily focusing on academic experiences and teaching-related factors (Dunn & Hansford, 1997; Kornpitack & Sawmong, 2022; Sakthivel & Raju, 2006; Stamelos & Bartzakli, 2013). These studies often lack a comprehensive assessment framework, despite the diverse nature of the higher education system (Savage & Lewis, 2018). Furthermore, the rise of the digital economy has significantly impacted the landscape of university education, prompting ongoing digitalisation efforts, and needs to be examined (Castro, 2019). The current literature fails to provide clarity on the nuances of student experiences with these components, hindering our understanding of their impact on overall satisfaction. Therefore, there is a compelling need for more research to delve into students' perceptions and interactions with digital platforms and contact centres, shedding light on the factors that influence their satisfaction in these critical areas of university services. While the importance of student support and service operations in universities is acknowledged, there is a

discernible gap in the literature regarding how students perceive and interact with various digital aspects, such as university websites. Additionally, the existing body of research falls short of addressing the specific factors (such as accessibility to contact centres, prompt services to personalisation and customisation of services) influencing student satisfaction with university contact centres, which play a crucial role in providing support and information to students.

While the literature recognises the growing relevance of university contact centres in facilitating communication between students and educational institutions, a significant research gap persists in understanding how these centres address the diverse needs of students with diverse demographic groups (Sahoo & Choudhury, 2023; Shaltoni et al., 2015). The accessibility and inclusivity gaps within these centres remain largely unexplored, especially regarding contact centre service quality, customer support and their online environments (servicescape). This research investigates and analyses these gaps using demography as predictor to provide insights to universities. This will ensure information is easily accessible and comprehensible for all students (demographically). The identified research gap is critical as it directly influences student satisfaction (Singh et al., 2022).

The growing influence of online education has prompted a paradigm shift in educational practices, necessitating a re-evaluation of pedagogical methods and student engagement strategies (Werang & Leba, 2022). However, the limited knowledge of shared services, specifically how students should be approached when dealing with university contact centres at a general level, underscores the need for focused research in this area. Bridging this gap is essential to inform the development of effective strategies that address student satisfaction in the context of university contact centres, aligning with the broader goal of creating a positive campus culture. The research highlights a gap in studying student interactions and engagement (Buelow et al., 2018; Werang & Leba, 2022; Yousaf et al., 2022) in university contact centres and emphasises the need for a dedicated examination of student perspectives on contact centre utilisation, including the awareness and utilisation of online services offered through these centres (Gruber et al., 2010). The existing body of research inadequately addresses the unique nuances and challenges posed by contact centre services in Australian universities (Fares et al.,

2016). Addressing these gaps requires a comprehensive examination of student perspectives on contact centre utilisation, service quality, and the online environment, especially given the evolving digital landscape of higher education (Castro, 2019).

### **1.6.3 Digital Nature of Contact Centres**

In the evolving digital landscape of higher education, there is limited research on the digital nature of contact centres and their impact on student satisfaction (Hartmann et al., 2016). While universities increasingly adopt digital technologies, the specific factors influencing student satisfaction with digitalized contact centres remain unexplored. Research in this area is essential for understanding the effectiveness of shared services, accessibility, and the impact of environmental factors on digitalized contact centres in university service environments (Schulz et al., 2018). Bridging these research gaps is crucial for informed decision-making and enhancing student support services in universities.

The broader landscape of digital engagement has been explored extensively in the literature, encompassing social media, online forums, and various digital platforms (Buelow et al., 2018; Werang & Leba, 2022). However, within this evolving digital paradigm, the focus on university contact centres as a critical component of student support and satisfaction remains conspicuously limited.

The transition from traditional classroom settings to virtual platforms has necessitated a comprehensive re-evaluation of pedagogical methods and student engagement strategies (Yousaf et al., 2022). While research has delved into the effectiveness of digital engagement strategies on learning and teaching (Faize & Nawaz, 2020; Holbeck & Hartman 2021; Latip et al., 2019; Nortvig et al., 2018; Yousaf et al., 2022), there is a dearth of knowledge concerning the role and impact of university contact centres on overall student satisfaction. These contact centres serve as centralised hubs for addressing student enquiries, providing support, and facilitating various administrative processes.

To date, the existing literature primarily emphasises the broader implications of the digital shift in education (Haleem et al., 2022) but lacks in-depth insights into the specific dynamics of student interaction with university contact centres. This research

gap is critical, as these contact centres play a pivotal role in shaping students' satisfaction, serving as a primary point of contact for a myriad of queries and concerns.

Addressing this research gap is imperative for a holistic understanding of the digital engagement landscape in higher education. This research not only fills a critical void in the existing literature but also provides practical recommendations for universities to optimise their contact centre services and bolster student satisfaction in a rapidly evolving online education environment. The research gap in digital engagement in online education (Faize & Nawaz, 2020; Holbeck & Hartman 2018; Latip et al., 2019; Nortvig et al., 2018; Yousaf et al., 2022) lies in the limited examination of the impact of university contact centres on student satisfaction, despite their crucial role. This necessitates a focus on understanding and optimising these services for a more comprehensive approach to enhancing student satisfaction in the evolving online environment. This study fills this critical void by delving into the dynamics of student usage of university contact centres. These centres serve as central hubs for addressing enquiries, providing support and facilitating administrative processes.

#### **1.6.4 Digital Monopoly**

The adoption of digital technology in organisational structures, particularly in contact centres, has led to centralisation. In turn, centralisation has created a number of benefits, such as cost savings and increased efficiency (Bai, 2021). This digital transformation has positioned contact centres as potential digital monopolies, operating in environments where efficiency dictates optimal performance (Dedola et al., 2023). In the context of universities, this phenomenon is exemplified by the shared service contact centre model employed by all 41 Australian universities, which directs enquiries through a centralised contact page (see Appendix G). However, the implications of this digital monopoly on student satisfaction within the university sector remain inadequately explored.

While digital monopolies can offer advantages in terms of efficiency, the potential concealment of knowledge in online processes (Bai, 2021) creates a significant concern. This becomes particularly relevant in the university sector, where subject expertise significantly influences student satisfaction (Latip et al., 2019). Meeting student expectations is crucial for fostering loyalty and positive word-of-mouth, whereas

dissatisfaction can lead to the spread of negative sentiments (W. G. Kim et al., 2009). The impact of digital monopolies on students' ability to fully comprehend university services and their consequent reliance on contact centres for support remains uncharted territory.

Despite the acknowledgement of the pivotal role of contact centres in shaping students' overall satisfaction with higher education services (Holmlund, 2020) and their adaptation to evolving technology trends (Periyasami & Periyasamy, 2022), a significant research gap exists in understanding the nuanced factors influencing the contact centre's ability and willingness to deliver appropriate services. The existing body of knowledge falls short in providing a comprehensive exploration of the specific mechanisms through which contact centres impact student satisfaction and how they effectively utilise data and technology for enhancing service delivery.

The research literature highlights the heightened importance of contact centres, especially in the context of virtual operations accentuated by the global pandemic (De et al., 2020). However, there is a pressing need to delve deeper into students' satisfaction with this mode of service delivery in higher education (Holbeck & Hartman 2018; James, 2021; Winstone et al., 2022). Addressing this gap is crucial for advancing our understanding of these dynamics and ultimately contributing to the development of strategies that optimise the performance of contact centres in the educational context.

### **1.7 Research Aim, Objectives and Research Questions**

Businesses build their public image through the services they provide (Katsoni & Segarra-Oña, 2019). In the process of delivering services, businesses rely on their employees to maintain service quality and communicate with customers in a way that conveys a positive corporate image (Tsaur & Tang, 2013). Similarly, university student services staff play a critical role in enhancing student satisfaction (Buultjens & Robinson, 2011). However, in the last decade there has been a greater focus on improving efficiency by re-directing student services (e.g., enrolments, advice, transfers, credits etc.) online, as much as possible. As a consequence, the role and impact of contact centre staff in influencing customer satisfaction may have diminished.

As universities are large and complex, strategic planning within shared services (such as contact centres) is required. Customer service in universities takes on a wider function as students need to access a large range of resources in an environment that is usually new to them and can be overwhelming (Pitman, 2000). The operating model of student services and the degree of support centres provide can make a difference between retention and withdrawal as such services influence customer satisfaction (Buultjens & Robinson, 2011). Due to the online boom, service offerings are predominantly virtual, which has added an extra layer of complexity to the services provided by the university (Zamora-Ramos, 2023). As such, shared service provision models such as contact centres in the university environment make an important contribution to student satisfaction.

Students, as paying customers in the tertiary education sector, are now much more aware of what they want, and therefore, they expect and demand services similar to the way they demand services from commercial businesses. Customer service has become the centre of management activities, constituting the basis of competition in the higher education sector today (Wahab, 2016). Quality of service needs to be assessed to remain competitive. Research indicates that the importance of service quality matters in the educational setting as it impacts student experiences of quality (Arambewela & Hall, 2009). This study addresses the research gaps in this context by addressing the following research question:

RQ. What is the impact of the quality of service, online service environment, customer engagement, and level of customer support on student satisfaction with the university contact centre?

To answer this research question, the aim of this study was to determine the factors that influence student satisfaction with university contact centres in a virtual online environment around Australia. The following specific objectives were identified:

1. To determine the relationship between contact centre service quality and student satisfaction.
2. To determine the relationship between the contact centre online environment (servicescape) and student satisfaction.

3. To determine the relationship between contact centre customer support and student satisfaction.
4. To examine whether the customer role of online engagement plays a key role in enhancing student satisfaction through contact centre service quality, contact centre online environment (servicescape), and customer support.
5. To assess and compare student satisfaction levels with university contact centres by examining differences in satisfaction between domestic and international students, between undergraduate and postgraduate students and exploring gender-based variations.

This research reconceptualises student satisfaction through the new realms of service delivery in university contact centres in an online environment.

## **1.8 Statement of Significance and Contributions to Knowledge**

The university sector is striving to enhance student satisfaction by examining determinant factors such as quality of teaching, learning resources, facilities and infrastructure, including support services (Winstone et al., 2022). This research will help universities to understand the resources needed to improve student satisfaction with contact centres. As such, this research has theoretical and practical implications for management, marketers, information technologists, and human resources professionals dealing with student services in the university sector.

### **1.8.1 Theoretical Contribution**

This study explores the relationship between contact centre service quality, the online servicescape, and customer support among university students in Australia, thus filling a research gap in existing literature. It offers important insights to enable a better understanding of how service quality and the servicescape of universities work in the digital-only interface.

Student satisfaction with a contact centre digital-only interface may be influenced by their preferences for online versus on-campus service. Therefore, the research presents a moderating element in the conceptual model to determine whether a preference for

digital engagement moderates the relationship with determinant factors and student satisfaction.

### **1.8.2 Practical Contribution**

This research makes a number of practical contributions, as follows:

1. It has the potential to impact sustainability significantly and promote green practices. This is achieved by highlighting the service centre as a manifestation of technological innovations, thereby serving as a crucial catalyst for sustainable and environmentally-conscious transformations in service delivery.
2. The findings provide university sector management with an understanding of customer satisfaction in terms of service quality, customer support, and online servicescapes from the customers' perspectives, allowing them to allocate relevant resources strategically to meet their aims and objectives. Understanding student needs gives management insights into how to resolve problems.
3. The recommendations of this study may encourage government agencies to shape their survey instruments to incorporate the key variables identified in this research.
4. The study provides insights about students' perceptions of university contact centre services and how the university sector can gain a competitive advantage and boost its reputation by addressing issues identified from those student perspectives.

### **1.9 Thesis Structure**

The thesis consists of six chapters, as follows:

Chapter 1 has introduced the study context, research aims, and research objectives. It has also highlighted some of the theoretical and practical contributions.

Chapter 2 provides a review the literature, focusing on contact centre service quality, online services, contact centre customer support and student modes of engagement.

Chapter 3 presents the conceptual framework and hypotheses, and discusses the theoretical foundation of this study.

Chapter 4 presents the research methodology, design, approach, and data collection methods, along with sampling considerations.

Chapter 5 describes the data and the data analysis approach. Descriptive statistics, exploratory and confirmatory factor analysis are presented. The conceptual model is tested and interpreted, along with the performance of multi-group tests.

Chapter 6 discusses the conceptual framework validation and results. It also offers recommendations to the university sector, theoretical and practical contributions, the limitations of the study, and suggestions for future research.

### **1.10 Chapter Summary**

This chapter has presented the research background, research gaps, questions, aims and objectives of the study, as well as its contributions and significance. It has also provided background data and the context within which to explore student satisfaction through the lens of students, specifically in a shared service environment such as a contact centre. This chapter has also provided justification for investigating the connection between student satisfaction in an online service offering and how it is influenced by contact centre service quality, the online servicescape, customer support, and customer engagement parameters in the digital economy. To better understand drivers of student satisfaction in the context of contact centres, the next chapter focuses on the literature review.

## CHAPTER 2: LITERATURE REVIEW

### 2.0 Chapter Overview

This chapter focuses on the literature review, which was conducted using a mixture of narrative and theoretical formats as adopted by Paré et al. (2015). The purpose of the literature review is to understand the current state of knowledge, identify gaps in existing research, understand the methodologies and approaches used, establish the context of this research and recognise and appreciate current trends and debates to support theoretical frameworks. Consequently, this chapter provides a comprehensive overview of key elements in the education sector, with a specific focus on tertiary education in Australia. The discussion begins by examining the general landscape, emphasising the critical role of tertiary education and its implications for student satisfaction. The chapter then delves into the contact centre domain, exploring its significance in the context of student support and satisfaction. A detailed analysis of customer satisfaction within the contact centre is presented, along with an investigation into the impact of digitalisation on satisfaction. Further, the chapter explores the determinants of student satisfaction with contact centres: service quality, online servicescape, customer support and customer engagement.

### 2.1 Education Sector

Tertiary education, or higher education, encompasses institutions beyond secondary school, including universities, colleges, institutes, and vocational schools (Tang, 2023). The sector varies globally in terms of structure, admission requirements, and degree offerings. The US has a diverse system, including Ivy League universities, state universities, and private colleges. The UK has prestigious universities like Oxford and Cambridge, while Europe uses the Bologna Process-compliant system (Kogan et al., 2007; OECD, 2002). Countries like Germany offer tuition-free education at public universities (Salmi, 2000). Asia has a growing number of universities and technical institutes, with Singapore and Japan known for high-quality education (Yu & Delaney, 2016).

Australia, the focus of this study, is renowned for its high-quality and diverse range of institutions (Lokuwaduge & Armstrong, 2015). Tertiary education in Australia includes

universities that offer undergraduate and postgraduate qualifications; vocational education and training (VET) institutes that offer certificates, diplomas, and advanced diplomas; and technical and further education (TAFE) institutes that provide vocational training ranging from basic skills to advanced technical training. Australia also has several private higher education providers (such as University of Notre Dame Australia, Bond University and Torrens University Australia), which offer a range of courses and programs across various disciplines. The Tertiary Education Quality and Standards Agency (TEQSA) regulates Australian universities, ensuring their compliance with the Australian Qualifications Framework. This framework maintains consistency across the sector and facilitates Australian universities' substantial contributions to global research and innovation (Universities Australia, 2016). The governance of Australia's education system is managed primarily by states and territories, with significant federal government involvement in university funding and policy development (Probet, 2015).

## **2.2 The Role of Australian Tertiary Education**

Australia's tertiary sector plays a crucial role in the country's economic development by providing specialised skills and knowledge to students, making them job-ready and capable of contributing effectively to the economy (Dawkins et al., 2019). It has produced professionals in various fields, including healthcare, business, law, engineering, and science, significantly enhancing the nation's overall well-being (Boniol et al., 2022). Tertiary institutions also drive research and innovation, leading to advancements across various domains and facilitating the commercialization of research outcomes, fostering entrepreneurship, and creating new business opportunities (Gibson, 2007). A well-educated workforce enhances global competitiveness, attracting international businesses and investments (Parant, 2012). Furthermore, universities play a significant role in promoting cultural diversity, intellectual growth, and economic prosperity by attracting students from diverse backgrounds (Denson & Bowman, 2013).

Australia's robust education system, supported by factors such as institutional quality, international collaborations, industry-relevant curriculum, and government backing, consistently produces highly skilled graduates. Tertiary education significantly boosts

social mobility by providing individuals with specialised knowledge and skills for higher-paying jobs, professional networks, and critical thinking abilities (Crichton & Scarino, 2007; Haveman & Smeeding, 2006). This contributes to improved living standards and breaks the cycle of poverty, empowering individuals from disadvantaged backgrounds (Chesters, 2015).

Moreover, tertiary education encourages lifelong learning, enabling individuals to adapt to changing economic demands, and fosters international partnerships, facilitating global knowledge exchange (Mthethwa-Kunene et al., 2021; Universities Australia, 2016). This positive reputation in education attracts talent from other countries, further diversifying the workforce and bringing in fresh perspectives and ideas.

### **2.3 Examination of Organisational Complexity**

Australian universities have complex organisational structures. The most common structure is built around the Chancellor as the ceremonial head and the Vice-Chancellor as the chief executive officer. The governing body is the University Council, which includes academics, professionals, and student representatives (Croucher & Woelert, 2022). Universities are divided into faculties or schools, which focus on specific areas of study, and departments or disciplines, which are specialised areas of study. Undergraduate and postgraduate degrees are offered through specific courses or programs within these departments. Academic staff include professors, lecturers, and tutors (Croucher & Woelert 2016). Supporting departments include the Registrar's Office, Finance and Administration, Student Services, and Library Services, some of which are shared services (M. S. Anderson, 2001; Guilfoyle et al., 2012). Research centres and institutes focus on specific areas of research. Many universities also engage in collaborative ventures, research partnerships, and international programs, involving multiple stakeholders and creating intricate networks within the university system (Saez et al., 2002; Tirlinck & Spithoven, 2012).

In the context of this study, it is important to note that the complexity of an organisation can significantly affect customer satisfaction (Madanat & Nuseir 2017). This might be due to communication breakdowns, lack of accountability, inflexibility, slow innovation, inconsistency in service, longer response times, and inefficient customer

feedback handling, all of which can contribute to dissatisfaction (Jamal & Naser, 2002; Patterson, 1997). In complex organisations, information often passes through multiple hierarchies, leading to delays in responding to customer queries resulting in dissatisfaction (Rosak-Szyrocka et al., 2022). The lack of accountability can frustrate customers, while rigid policies and procedures can hinder innovation (Akarsu et al., 2023). Inconsistencies in service can also affect customer experiences (Lazirkha et al., 2022). The same has been the case for the university sector, as indicated by Berger's (2002) research, which revealed that organisational structure influences student learning. Understanding this, Berger argued, might assist campus leaders in being more purposeful in performing their professional tasks, promoting better levels of learning. He further indicated that less attention has been paid to the investigation of the influence of organisational structure on student learning as a result and overall student satisfaction in general (Berger, 2002). Consequently, conducting this research on how satisfied students are with shared services is crucial as it involves an analysis of university organisational structure.

Furthermore, universities around Australia are continuing to evolve their operational models with the assistance of the 'big four' accounting firms (Deloitte, Ernst & Young, PwC, and KPMG). Administrative restructuring and the evolution of university operational models have broader implications for various departments, including the university contact centre. Changes in processes, staff structures, budgets, and alignment with university-wide initiatives may impact how the contact centre operates and interacts with students and stakeholders (Campus Morning, 2019; Visentin, 2019).

Some organisations invest heavily in customer service infrastructure and technology to maintain high customer satisfaction (H. Ahmad, 2022), but transition and adaptation to using technology in a more independent and self-directed way can also impact satisfaction levels. Problems can further deepen due to globalisation and cultural differences, especially when comparing how other industries deal with their customers, which can lead to misunderstandings and different expectations, thus affecting satisfaction levels (Mishrif & Khan, 2023). The integration of technology in education has introduced innovative tools and platforms (Al-Malah et al., 2023). However, it has

also presented challenges in terms of accessibility, usability, and the digital divide, impacting student satisfaction differently (AlAmin, 2022).

## **2.4 Contact Centres**

In the dynamic landscape of business, one undeniable constant is the paramount importance of customer satisfaction (Gunawan, 2022). This theme resonates as a cornerstone of success, transcending industries and markets. Satisfied customers are not just one-time buyers; they evolve into loyal patrons who become brand ambassadors (Cuong, 2020). So, the quality of service offered by a business is a direct determinant of customer satisfaction, and exceptional service is the linchpin for creating positive customer satisfaction, thereby solidifying a brand's position in the market (Matosas-López, 2024).

As such, in this era of heightened customer expectations, contact centres emerge as pivotal players in delivering high-quality customer service (Holman et al., 2003). Acting as nerve centres for customer interactions, contact centres play a crucial role in managing queries, addressing concerns, and resolving issues promptly and effectively (Samuel et al., 2023). By providing timely and efficient support, contact centres contribute significantly to overall customer satisfaction. Their role extends beyond issue resolution; they become conduits for building and nurturing relationships between businesses and their customers (Jaiswal, 2008; Saberi et al., 2017).

A contact centre, or call centre, is a centralised facility or department used by organisations to manage customer communications. It serves as a hub through which customers can contact a company via various channels, including phone calls, emails, live chat, social media, messaging apps, and sometimes even faxes (Holman et al., 2003). A contact centre handles incoming and outbound communication, providing support and assistance to customers. CRM software is used to store customer information, enabling personalised interactions (Demarchi, 2020; Taylor & Bain, 1999). Contact centres are vital for customer satisfaction and business growth, enhancing customer satisfaction through efficient, empathetic, personalised service, smart technology use, and continuous improvement (Samuel et al., 2023). By applying these same principles, universities can transform their contact centres into dynamic

hubs that contribute to student satisfaction, and overall success. As higher education institutions adapt to the evolving needs of students, efficient contact centre services become instrumental in shaping a positive and supportive educational environment.

Contact centres have multi-tier service delivery models, with communications separated into tiers to resolve different enquiries. The tier classification is normally from zero to three tiers. Tier zero involves consumers receiving assistance through online self-service, such as getting information from websites or referring to generic frequently asked questions (FAQ) online (Doomun & Nevin, 2008). This is the first stage of the service delivery model, which is usually a digital channel providing support to consumers without staff intervention (Russell, 2012). Tier one involves getting assistance from a contact centre face to face, or via emails or phone. This involves providing information about the services available that customers cannot access or locate online themselves (Hasija et al., 2005). Typically, this event occurs when an enquiry is lodged by a consumer. A staff member will then provide a standard range of information services, which are all sourced from their organisation's website. Tier two involves cases that contact centre staff cannot resolve. These are escalated to specialists in various business areas to ensure service delivery (Chicu et al., 2019). If the specialist cannot resolve the enquiry, it is escalated further to tier three, to another specialised team or senior leader to address the issue. Tiers two and three thus involve subject matter experts (Hasija et al., 2005).

To ensure a high standard of service delivery, standardised service offerings are developed to ensure consistency and vigorous escalation protocols (Chicu et al., 2019). Some contact centres provide a "night line" service to assist their customers after normal office hours. This is evident in the medical profession, banking and the telecommunications sector (Dharamdass & Fernando, 2018). This is possible by implementing a single point of contact model, specifically utilising a contact centre. This strategic approach capitalises on the reduced call volume during the night, minimising the time required for after-hours operations. The allocation of resources is intelligently managed through meticulous data analysis of call volumes, as highlighted by Marinache (2016). This highlights the importance of a centralised and data-driven

approach to providing university support services, with the potential to enhance satisfaction and effectiveness in student interactions within the university.

There has been an evident increase in consumer expectations in recent years, particularly in relation to specific service principles such as unwavering quality, steadfastness, strength, performance, security and ease of use. For instance, in the mobile phone industry, high consumer expectations have resulted in dissatisfaction over excess billing, high costs, disconnections and so on. This, in turn, has led to consumers switching from one mobile phone provider to the next (Manthiri & Khan, 2012). In the context of contact centres, with the swift development and adoption of technology, the way consumers communicate with businesses has changed with an increase in online interactions. Contact centres now use a combination of technology, human talent and streamlined procedures to deliver effective consumer services (Saberri et al., 2017). In the context of this study, understanding this combination of factors provided a broader perspective on consumer expectations, technology adoption, and effective service delivery in service industries. This is relevant to the analysis of student satisfaction in the use of contact centres and emphasises the importance of meeting expectations, leveraging technology, and staying abreast of industry trends to enhance overall satisfaction.

#### **2.4.1 Benefits of Contact Centres**

Contact centres have many benefits for both consumers and the organisation in which they function. For businesses, contact centres can enhance competitive advantage as they have become the dominant form of contact with consumers in business operations. They can facilitate successful consumer relationships by solving a range of issues from simple enquiries to complaints (Holman, 2013). Contact centre staff members have defined roles and processes, so everyone knows what they need to do. As some contact centres work under shared operations, this can result in a significant reduction in overall costs for the company. In addition, shared contact centres can collect key information about clients, creating profiles that can aid in strategic planning and marketing (Bennington et al., 2000).

For consumers, service delivery is simplified through automation or digitising of business operations as much as possible, such as through online processing of payments

(Holman, 2013) or robust telecommunication services that automatically queue phone calls and evenly distribute those calls to different staff members to reduce waiting times for consumers (Bennington et al., 2000). In the university environment, research indicates that the tier-based model can help resolve 80 percent of student and staff enquiries at first contact (Salt, 2004). The tier-based model streamlines support by addressing simpler issues at the first level, and escalating more complex problems to staff in higher tiers with specialised knowledge (Holman et al., 2003). In this context, a tier-based model for university contact centres can improve student satisfaction by offering efficient, personalised support, reducing wait times, and fostering continuous improvement through feedback and data analysis (Salt, 2004).

#### **2.4.2 Criticisms of Contact Centres**

Contact centres have also received criticism over time. Concerns have been raised that the quality of online or telephone service is not as good as face-to-face contact. This is based on consumer perceptions about contact centre staff adhering to scripted communications, fostering a mechanised and impersonal ambience during interactions (Russell, 2008) that fails to engender authentic connections with customers. A lack of face-to-face interaction can make it difficult to build consumer relationships as emotions are difficult to detect over the phone (Sato & Oki, 2023). In addition, some cultures do not welcome contact centre technologies such as the Amish communities or certain conservative religious groups within Islam or Christianity (Nolt, 2023). Service needs to be reliable and user friendly and with the use of technology this becomes very complex due to cultural adaptation as well as security concerns (Jeon et al., 2022). Consumers also do not wish to wait on the phone for a long time; prolonged wait times serve as a source of exasperation and frustration for customers (Taylor, 2021). Automated phone systems and intricate call routing processes exacerbate this frustration (Sato & Oki, 2023). This can create an adverse perception of a company's customer service.

Furthermore, staff turnover is high in contact centres due to the nature and expectations of work (Bennington et al., 2000). Inherent in contact centre occupations are stress-inducing factors, including elevated call volumes, contentious customer engagements, and stringent performance benchmarks (Russell, 2008). This stress propensity

precipitates high turnover rates, thereby perpetuating a recurrent cycle of recruitment and training. Contact centres are often outsourced and when this happens, the organisation loses control over its operations and this can affect the service quality (Van denSchrieck et al., 2014). Outsourcing can also introduce language and cultural barriers that impede effective communication with customers. In addition to this complexity, contact centre staff often confront constraints on their authority to make decisions or resolve intricate issues, necessitating escalation to higher echelons (Russell, 2008). This can result in delays and customer dissatisfaction arising from the quest for expeditious resolutions.

In the context of this study, it would be pertinent to consider how universities manage their enquiries from students and what is the perceived expectations from students. The challenges mentioned indicate the difficulties universities face in providing effective and responsive services to students, making it a relevant area for study.

### **2.4.3 Digitalisation and Contact Centres**

Contact centres play a crucial role in customer satisfaction, and digitalisation has significantly transformed the way businesses interact with their customers in today's digital age (Demirel, 2022). Digitalisation enables businesses to communicate with customers through various channels, such as email, social media, chatbots, and mobile applications (Bommel et al., 2014). Chatbots and automated response systems powered by AI can handle routine queries, allowing contact centre staff to focus on more complex issues. This helps improve overall customer satisfaction (Suciu et al., 2019). In addition, digital platforms facilitate seamless data integration, allowing contact centre agents to access customer history and preferences instantly. This leads to personalised and efficient interactions with the effective use of CRM software (Kennedy, 2006). With the pandemic, contact centres around the world started to service their customers remotely, and the customer support aspect of contact centres enhanced flexibility and reduced operational costs by allowing contact centre staff to assist customers from anywhere (Zahariev et al., 2023).

There are various ways in which customer satisfaction has been facilitated in contact centres using digitalisation (Aheleroff et al., 2019; Demirel, 2022), including but not limited to: personalisation, prompt responses, accuracy of information, self-service

options, real-time feedback, and omnichannel digital experience. Each of these is discussed in the subsections below, followed by a brief discussion of the challenges of digitalisation.

#### ***2.4.3.1 Personalisation***

Digitalisation has revolutionised customer service, allowing businesses to personalise interactions, address customers by their names, and provide tailored recommendations based on their past interactions (Aheleroff et al., 2019). Businesses are increasingly using customer data to segment their customer base (Dibb, 2001), personalise their websites, and use AI-powered customer support (Raiter, 2021). This approach leads to increased customer loyalty, conversion rates, and business growth but requires responsible and ethical handling (Mandapuram et al., 2020). Personalisation enhances customer engagement and satisfaction (Aheleroff et al., 2019; Mbama et al., 2018). To measure this aspect of contact centre interactions, specific indicators and metrics related to personalisation should be considered. In the context of this research, the principles of personalisation were considered important for measuring and improving student satisfaction with contact centres in universities around Australia.

#### ***2.4.3.2 Prompt Responses***

Digitalisation has a strong impact as it ensures prompt responses to customers, which is crucial for customer satisfaction. Customers appreciate timely solutions to their problems or quick answers to their queries (Metz et al., 2020). Businesses that leverage digital tools effectively can enhance customer satisfaction, leading to customer loyalty and positive word-of-mouth. These are invaluable assets in today's competitive market (Jarasuniene et al., 2022). In the context of this study, limited research exists in relation to how universities perform against this aspect. Consequently, it was considered an important area of focus in this current research.

#### ***2.4.3.3 Accuracy of Information***

Automation significantly reduces human error in tasks such as information delivery. Its precision and consistency minimise errors due to fatigue, distraction, or oversight (Osman, 2019). Businesses can improve efficiency and customer satisfaction by relying

on automation (J. D. Lee & Seppelt, 2009; Nof, 2009). However, careful design and implementation of automated systems are crucial for ensuring their ethical and correct functioning (Aghion et al., 2022). Overall, automation enhances the accuracy and reliability of information delivery processes; these elements contribute significantly to customer satisfaction as customers feel valued and their time is respected (Andrzejak, 2023). This is also applicable to student interactions with university contact centres.

#### ***2.4.3.4 Self-Service Options***

Digital tools have revolutionised customer access to information and solutions. They provide instant access to vast amounts of information through various self-service methods like online reviews and ratings, comparison shopping, self-service customer support, interactive content, social media and online communities, mobile apps, e-learning platforms, virtual reality and augmented reality, and do-it-yourself (DIY) tools (Jarasuniene et al., 2022). These tools empower customers to make informed decisions, compare prices, find the best deals, and find solutions independently, much like self-service business intelligence (Alpar & Schulz, 2016). They also enable customers to share experiences, learn from peers, and use tools like chatbots and virtual assistants for personalised experiences. These digital tools challenge businesses to provide better services and products to meet the increasing demands of an informed and tech-savvy consumer base (Andrzejak, 2023). Self-service options through digital tools play a crucial role in assessing and improving customer satisfaction with call centre services (Jarasuniene et al., 2022). Again, this is also applicable to student interactions with university contact centres.

#### ***2.4.3.5 Real-Time Feedback***

Digital platforms have revolutionised customer feedback collection by providing accessibility, convenience, anonymity, and multichannel options through real-time feedback. Various technological methods are used, such as instant messaging and chat support, surveys and polls (S. M. Lee & Lee, 2020), social media integration, feedback forms and comment sections, user ratings and reviews (Y. Chen, 2016), live streaming and webinars, data analytics and monitoring tools, push notifications, interactive content, and the use of AI-powered chatbots that can engage with users in real-time,

collecting feedback and responding to queries without human intervention (Stepanov et al., 2021). It should be noted that these platforms allow customers to provide feedback from their homes or while on the go, allowing for more honest feedback as the service encounter is immediate (Buhalis & Sinarta, 2019). As such, these tools enable businesses to identify issues quickly, increase user engagement, enhance customer satisfaction, and gain a competitive advantage (Porter & Grippa, 2020). Real-time feedback on digital platforms also allows businesses to make necessary adjustments promptly, enhancing their offerings and user experience (Kite & Phongsavan, 2017). This research sought to understand students' perceptions of real time information in relation to contact centres and whether various digital platforms facilitated student satisfaction.

#### ***2.4.3.6 Omnichannel Digital Experience***

Digitalisation offers an omnichannel customer experience in which customers may transition smoothly between different channels while interacting with businesses (Gerea et al., 2021). By doing so, digitalisation allows organisations to gather, store, and analyse consumer data in real time (Piotrowicz & Cuthbertson, 2014), leading to a greater understanding of customer behaviour across different touchpoints (Cuesta-Valino et al., 2023). This data assists in maintaining a consistent brand image across all platforms, increasing trust and awareness among consumers (Karadag & Erdogmus, 2020). Data-driven insights provide useful information to organisations, boosting the personalisation of the customer journey (Akter et al., 2021; Melacini et al., 2018). This research unpacks what methods of communication students utilise and the most common approach used for contacting universities.

#### ***2.4.3.7 Digitalisation Challenges***

Digitalisation also comes with some challenges, such as securing customer data and staff training and knowledge (Marcon et al., 2019). As such, digitalisation has also led to the need for robust data security measures to maintain customer trust and satisfaction (Schneider, 2017). Key strategies include, but are not limited to, data encryption, access control, regular updates, employee training, compliance with regulations, incident response plans, secure development practices, security audits, privacy controls, vendor

management, data backups, and transparency and communication with customers. Staying proactive and adaptive in the face of evolving cybersecurity threats is crucial. (Ball & Margulis, 2011; Hasal et al., 2021; Kinnie et al., 2000). In the context of this research, this implies that the use of digital tools plays a crucial role in enhancing the quality of services offered by university contact centres. By training staff on the proper use of these tools and providing them with a clear understanding of their responsibilities, universities aim to ensure that students receive top-notch assistance and support when interacting with their contact centre.

By utilising personalisation, prompt responses, accuracy of information, self-service options, real-time feedback and omnichannel digital experience, businesses can gain a competitive edge and refine their offerings, ultimately enhancing customer satisfaction and overall business success. In conclusion, organisations that want to flourish in the digital era must integrate contact centres and digitalisation to improve the overall customer journey. This can improve customer satisfaction and is good for long-term financial success (Lazirkha et al., 2022). In the context of this study, for a university contact centre focused on student satisfaction, adopting an integrated and digitally-driven approach can lead to not only immediate improvements but also long-term financial sustainability. Continuous adaptation and responsiveness to the evolving needs of students are crucial elements for success in the dynamic digital era.

#### **2.4.4 Contact Centres in Australian Universities**

The implementation of shared services in Australian universities has occurred gradually over the years. Many Australian universities began exploring shared services in the late 1990s and early 2000s, but the exact timeline varies by institution (Gale & Parker, 2013). Some universities adopted a shared services models for specific functions, such as finance, human resources, or information technology, before expanding to more comprehensive shared services approaches (Gale & Parker, 2013). Traditionally, advice was provided at all levels, creating multiple service contact points in the university (e.g., the school, department, faculty, and central levels). This created inefficiencies. Now most universities have a one-stop shop for students that can address different forms of service, including student support, information technology support, and student financial services (Schulz et al., 2018).

There are two kinds of student service provision models. One is a specialised model of student support that provides specialist assistance to students. In this model, the staff have specialised knowledge in dealing with the recognised needs of the students and, in most cases, they are the first point of contact for students with unique needs (Forbes-Mewett & Nyland, 2008). An example of such a model is a university international student support team. The second type is the mainstream model (Vergani et al., 2022). This assumes that the problems of international and domestic students are homogenous and neither of these groups requires the assistance of professionals with specific skills. As such, the service is provided in the same manner to all students. Forbes-Mewett and Nyland (2008) found that senior managers within this model had little contact with, and knowledge of, the needs of students, particularly international students. These two models continue to change to reflect changes in the economic climate and market. Universities are increasingly adopting a contact centre mode of service delivery to complement their traditional business operations (Schulz et al., 2018). As noted previously, all 41 universities in Australia have contact centres of one kind or another (see Appendix A). This shift towards contact centre modes of service delivery in universities is indicative of a broader trend in the education sector. As technology continues to advance, educational institutions are recognising the importance of modernising their communication strategies to enhance efficiency and provide better services to students, faculty, and other stakeholders.

Contact centres in universities streamline communication channels, providing instant access to information and enhancing customer satisfaction (Salt, 2004). For example, Salt (2004) explained how Griffith University faced challenges in the backlog of enquiries and improved its library service by streamlining operations. This mitigated redundancy, and achieved economies of scale throughout the service value chain using a contact centre approach. The university library service offers personalised guidance and support, helping students make informed decisions about their education. Data collected from these centres can be analysed to address common issues and optimise services. During the COVID-19 pandemic, contact centres have proven invaluable in maintaining communication and connecting students with essential resources, academic support, and mental health services (Rimel et al., 2023).

## **2.4.5 Technologies Used in University Contact Centres**

Contact centres rely on cutting-edge technology to deliver services across diverse communication channels, including phone calls. Utilising specialised software for call logging, distribution, and tracking, these centres streamline their operations for enhanced efficiency and effectiveness (Dormann & Zijlstra, 2003). For online self-service knowledge-based applications, recording and dealing with emails and face-to-face enquiries, CRM tools, cloud-based Software as a Service (SaaS) apps, live chat software are used heavily (Martin, 2020). The technology used is a mixture of in-house and commercially purchased applications that aid in the delivery of the service. Griffith University, for instance, developed an in-house relationship tool call ICE (integrated client enquiry), which allows various technology tools to integrate as one application in a single place, so entering a student ID would display the student's name, email, subjects enrolled, course type and referral contacts for escalation of enquiries to specialists (Salt, 2004).

In essence, the aim of this current research was to provide a nuanced perspective on the technological facets intertwined with the service delivery model, offering a detailed exploration that goes beyond the surface to uncover the technological intricacies at play. By unravelling these layers, this research contributes valuable insights to inform future developments, optimisations, and innovations within the realm of service delivery technologies.

## **2.5 Customer Satisfaction and Student Satisfaction**

Transitioning to the core concepts of satisfaction, this section separates customer satisfaction and student satisfaction. Customer satisfaction is the fulfilment of one's wants and expectations (Gunawan, 2022; Oliver, 1980). Student satisfaction is an attitude arising from an evaluation of the educational experience of students as well as the services and facilities supplied by the institution in which they study (Holbeck & Hartman, 2021). The following subsections delve deeper into these concepts.

### **2.5.1 Understanding Customer Satisfaction**

Customer satisfaction refers to the measure of how well a product or service meets or exceeds the expectations of customers (Oliver, 1980). When customers are satisfied,

they are content with their overall experience, including the quality of the product or service, customer service, and the overall value they receive (Hill et al., 2007; Nurcahyo, 2016). Customer satisfaction is a pivotal factor for business success, influencing customer loyalty, repeat business, and positive word-of-mouth marketing (Schertzer & Schertzer, 2004). Satisfied customers are more likely to become loyal patrons, engaging in repeat purchases and recommending the business to others, thereby enhancing the company's reputation and customer base (Ginting et al., 2023). Moreover, customer satisfaction contributes to long-term relationships with a business, ensuring a stable revenue stream (Barsky & Labagh, 1992). Retaining existing customers is financially prudent, as it is more cost-effective than acquiring new ones (Rust & Zahorik, 1993). Satisfied customers are forgiving of occasional mistakes, if handled promptly and with care, fostering a positive feedback loop (Curasi & Kennedy, 2002). Consistently exceeding customer expectations allows businesses to build strong relationships and establish a positive brand image, ensuring sustainability and market growth (Barsky & Labagh, 1992).

In a shared service, customer satisfaction is a crucial metric that reflects the quality of a company's offerings and customer service (Hult et al., 2022). Achieving customer satisfaction involves understanding customer preferences, addressing their concerns, and delivering exceptional service (Barsky & Labagh, 1992). This can be achieved through various means, including high-quality products, efficient and friendly customer support, personalised services, and convenient purchasing. Businesses measure satisfaction through surveys and online reviews to identify areas for improvement. As already stated, satisfied customers are more likely to return and recommend businesses, leading to long-term success and profitability (Ginting et al., 2023).

Customer satisfaction can be understood through the application of two main theories: the disconfirmation paradigm and the expectancy-value concept. The disconfirmation theory paradigm focuses specifically on the dissonance between expectations and perceptions (Oliver, 1977); the expectancy-value concept underscores the significance of both expectations and perceived value in influencing satisfaction (Fishbein & Ajzen, 1975). The disconfirmation paradigm is delineated as a model that elucidates satisfaction through the disjunction between customers' preconceived expectations and

their perceptions of actual performance or outcomes. This encompasses integral constituents, including the formation of expectations, the comparative analysis of perceptions vis-à-vis expectations (Oliver, 1977), and the resultant degree of satisfaction or dissatisfaction contingent upon the magnitude of disconfirmation (Ameer, 2013). Positive disconfirmation ensues when perceived performance surpasses expectations, leading to contentment, whereas negative disconfirmation arises from a perceived performance shortfall, engendering dissatisfaction (Oliver, 1977).

Conversely, the expectancy-value theory posits that customers assess products or services based on their expectations and the perceived value derived from them (Fishbein & Ajzen, 1975). This theory incorporates expectancy, wherein customers harbour specific anticipations regarding quality, features, performance, and value, signifying the perceived benefits emanating from both functional attributes and emotional facets. According to the expectancy-value concept, customer satisfaction is contingent upon the congruence between expectations, perceived value, and actual performance. Favourable expectancy-value alignments yield satisfaction when perceived value either meets or exceeds expectations, while unfavourable alignments precipitate dissatisfaction when perceived value falls short (Schwarz, 1997).

Various methods are used to measure customer satisfaction (McColl-Kennedy & Schneider, 2000). Traditional surveys and questionnaires, such as Net Promoter Score (NPS) questions, provide structured feedback from customers, while customer interviews offer in-depth qualitative insights into customer opinions, preferences, and pain points (Durbin, 2006). Online reviews and ratings like Yelp, Google Reviews, and industry-specific forums provide a public perception of the business, highlighting areas for improvement (Kondo, 2001). Social media monitoring helps gauge customer sentiment in real-time (Sadman et al., 2020). Customer feedback forms allow businesses to quickly gather feedback on specific interactions (Durbin, 2006). For contact centres, a customer effort score (CES) measures the ease with which customers can resolve issues or find products, indicating higher satisfaction when processes are effortless (Dixon et al., 2010). There are also first-call resolution (FCR) gauges to determine if a customer's problem is resolved in their initial contact with a contact centre without requiring further calls. High FCR rates signify contented customers

(Abdullateef et al., 2011). Average handling time (AHT) measures the average duration of customer interactions, encompassing hold time, talk time, and after-call work. Although not a direct satisfaction indicator, prolonged AHT can result in customer dissatisfaction (S. M. Lee & Lee, 2020).

In the realm of education, particularly within tertiary education, the concept of student satisfaction shares an intrinsic link with customer satisfaction where this connection is vital for understanding the dynamics of educational services and fostering an environment conducive to positive learning (McCollough & Gremler, 1999). As such, a university's level of student satisfaction is the equivalent measure of organisational success. In the tertiary sector, it is understood that student satisfaction is very complex as it contains several dimensions that can continually evolve through the experiences of the student life cycle (Marzo-Navarro, 2005). Current findings reveal that satisfied students may draw in other students through word-of-mouth referrals, helping to educate colleagues and friends about their experience or returning to do another course (Schertzer & Schertzer, 2004). This can also have a positive impact on student motivation (Elliott & Shin, 2002).

### **2.5.2 Understanding Student Satisfaction**

Student satisfaction is the subjective assessment of students' contentment with their educational experiences, encompassing factors such as teaching quality, facilities, support services, administrative processes, social and cultural environment, communication, value for money, safety, and well-being within an academic institution. (Holbeck & Hartman 2018; James, 2021; Winstone et al., 2022). Research indicates that student satisfaction can be influenced by various factors including the quality of teaching, available resources, campus facilities, support services, access to resources, modern infrastructure, diversity and inclusion, positive peer relationships, robust career services, financial considerations, opportunities for extracurricular activities, and overall learning experience (Alqahtani et al., 2022; Douglas & Barnes, 2006; Kosravi et al., 2013; Winstone et al., 2022).

Universities often conduct surveys and gather feedback from students to assess their satisfaction levels, as this feedback is valuable for identifying areas for improvement and enhancing the overall quality of education and student life (Grebennikov & Shah,

2013). Measuring student satisfaction is crucial for universities, as high levels of satisfaction typically indicate a positive learning environment where students feel engaged, supported, and motivated to succeed. Satisfied students are more likely to be actively involved in their studies, have a sense of belonging within the academic community (Faize & Nawaz, 2020; Holbeck & Hartman, 2018; Latip et al., 2019; Nortvig et al., 2018; Yousaf et al., 2022), and may contribute positively to the institution's reputation through word-of-mouth recommendations (Billingsley, 1993; Kerby, 2015; Palacios et al., 2021; Rotar, 2020).

Student satisfaction, as derived from business and marketing concepts, extends beyond the traditional customer satisfaction framework to address the unique dynamics of the educational environment. This concept is rooted in the idea that students, akin to customers, undergo a journey that goes beyond the point of admission or enrolment, covering various stages from initial interest to their post-education engagement (Alves & Raposo, 2007; Guolla, 1999), as follows:

- **Pre-enrolment phase:** individuals undergo a process of interest and decision-making as they contemplate becoming students. This phase is marked by an institution's strategic marketing and promotional initiatives aimed at capturing the attention of potential students (S. C. Chen, 2022). These efforts focus on highlighting various aspects, including academic reputation, state-of-the-art facilities, faculty expertise, and enticing extracurricular opportunities. A key feature of the pre-enrolment phase is the abundance and accessibility of information. Prospective students actively seek comprehensive details regarding courses, admission procedures, financial aid options, and the overall campus life experience. In this stage, information plays a crucial role in shaping the decisions of aspiring students, guiding them towards making well-informed choices about their educational journey. Consequently, the role of contact centres becomes crucial in this journey (Rehman et al., 2020).
- **Enrolment phase:** students undergo the formal admission process, solidifying their commitment to pursue education at a specific institution (S. C. Chen, 2022). This process involves various steps, including submitting necessary documents and meeting admission requirements. Additionally, institutions play

a pivotal role in this phase by actively engaging in expectation setting. They provide students with a comprehensive understanding of what to anticipate in terms of the academic experience, available support services, and overall campus life (Menon & Perali, 2015). This proactive approach ensures that students are well-informed and have realistic expectations as they embark on their educational journey at the chosen institution. The foundation of student satisfaction is rooted in two key components: teaching and learning, and support services (Aldemir & Gülcan, 2004). The quality of teaching, the relevance of the curriculum, and the overall learning environment play pivotal roles in shaping the academic journey and, consequently, influencing student satisfaction. Equally significant are the non-academic facets encompassed within support services, which include counselling, career services, and extracurricular opportunities. These factors contribute synergistically to the holistic satisfaction of students, enhancing their educational experience beyond the confines of traditional classroom settings (Menon & Perali, 2015).

- **Post-graduation phase:** the primary focus is on alumni engagement and advocacy. A crucial aspect of this period is career placement, where the ultimate objective for students is to enter the workforce successfully (S. C. Chen, 2022). Satisfaction in this phase is closely tied to the effectiveness of career services and the accomplishments of graduates in securing relevant employment opportunities. Concurrently, institutions place great emphasis on fostering strong alumni relations. The goal is to sustain positive connections with former students, transforming them into advocates who actively promote the institution to prospective students. These engaged alumni not only contribute to the university's reputation but also play a vital role in attracting new students and fostering a sense of community within the institution (Iriundo, 2022).

A recognition of the various aspects of the student journey and their impact on satisfaction have led to the necessity of adopting a customer-centric approach (Petruzzellis et al., 2006). The concept of a customer-centric approach derives from marketing. This focuses on the method of doing business with customers, creating a positive experience before and after the service encounter by maximising service or product offerings and building relationships (Trotter & Carole, 2006).

Student satisfaction is influenced by expectancy, instrumentality, and valence. Expectancy refers to a student's belief that their efforts will lead to desired outcomes, such as good grades or personal growth (Gyepi-Garbrah et al., 2023). Instrumentality refers to the belief that a certain level of performance will lead to specific outcomes (Cheng et al., 2016). Valence represents the value a person places on the expected outcome (Cheng et al., 2016). Understanding individual differences in value can help universities tailor their offerings and support services to different student preferences, enhancing overall satisfaction (Hancock, 2018). In the context of contact centres in universities, expectancy and instrumentality are crucial. Employees need to perceive a clear link between their actions and positive outcomes, such as student satisfaction and retention. Valence is the satisfaction and fulfilment employees derive from helping students succeed (Caulfield, 2007). To enhance student satisfaction and performance, universities should communicate expectations clearly, provide adequate support and resources, recognise and reward performance, and tailor strategies to cater to diverse needs and preferences (Abd Aziz et al., 2023).

Defining student satisfaction is challenging due to the diverse nature of the educational experience (Dabija et al., 2016). Researchers argue that factors like varied backgrounds, cultural differences, and individual preferences contribute to this complexity (Gyepi-Garbrah et al., 2023). Evolving expectations influenced by societal changes further complicate the task. Cultural variations and temporal changes in norms add layers of complexity, making a fixed definition elusive (Dean & Gibbs, 2015). Adding to the complexity is the inherently subjective nature of satisfaction, shaped by individual perceptions, attitudes, and personal values. This subjectivity makes it challenging to establish standardised measures that can capture the diverse spectrum of student involvement effectively. Education itself is a multi-dimensional endeavour, encompassing academic, social, extracurricular, and administrative facets in which students may prioritise different aspects such as instructional quality, campus facilities, social interactions, or administrative support. This necessitates a comprehensive approach that accommodates a wide range of factors (Holbeck & Hartman 2018; James, 2021; Winstone et al., 2022). The temporal changes in societal norms such as digital technology and educational methodologies continuously reshape the criteria for student satisfaction, making a fixed and enduring definition elusive (Latip et al., 2019).

In summary, various researchers, including Anderson et al. (1994), Elliott and Shin (2010), and Oliver (1980), contributed diverse perspectives on customer satisfaction that were later adapted to student satisfaction (Alves & Raposo, 2007; Guolla, 1999; McCollough & Gremler, 1999). These perspectives emphasise the multifaceted nature of satisfaction, rooted in overall experiences, cognitive and affective evaluations, and transaction-specific judgements. In addition, teaching quality, resources, campus facilities, support services, diversity, positive peer relationships, and career services, can also impact student satisfaction (Alqahtani et al., 2022; Douglas & Barnes, 2006; Kosravi et al., 2013; Winstone et al., 2022). Given its complexity, there is inconsistency in defining student satisfaction.

### **2.5.3 Student Satisfaction: Demographic Groups**

Analysing student satisfaction serves as a pivotal metric for assessing the effectiveness of university services, particularly focusing on contact centres that play a central role in managing student enquiries and addressing concerns (Tsiligiris et al., 2022).

This current study investigates satisfaction levels among distinct demographic groups consisting of domestic versus international students, undergraduate versus postgraduate students, and male versus female students, within the context of university contact centres. Various empirical studies have explored the contentment levels of both domestic and international students regarding diverse university services (Ammigan & Jones, 2018; Asare-Nuamah, 2017; Korobova & Starobin, 2015; Suh et al., 2022). Amos and Rehorst (2018), Smith et al. (2020), and Frawley et al. (2019) identified specific challenges faced by international students, particularly in relation to language barriers and cultural disparities, which can significantly impact their satisfaction with support services. Tsiligiris et al. (2022) suggested that cultural factors play a pivotal role in shaping the satisfaction levels of international students regarding university services. In contrast, domestic students may hold distinct expectations (Asare-Nuamah, 2017; Tan & Greenwood, 2021).

The existing literature has explored extensively the differences in academic requirements, expectations, and student satisfaction levels that characterise the academic trajectories of undergraduate and postgraduate students (Arambewela & Hall, 2011; Douglas et al., 2008; Mannal, 2018; Tsiligiris et al., 2022; Wong & Chapman,

2023). Arambewela and Hall's (2011) seminal work emphasised the need for heightened and more specialised support for postgraduate students (Heussi, 2012) due to the advanced nature of their academic pursuits. Moreover, recent research by Tsiligiris et al. (2022) suggested that the determinants of satisfaction for postgraduate students may differ significantly from those prevalent among their undergraduate counterparts.

Scholarly investigations into gender-based differences in levels of satisfaction with university services are abundant, with notable contributions from Malkawi (2021), Osmani (2021), Park and Kim (2020), Sashittal et al. (2011), and Yawson and Yamoah (2020). Yawson and Yamoah's (2020) study revealed that female students tend to prioritise interpersonal communication and support, influencing their satisfaction with academic services. Conversely, male students may place greater emphasis on factors such as efficiency and accessibility. Research by Park and Kim (2020) further emphasised the significance of gender in shaping expectations and perceptions of university support services. They highlighted how gender dynamics contribute to variations in students' perspectives on the effectiveness and adequacy of available support services. Collectively, these findings underscore the nuanced nature of gender-based differences in the evaluation of university services (Malik et al., 2018), emphasising the need for a comprehensive understanding of these distinctions to enhance the delivery and tailoring of support services to diverse student populations (Park & Kim, 2020; Yawson & Yamoah, 2020).

Universities should adopt a holistic approach to cater to the diverse needs of their student cohorts effectively. Further research is needed to explore these dimensions in order to inform targeted strategies that will enhance overall satisfaction and promote a positive university experience for all students, especially in regard to the university contact centre. This is the focus of the current study.

## **2.6 Contact Centre Service Quality**

Contact centre service quality refers to the level of customer service provided by a contact centre. This is measured by how well contact centre staff interact with customers, address their enquiries, resolve issues, and meet their needs (Durbin, 2006).

To improve contact centre service quality, businesses often invest in training programs, quality monitoring systems, customer feedback mechanisms, and technology upgrades (Berry et al., 1994).

As already indicated, contact centre service quality is crucial for customer satisfaction, brand image, retention, loyalty, increased revenue, cost efficiency, feedback, competitive advantage, and overall staff morale (Connell & Burgess, 2006). Satisfied customers are more likely to remain loyal, make repeat purchases, and recommend the company (Jones & Sasser, 1995). A positive experience enhances the business' reputation, while poor service can damage that reputation (C. Y. Li, 2015). Furthermore, efficient and effective customer service processes can streamline operations, reducing the time and resources needed to resolve customer issues. This can lead to cost savings in the long run (Connell & Burgess, 2006). Contact centres serve as a valuable source of customer feedback. By monitoring customer interactions, companies can gain insights into customer preferences, pain points, and areas needing improvement, allowing them to make informed business decisions (Barlow et al., 2018; Ginting et al., 2023). In certain industries, like banking, finance, hospitality, and utilities, there are legal requirements and regulations governing customer interactions (Brown, 2018). Ensuring high-quality service helps these industries comply with these regulations, avoiding legal issues and potential fines (Alaassar et al., 2020). Lastly, exceptional customer service can set a company apart from its competitors. In today's competitive market, where products and prices are often similar, the quality of customer service can be a key differentiator (Pramedyas et al., 2021).

The concept of service quality, which emerged during 1980s and 1990s, is by far the most used construct related to customer satisfaction (El-Bassiouni et al., 2012). One crucial way to understand the quality of a service is through the SERVQUAL model (Parasuraman et al., 1991), which helps determine the gap between consumer expectation and service performance. This, by far, is the most common way to measure service quality. The SERVQUAL model initially consisted of 10 dimensions. These were later reduced to five overarching dimensions, as follows:

- **Tangibility:** refers to the actual appearance of the service place and the equipment used in service encounters (Parasuraman et al., 1991; Schneider &

White, 2003). It is imperative for these visual elements to be aesthetically pleasing in order to captivate consumers. This encompasses the physical presentation of the service staff, who are expected to maintain a neat and well-dressed appearance. Additionally, the use of brochures and other collateral material plays a crucial role in displaying the branding of the business.

- **Reliability:** refers to a business' commitment to delivering services as promised, consistently, and accurately (Parasuraman et al., 1991). Exceptional organisations prioritise executing services with precision on the first attempt, striving to minimise errors. In the event of issues or problems, the business must exhibit a genuine enthusiasm for resolving them promptly.
- **Responsiveness:** refers to the willingness of service staff to assist consumers and provide prompt and efficient service (Parasuraman et al., 1991). It entails educating consumers on the progress and completion of services during the interaction. Representatives of outstanding organisations exhibit a continuous eagerness to assist consumers, never appearing too busy to address their needs.
- **Assurance:** refers to consumers feeling secure in their service transactions (Parasuraman et al., 1991). Employees must instill trust, confidence, and courtesy in consumers, addressing their questions with comprehensive knowledge and information (Schneider & White, 2003). This creates an atmosphere of reliability and credibility in the service provided.
- **Empathy:** refers to serving consumers with individualised attention, ensuring their needs are not only understood but also addressed effectively (Parasuraman et al., 1991; Pakurár et al., 2019). Exceptional organisations prioritise creating an environment in which consumers feel that their concerns are acknowledged and handled to the best of the organisation's ability. Additionally, operating hours should be convenient to accommodate the majority of consumers associated with a given organisation (Parasuraman et al., 1991; Schneider & White, 2003).

SERVQUAL has been criticised by some researchers, such as Johnston (1995), who have claimed that the five dimensions are not robust. Likewise, same five dimensions are not applicable for the information technology service industry (van Dun et al., 2011). In addition, the criticism of SERVQUAL revolves around the dynamics between

the customer and the employee within the online service environment. The behaviour of the employee is regulated by the organisation's values, norms and expectations. In comparison to the customer, the role of the employee is more explicit and defined by the organisation (Goffman, 2003). The interaction between the customer and employee can either detract or enhance customer satisfaction due to the virtual nature of e-service interactions, factors such as responsiveness, clarity, and empathy may not be effectively conveyed, potentially leading to lower levels of customer satisfaction (Grove & Fisk, 1997).

SERVQUAL is also process-oriented and it focuses very much on the process of service delivery and not the outcome of the service encounter. Its dimensions also overlap with each other (e.g., responsiveness and empathy are closely linked). Consequently, it is normally regarded as an expectation model. Moreover, it is believed that the SERVQUAL model cannot be applied to different service settings (Nusair, 2008). Service quality is heavily focused on the provider of the service rather than the value derived by the customers. Research now states that customer satisfaction is produced through a more drawn-out procedure through interaction with consumers over numerous channels generated through emotional and practical signs such as tone of communication to a user-friendly interface for an e-commerce website or a reliable delivery service (Klaus & Stan, 2013).

E-SERVQUAL refers to an electronic or online adaptation of SERVQUAL (Zavareh et al., 2012), but the fundamental dimensions of service quality remain relevant in the context of contact centre services, whether they are delivered through traditional means or electronically (van Dun et al., 2011; Zeithaml et al., 2002). As such, in the context of contact centres, service quality can be measured by the following elements:

- **Accessibility:** this refers to easy access to the centre contact details and hours of operation (van Dun et al., 2011). Accessibility includes providing a list of the organisation's street address, email address, phone and fax numbers, and details of the availability of contact centre staff through chat rooms and other communication channels (Santos, 2003). This is an important attribute of good quality service as accessibility can affect customer satisfaction (Parasuraman et al., 1991).

- **Waiting:** this refers to the time customers must wait for a response when they contact a centre (van Dun et al., 2011). The waiting environment influences the overall evaluation of the service and affects customer satisfaction (Bielen & Demoulin 2007). Previous research indicates that if information is provided to customers in the case of delays, then this has a positive influence on customer satisfaction as they are at least aware of the nature of the delay (Parasuraman et al., 1991). Studies suggest that any improvement in service delivery related to waiting time should focus on information and communication rather than physical facilities (van Dun et al., 2011).
- **Voice response unit (VRU):** is a technology that enables computer systems to interact with callers through voice commands or touch-tone keypad entries. VRU is used in automated customer service hotlines, telephone banking systems, and interactive voice response (IVR) systems. VRU streamlines handling incoming calls, providing a more efficient and convenient experience for callers (van Dun et al., 2011)
- **Knowing the customer:** this consists of aspects such as asking whether the answer was clear or whether the customer has any other questions, as well as understanding the needs of customers. This is also known as the customer relationship (van Dun et al., 2011). This aspect involves the methods and techniques businesses use to engage with their customers and improve their overall experiences (Chen. I. J & Popovich, 2003). In the context of contact centres, this consists of reactive and proactive functions performed by the contact centre staff. Reactive functions are enquiry principles that arise because a customer initiates the issue or reports something to the contact centre. This might include responding to complaints raised by customers. Issues raised can be unexpected in nature and being able to solve issues builds strong customer relationships (Mahdavipour & Rezaei, 2018). Proactive functions can be measures taken to ensure a long-term relationship with customers with efforts aimed at nurturing customer satisfaction. This might involve predicting future issues before they arise to make service delivery more efficient (Delana et al., 2021).

- **Empathy:** this refers to aspects such as friendliness, listening, and understanding. This makes customers feel special and given personal attention (van Dun et al., 2011). The concept of empathy was included in the original SERVQUAL model developed by Parasuraman et al. (1988). Empathy, in essence, is about caring and paying individualised attention to customers. Customers like to feel that they are more than just a business transaction and when a business shows empathy, it implies that they care about their customers. This can help them exceed customer expectations and enable a positive level of customer satisfaction (Wieseke et al., 2012).
- **Reliability:** this comprises concepts such as answering the question and being able to trust the employee's knowledge. This represents the core goal of customer contact centres (van Dun et al., 2011). The concept of reliability was also included in the original SERVQUAL model developed by Parasuraman et al. (1988). This dimension reflects the ability to perform with accuracy in accordance with the promised service. This is deemed essential in order to satisfy customers who want to rely on businesses to deliver what they say they will deliver (Kumar & Hundal, 2019).
- **Customer focus:** this consists of aspects such as giving proactive advice or providing information to enhance customer satisfaction (van Dun et al., 2011). This refers to placing the customer's needs first, with the customer experience pivoted in all matters in the business, at every step of the customer's journey (Ivana et al., 2019). It has been revealed that there is a significant and positive relationship between customer focus and customer satisfaction (Ooi et al., 2011) as it is vital to make the customer feel satisfied with the services offered by business.

An analysis of service quality requires a thorough investigation of the multifaceted points of interaction with customers. During a physical face-to-face service encounter, tangible elements such as the physical appearance of employees and the ambience and aesthetics of the business can affect the perceived quality of service delivery (Bitner, 1992). While tangible factors are not applicable in contact centres in which service encounters occur virtually (e.g., through online enquiries, chats or by phone), verbal

and written cues assume a high importance (Dias et al., 2017). Consequently, the interpersonal skills of contact centre employees directly affect the quality of service. Furthermore, depending on the complexity of service provided, the coordination processes and structures are also critical. Customers may also seek empathy and assurance, intangible aspects that are frequently ignored by contact centres and/or they lack proper systems for measuring and monitoring such aspects of customer service (Dharamdass & Yudi, 2018). As already stated, there is a strong correlation between the perceived quality of services provided by businesses and the satisfaction levels of its customers (van Dun et al., 2011). Universities that prioritise and excel in various aspects of service quality are more likely to create a positive and satisfying environment for their students (Demirel, 2022).

The relationship between service quality and student satisfaction with the university contact centre is paramount in shaping the overall satisfaction of students. The contact centre serves as a primary interface between students and the university by playing a crucial role in addressing enquiries, providing information, and offering support (Samuel et al., 2023). The quality of service delivered by the contact centre directly influences students' perceptions of the university (Kavoura et al., 2017). When students experience prompt, accurate, and courteous assistance, their satisfaction levels tend to rise. Conversely, poor service quality, such as delays, misinformation, or inadequate communication, can lead to frustration and dissatisfaction (van Dun et al., 2011). A well-functioning contact centre not only resolves issues efficiently but also contributes to a positive campus environment (Dharamdass & Yudi, 2018). Thus, investing in continuous improvement of service quality in the university contact centre is instrumental in enhancing overall student satisfaction and contributing to a positive educational journey. In summary, service quality is the level of excellence in a business' services, influenced by factors like responsiveness, reliability, empathy, and assurance, which often leads to increased customer satisfaction (El-Bassiouni et al., 2012). Businesses must continually assess and improve service quality to meet evolving customer demands and stay competitive. Efficient services ensure timely delivery, reliability builds trust, and personalisation creates a memorable experience. Focusing on these aspects fosters long-term relationships and positive word-of-mouth

(Pramedyas et al., 2021). As such, high service quality leads to increased customer satisfaction, with customers who receive quality service more likely to be satisfied with their overall experience (van Dun et al., 2011).

## **2.7 Contact Centre Online Servicescapes**

The online servicescape refers to the digital environment or virtual space in which service interactions between service providers and customers take place (Williams & Dargel, 2004). It encompasses all the elements of the physical servicescape (the physical environment in which services are delivered), but in an online context. In traditional brick-and-mortar businesses, the servicescape includes elements such as the layout, design, cleanliness, and ambience of the physical space, which can influence customers' perceptions and experiences (Heijden, 2003). The servicescape in the online world is a complex web of digital elements that shape the customer experience (Ananda et al., 2023). It includes website design, the user interface, visual elements, content, interaction, security, social presence, and customisation (Rafaeli & Pratt, 2013). Website design influences user perceptions of a brand and its services, while the user interface and user experience impact interaction (Eroglu et al., 2003). Visual elements, such as images and graphics, are crucial for the user experience. Content quality and relevance are essential for engagement (Srivastava et al., 2023). Trust signals, social presence, and personalised recommendations contribute to the overall servicescape (Harris & Goode, 2010). Bolton et al. (2018) also conceptualised the digital servicescape as including all interactions and touchpoints that occur between a customer and a company in the digital space. They argued that the digital customer experience is integral to overall customer satisfaction, reflecting how effectively a business engages, serves, and satisfies its customers in the online environment.

Online servicescapes are crucial for several reasons. They set the first impression customers have of a business, influencing their perception of the brand (Eroglu et al., 2003). A well-designed and user-friendly interface can enhance the brand's identity. Also, a well-organised servicescape ensures a positive user experience, boosting conversion rates (Rahi et al., 2020). A professional-looking website or app instills trust and credibility, encouraging transactions and a competitive advantage in the digital age can attract and retain customers (Ladhari & Michaud, 2015). Online servicescapes

allow businesses to collect data and personalise the user experience, enhancing customer engagement (Tam & Ho, 2006). They provide access to a global audience 24/7, allowing businesses to gather feedback and improve the overall customer experience (Rababah & Masoud, 2010). In addition, online servicescapes are often more cost-effective than physical storefronts, making them ideal for small businesses and startups. They can integrate with other services, providing a seamless experience for customers (Moliner & Tortosa-Edo, 2023).

The technology acceptance model (TAM), along with the theory of reasoned action (TRA) and theory of planned behaviour (TPB), play a crucial role in guiding the digitalisation of contact centres for the purpose of enhancing customer satisfaction. The TAM emphasises the significance of perceived ease of use (PEOU) and the usefulness of digital tools (Marangunic & Granić, 2014), suggesting that user-friendly interfaces, clear instructions, and support mechanisms contribute to successful adoption (Moliner & Tortosa-Edo, 2023). The TRA and TPB focus on understanding human behaviour, helping identify factors influencing both agent performance and customer interactions in contact centres (Yzer, 2017). By considering attitudes, beliefs, and intentions, organisations can design interventions and strategies that align with positive outcomes, leading to improved customer satisfaction and loyalty in the digitalised contact centre environment (Tucker et al., 2020).

Bitner (1992) argued that physical environments influence human actions and reactions. In an online service environment, customers benefit from a unique service encounter as they can access the service from any location regardless of where they reside (Williams & Dargel, 2004). Methods to measure the digital experience are based on the initial servicescape model developed by Bitner (1992). This was later modified to incorporate the e-servicescape (Heijden, 2003). For the purpose of this research, in terms of measuring digital experiences, the dimensions of the e-servicescape were adopted, measured using three main criteria (aesthetic appeal, layout and functionality, and financial security).

Aesthetic appeal alludes to how attractive and alluring customers find online services such as websites and how this attraction might influence their purchase decisions (Wang et al., 2010). Aesthetic appeal tends to affect the pleasure customers feel during their

online service encounter (Rafaeli & Pratt, 2013). Aesthetic appeal can be gauged using three sub-elements, which are:

- **Visual appeal:** this refers to how the online service looks and whether it is appealing enough for the customer to explore the product further (Lindgard et al., 2011). This aspect is derived from the physical servicescape under the aesthetic appeal dimension, as developed by Bitner (1992) and later modified to incorporate online features (Heijden, 2003). Research indicates that there is a significant and positive relationship between customer satisfaction and visual appeal, based on the theory of visual rhetoric and the notion that visual appeal facilitates better processing of information (Djamasbi et al., 2010). By paying attention to aesthetics and design, businesses can enhance customer satisfaction and differentiate themselves in the competitive market (Harris & Goode, 2010). Visual appeal also improves customer trust in the service (Harris & Goode, 2010).
- **Originality of design:** this refers to the construction and design of the online service. This adds value to the service's visual appeal through colour, typography, as well as suitable and appropriate background designs (Fink & Laupse, 2000).
- **Entertainment value:** this refers to feelings of amusement, excitement, fun and joy related to the visual appeal of the online service (Eroglu et al., 2003).

The layout relates to the arrangement, organisation, construction and flexibility of online services such as websites. Functionality relates to the administrative aspect of an online service and how this suits its desired purpose (Koo & Ju, 2009). The layout and functionality of online services are deemed crucial as they can affect the customer's online experience in terms of use and purchase behaviour (Eroglu et al., 2003). The sub-categories of layout and functionality are:

- **Usability:** this refers to how easily and effectively a customer can use the online platform, particularly if they are a first-time purchaser or user (Y. M. Li & Yeh, 2010). The concept of usability also emanated from Bitner's (1992) physical servicescape, later modified to incorporate online servicescapes (Heijden, 2003). It considers how easy user interfaces are to navigate, their level of

simplicity and how easy their structures are to understand. The ease of use enhances trust in the user interface, which can enhance customer satisfaction (Flavian et al., 2006).

- **Relevance of information:** this refers to the materials available on the online platform, how relevant they are to customer needs, and the level of detail provided about the services offered (Harris & Goode, 2010). This aspect is also derived from Bitner's (1992) physical servicescape and has been adopted to suit online servicescapes (Heijden, 2003). This aspect also focuses on how interactive the online user interface can be during a search process (Kuhn & Petzer, 2019).
- **Customisation/personalisation:** this refers to customer perceptions of the capacity of the online service to match their needs, tastes and/or preferences (Grewal et al., 2004). This concept stems from CRM, which is incorporated in online servicescapes when there is an absence of human interaction (Heijden, 2003). Customisation and personalisation are both equivalent to empathy in interpersonal services (Liljander et al., 2002). Making your customers feel important can be an expensive undertaking, especially when dealing with a large customer base (e.g., in a contact centre) (De Torcy, 2002). However, the right online user interface systems and appropriate processes for mass customisation and personalisation represent cost-effective options (Aheleroff et al., 2019).
- **Interactivity:** this refers to the capability of customers to connect with the business through various communication channels, such as customers' requests, comparison of service or product features, and pricing (Bauer et al., 2002). For this study this construct was removed as it overlapped with the other concepts revolving around online servicescape.

Lastly, financial security is crucial for an online service environment. This refers to customers' perceptions of safety in terms of payment procedures, privacy and data collection (Harris and Goode, 2010). The sub-categories of financial security are:

- **Ease of payment:** this measure how efficient and easy the payment process is to use. This aspect is also derived from Bitner's (1992) physical servicescape and has been adopted to suit online servicescapes (Heijden, 2003). Research indicates that e-payment user interfaces are perceived to be more useful in terms

of user friendliness, and ease of understanding the structure and content. This means these systems are easy to learn and require only minimal effort. The ease of payment has a significant influence on customers' perceptions of e-payment interfaces, which can influence their levels of satisfaction (Teoh et al., 2013).

- **Perceived security:** this aims to capture the perception of customers about security concerns for online services (Casalo et al., 2007). Customers are cautious about giving out sensitive or delicate information over online interfaces. Perceived security means customers want to be assured that their financial information will not be shown, saved or stolen during e-commerce service transactions (Aggarwal & Manmohan, 2018). Hence safety and security are vital. Failing to put adequate security measures in place or assure customers of confidentiality can have a negative impact on customer satisfaction (Ozguven, 2011).

Service quality and online servicescapes are strong drivers in customer decision-making. This was evident in a study on the use of online applications-based transport services such as Gojek, Uber and Grab bike (Hanafi & Widowati, 2021). In this research, it was determined that the online servicescape had a significant positive influence on customer satisfaction. The existence of online servicescapes has also led to taxi operators improving their strategies in order to survive in the taxi market. Hanafi and Widowati (2021) also found that the use of creative interactive designs in the online applications supported market segmentation strategies and the online appearance affected consumer behaviour and responsiveness to service delivery.

In the context of this research, the relationship between the online servicescape and student satisfaction is a critical aspect of contemporary university environments. A well-designed and user-friendly online servicescape can significantly impact student satisfaction (Rahi et al., 2020). Factors such as intuitive navigation, accessibility, responsiveness, and aesthetically pleasing design can create a positive online environment (Moliner & Tortosa-Edo, 2023), making students feel comfortable and supported during their interactions. This, in turn, can enhance student satisfaction. A seamless and efficient online servicescape fosters a conducive atmosphere for learning, facilitating effective communication between students and instructors, easy access to

course materials, and streamlined interactions (Sartono et al., 2022; Ylmaz & Temizkan, 2022). Likewise, factors such as ergonomic design, efficient queuing systems, and aesthetically pleasing surroundings can contribute to a positive servicescape (Aheleroff et al., 2019). By contrast, a poorly designed or chaotic environment may lead to frustration and dissatisfaction among students (Nuseir & Madanat, 2015). The intrinsic connection between the contact centre servicescape and student satisfaction has been well recognised, significantly impacting overall student satisfaction (Harris & Goode, 2010).

In summary, the online servicescape plays a vital role in relation to student satisfaction (Williams & Dargel, 2004). An appealing and user-friendly website interface with easy navigation and visually pleasing design can enhance the overall customer experience, positively influencing satisfaction (Demirel, 2022; Harris & Goode, 2010).

## **2.8 Contact Centre Customer Support**

Customer support covers the spectrum of services offered by businesses to help their customers make the most cost-effective choices and use a product correctly. It encompasses help with the purchase, installation, training, troubleshooting, maintenance, upgrading, and disposal of a product or service (Goffin, 1999). In a contact centre, customer support can be provided through various methods, including phone support, email support (Rose & Wright, 2005), live chat on websites, self-service support, social media support, and in-person support. Phone support is available through a dedicated hotline, email support is available through email channels, live chat on websites allows real-time interaction with contact centre staff (Elmorshidy, 2013), self-service support involves FAQs, knowledge bases, forums, and other resources, social media support addresses customer queries on social media platforms like Twitter, and in-person support (Negash et al., 2003) is available in some sectors, particularly in technology (e.g., IT helpdesk support or even just troubleshooting issues) (Taylor et al., 2002).

Contact centre customer support plays an integral role in ensuring and maintaining customer satisfaction, as it is a key aspect of CRM and important for customer retention and maintaining a good brand reputation (Elmorshidy, 2013). Customer support is vital

for digital platforms as it assists in problem resolution (e.g., when customers encounter issues, bugs, or have questions while using digital platforms). Having customer support provides a channel for users to get assistance and resolve their problems, ensuring a positive user experience (Indrasari et al., 2022). The feedback from customer support channels can help the contact centre adapt and innovate, ensuring its relevance and competitiveness (Wattoo & Iqbal, 2022). In the competitive digital landscape, excellent customer support can be a differentiator (Kumar et al., 2022). Users are more likely to choose a platform that offers reliable support over one that does not (Al-Khateeb et al., 2023). Furthermore, prompt and effective customer support builds trust among users, and from the perspective of customers, knowing that there is reliable assistance available can enhance the credibility of the digital platform (Rose & Wright, 2005). It also helps reduce churns, when digital platforms face issues related to customer support and stop using the service (Ribeiro et al., 2023). Effective customer support can address the concerns of users, potentially preventing them from leaving the platform (McDonald et al., 2023).

Research has shown that in the offline environment, encounters with other customers and with service staff have an influence on the customer's satisfaction during and after the service encounter (Tombs & McColl-Kennedy, 2003). These interactions can give rise to individual emotional displays, which in turn can influence the customer's behaviour (Truel & Connelly, 2013). As such, there is a need for online customer support during information searches as research suggests that customers are time conscious during a utilitarian search and the perceived length of time spent on the website can influence their experience. Additionally, the length of time spent on the website influences the need to seek online customer support. Customer support might consist of the following elements:

- **Social interaction:** this refers to getting assistance in searching and using information, especially for self-service information (Negash et al., 2003). McLean and Wilson (2016) suggested that online assistance and support should be provided during the search for information to minimise the amount of time customers spend online, which, as indicated above, can impact their customer

experience. The perceived length of time spent on the website influences the need to seek online customer assistance (Srivastava & Kaul, 2014).

- **System support:** this refers to getting assistance in system-related service (Negash et al., 2003). This refers to the system availability element of service quality, a common dimension derived from E-S-QUAL that relates to the accurate functioning of the website (Ulkhay et al., 2019) and the ability of the service provider to maintain the website so that it works properly. There are a variety of reasons to explain why a system is offline, including planned downtime for maintenance or to fix errors. The goal is always to minimise downtime or to find ways to recover from outages in order to meet user expectations, improve agility and responsiveness, and provide effective service delivery with value (Sjahroeddin, 2018).
- **Service benefit:** this refers to the overall service provided by the business in terms of relevant assistance (Negash et al., 2003). According to Candi and Kenneth (2016), service benefit can be classed into two groups:
  - Functional benefits, which relate to feelings of worth during and after service interactions.
  - Emotional benefits, which relate to feeling good during and after service interactions

Benefits and customer satisfaction are two concepts included as one within the customer value framework (Lindgreen et al., 2012). This indicates that customer perceived value is a trade-off between perceived benefits and sacrifices.

- **Support interaction:** this refers to the capability of customers to connect with the business through various communication channels, such as customers' requests, comparison of service or product features and pricing, or face to face (Negash et al., 2003). Researchers have acknowledged the importance of human interaction when dealing with customers during service encounter (Dabholkar & Richard, 2002). Studies suggest that human interaction is crucial when it comes to service delivery and this is even more relevant when service offerings are online (Sheehan et al., 2020). Customers with a high need for interaction will avoid self-service, especially those that are technology-based. Customers with a low need for interaction will seek self-service options (Alalwan et al.,

2018). The attitude of customers plays a key role in influencing whether they have a high or low need to interact with employees (Dabholkar & Richard, 2002).

As the internet has become a fundamental channel for service delivery (Meyer & Schwager, 2007), many businesses now provide online helpdesk services to support their customers (Truel et al., 2013). The role of this online customer support has become vital as it influences customer satisfaction (Jiang et al., 2019). Customer support is important for creating a meaningful connection between customers and businesses in a virtual environment. As such, the effectiveness of frontline information systems as well as employees is critical to managing these relationships. Research indicates that businesses that focus on customer support often attain higher levels of customer satisfaction (Sheth et al., 2020) and have a positive influence on the customer experience generally (Solomon et al., 2003).

The relationship between customer support and student satisfaction in university contact centres is pivotal. The contact centre serves as a direct communication channel between students and the university, addressing enquiries, providing assistance, and resolving issues (Elmorshidy, 2011). Effective customer support in this context goes beyond merely answering queries; it encompasses creating a positive and supportive environment that reflects the university's commitment to student success (Rumble, 2000). A responsive and knowledgeable contact centre contributes significantly to student satisfaction by ensuring timely and accurate information, facilitating smooth administrative processes, and addressing concerns with empathy (Meuter et al., 2000). A well-managed contact centre not only enhances the efficiency of administrative interactions (Zhang & Ba-Thein, 2022) but also plays a crucial role in fostering a sense of belonging and support within the university community (Indrasari et al., 2022; Reddy et al., 2022). Ultimately, the quality of customer support from the university contact centre directly influences students' overall satisfaction and perceptions of the institution (Meuter et al., 2000).

In summary, customer support further contributes to customer satisfaction, with prompt and effective resolution of customer issues or enquiries building trust and loyalty (Goffin, 1999). In the digital realm, this support often takes the form of live chats, emails, or social media interactions. Quick responses and helpful guidance can turn a potentially negative experience into a positive one (Elmorshidy, 2013). Effective customer support resolves issues and contributes to customer satisfaction, especially when problems are solved promptly and efficiently. In such cases, customers are more likely to be satisfied (Negash et al., 2003).

## **2.9 Contact Centre Customer Engagement**

Contact centre customer engagement refers to the interactions and relationships between contact centre staff and their customers. It encompasses all the touchpoints where customers interact with the contact centre, including phone calls, emails, chat messages, social media interactions, and more (van Doorn et al., 2010). Customer engagement on other hand refers to the emotional connection and active involvement of customers with a brand, product, or service. It goes beyond a one-time transaction and focuses on building long-term relationships between the business and its customers. Engaged customers are not just satisfied with their purchase; they are also enthusiastic about the brand, loyal to it, and often become advocates, recommending the brand to others (Brodie et al. 2011; Kumar & Werner, 2016).

There are various ways businesses can engage customers, including personalised communication, interactive marketing campaigns, social media interactions, loyalty programs, excellent customer service, and providing valuable and relevant content (van Doorn et al., 2010). Customer engagement is crucial for businesses because engaged customers are more likely to remain loyal, make repeat purchases, and contribute positively to a company's reputation through word-of-mouth referrals and positive online reviews (Vivek et al., 2012). Engaged customers also provide valuable feedback that can help businesses improve their products and services (Lim et al., 2022).

Customer engagement is important for several reasons, as it plays a crucial role in the success and growth of businesses (Brodie et al., 2011). It leads to increased sales, reduced churn, competitive advantage, data insights, emotional connections, and

reduced marketing costs (F. Ahmad et al., 2022; Bergel et al., 2021). In today's competitive business landscape, companies that excel in customer engagement can gain a significant competitive advantage (Hollebeek et al., 2022).

In the current period, developments in customer management has been focused on customer and brand engagement. Customer engagement refers to a psychological state that influences the depth of an individual's involvement and interaction with a business organisation's offerings. It encompasses the emotional and cognitive connection customers have with the brand, products, or services. This engagement can be initiated by either the business through its marketing efforts or by customers themselves as they seek out and interact with the company. It's a dynamic relationship where both parties contribute to the overall experience and value exchange. Customer engagement enables meaningful connections that lead to loyalty, advocacy, and mutual benefit (Koot, 2016). Customer engagement focused on the ways in which a business communicates through different channels of correspondence. This type of engagement can relate to reaction, interaction or overall customer experience either online or face to face (Brodie et al., 2011). Engagement can be used in business to business relationships or business to customer relationships or internal communications within the business (Palmatier et al., 2017). Due to the digital and social media revolution, customers have become more active in their engagement, which can have either positive or negative effects on business profits and value propositions. Recent studies have identified four facets of customer engagement: customer purchasing behaviour, customer referral behaviour, customer influencer behaviour, and customer knowledge behaviour. These all have an influence on customer satisfaction (Lemon & Verhoef, 2016).

Despite the growing importance of customer engagement, conceptualisation of this phenomenon is limited, and research is needed to explain its drivers, outcomes and implications for businesses (van Doorn et al., 2010).

Exploring customer engagement within university contact centres in this research will elevate its importance and provide distinctive insights into the realm of student satisfaction. This study stands out as a novel contribution, unveiling a unique perspective on the educational service sector, where the full integration of students as valued customers is yet to be fully embraced (Roberts & Frank, 2010). Consequently,

this research validates the criticality of customer engagement and underscores its relevance to the university sector (Javornik & Andreina, 2012).

Customer engagement is considered a key driver of customer satisfaction and an organisation's financial success. With the heavy reliance on technologies in business, a need for direct face-to-face contact and an offline customer experience can impact the business, as self-service and automated chats and phone messages do not have the human appeal (Scherer et al., 2015). Technology does create efficiencies for businesses in terms of improving their service delivery operational model (Collier & Donald, 2015). Despite the broad importance of creating a highly engaged customer base, many businesses still struggle to achieve this goal, despite the presence of digital technologies, has become challenging to leverage these opportunities due to information overload, changing customers behaviour and privacy concerns (Scherer et al., 2015).

As already noted, research indicates that customer engagement can have direct impact on customer satisfaction (J. U. Islam et al., 2019). Three main elements of customer engagement have been identified, as follows:

- **Psychological:** this highlights that customer engagement is a psychological process characterised by cognitive and emotional aspects that can lead to loyalty for both new and existing customers (Bowden, 2009). Customer engagement is also a psychological state defined by the degree of dedication, absorption, interaction and vigour (Patterson et al., 2006).
- **Motivational:** this emphasises that engagement comes from motivational drivers. Functional interactive experiences and the co-creation of value lead to a psychological state with multidimensional facets. This involves customers' observable behaviours, emotions and conative components (Brodie et al., 2011).
- **Behavioural manifestation:** this recognises that engagement is more of a behavioural manifestation toward the brand or business that goes beyond transaction. It highlights that engagement includes all kinds of behaviours and is not limited to a high degree of loyalty alone (Verhoef et al., 2010).

It can also be noted that rise in different modes and methods of communication has changed the way customers communicate and share information with each other, as such customer engagement management has become an important marketing strategy. But how customer engagement can be operationalised is still being explored, especially in the rapidly changing environment of technological evolution (Kumar & Werner, 2016). This research conceptualises how customer engagement can be used in a contact centre service setting. From a marketing perspective it is important to understand the value contact centres create for students and the level of their satisfaction (Harmeling et al., 2016).

One key recent insight into engagement is the concept of General Online Social Interaction Propensity (GOSIP), which provides explanatory power to consumer engagement. This is an important driver of engagement since it assumes that people are ready to consider online channels and are willing to enter into a dialogue, which are the main instigators of customer engagement. GOSIP is identified as a measurable trait that serves as a way of understanding different levels of behaviour via online platforms (Blazevic et al., 2014).

According to Blazevic et al. (2014), GOSIP covers three key elements, as follows:

- **Level of interaction:** this refers to the degree to which a person likes to communicate online. It can include things such as how often a person initiates a conversation, who receives the information and who interacts.
- **Social preferences:** this refers to the degree to which a person desires a sense of belonging, originating in the online interaction. It can include being involved, participating, and being active in seeking contact with others.
- **Enjoyment in interactions:** this refers to how much a person likes the interactive exchange with another person online. This can include enjoying exchanges with others, enjoying chatting online, and actively participating.

It is also argued that those who post content online generally have high GOSIP, while followers of that post are generally low in GOSIP. As such, high GOSIP individuals will respond differently to issues that solicit online interactivity when compared to those with low GOSIP (Blazevic et al., 2014). Some studies have demonstrated that

personality is an important indicator of preferences for interactive websites features (Sheehan et al., 2020), but there have been mixed results in regard to personality traits and online behaviours. Other studies have revealed that introverts might be more inclined to communicate online than others (Amichai-Hamburger et al., 2002).

GOSIP is also related to a number of online behaviours, including average posts per day alongside other social engagements in the diverse online context. The successful performance of virtual communities can significantly enhance individual engagement and participation levels. As individuals become more engaged within these communities, their likelihood of actively participating in various activities, discussions, and interactions increases. Consequently, heightened engagement can positively impact other parameters, such as recommendation and purchase behavior. When users feel connected and involved in virtual communities, they are more likely to trust recommendations and make purchases based on the opinions and experiences shared within those communities (Blazevic et al., 2014).

The interactive nature of the internet has boosted online communication, but there are notable variations in people's online behaviour. Petelina-Walsh (2021) found that the combination of technology and human interaction in service encounters enhances the perception of social presence. This heightened social presence can result in positive behavioural outcomes and stronger relationships, particularly in online settings. But there is a lack of research in this area, especially research on individual differences with regards to online interactions. In an environment in which service is offered virtually, it is important to study the online behaviour of its customers (Blazevic et al., 2014). McLean et al. (2020) found that social interactions in online environments enhance relationships and foster trust in platforms like websites, ultimately boosting purchase intention. Their research also highlighted the importance of human social cues, such as those provided by live chat facilities, in imparting a sense of warmth, assurance, and personalised content, positively influencing customer attitudes. This, in turn, leads to increased customer satisfaction and brand loyalty. Research has revealed that interaction plays a critical part in social media, which is underpinned by level of engagement. A variety of features are available to encourage interaction but customers do not interact equally on the platforms available (Valacich et al., 1993).

Although significant importance has been placed on behavioural approaches in relation to customer engagement, capturing information about behaviours has been challenging. New digital technologies have enabled customers and businesses to share and exchange information with each other and created platforms for engagement opportunities. These interactions offer a wealth of information to businesses, not only in understanding the volume and type of customers but also in examining customer behaviour. This allows businesses to be more proactive during customer service encounters (Choudhury & Harrigan, 2014).

In the context of this research, the GOSIP can aid in predicting and understanding consumer behavioural differences in online environments as GOSIP reflects traits like measure which can also act as enabler of customer satisfaction (Shipps & Phillips, 2013). This can further assist in the design of efficient strategies for increasing consumer engagement and encouraging a higher volume of online interactions (Blazevic et al., 2014).

As discussed earlier, Blazevic et al. (2014) developed the concept of GOSIP to explain the power of customer engagement in an online environment, with customers responding and behaving differently based on their level of online interactivity. The internet plays an important role in customer engagement, particularly with the increased use of mobile phones to assess online information. Various studies have been conducted to examine the role of the internet as an engagement tool. These indicate that in physical environments, customer engagement is firm-centric, but in virtual environments it is customer-centric as customers demonstrate their engagement by writing reviews online or liking posts on social media platforms (Talenta & Himawati, 2023; Thakur, 2016). Engaged customers are likely to interact with mobile apps frequently. Higher degrees of engagement among satisfied customers are likely to result in positive outcomes like their willingness to investigate a product and/or purchasing and using the product (Pagani & Giovanni, 2017).

Thakur (2019) argued that customer satisfaction is associated with different levels of customer engagement. He noticed that the correlation between online reviews and customer satisfaction isn't straightforward, especially for those who aren't actively engaged online. In other words, the relationship between how satisfied a customer is

and the reviews they leave online doesn't follow a linear pattern, particularly for individuals who aren't actively participating in online platforms or discussions. Research by Busalim et al. (2021) indicated that customer engagement behaviour is influenced by social interaction, technological factors, and perceived value, particularly in online environments. GOSIP increases social interactive engagement, leading to positive word-of-mouth about a business brand (Busalim et al., 2021).

The relationship between engagement and student satisfaction within the university contact centre is pivotal in shaping the overall educational experience (Werang & Leba, 2022). A responsive and interactive university contact centre plays a crucial role in fostering engagement by providing students with a direct and accessible channel for addressing queries, concerns, and seeking information (Yousaf et al., 2022). When students feel actively engaged through personalised interactions and prompt responses, their satisfaction levels tend to rise (Yohans et al., 2023). The contact centre serves as a touchpoint for students to connect with the university, creating a sense of support and belonging. Effective engagement strategies, such as employing knowledgeable and empathetic staff, utilising modern communication channels, and maintaining efficient response times (Kim et al., 2020), contribute significantly to heightened student satisfaction. A positive relationship between engagement and satisfaction not only enhances the overall perception of the university but also strengthens the bond between students and the institution, ultimately contributing to a more enriching and fulfilling student experience (Busalim et al., 2021).

In summary, customer engagement, characterised by interactions and communication between customers and businesses, is another significant factor in relation to satisfaction (Brodie et al., 2011). Engaged customers are more likely to provide feedback, make repeat purchases, and recommend the business to others. Online platforms, such as social media, forums, and review sites, facilitate customer engagement. When customers feel heard and valued, their satisfaction levels increase (Choudhury & Harrigan, 2014). Engaged customers tend to be more satisfied when personalised interactions and meaningful engagement efforts create positive emotional connections, leading to higher satisfaction levels (Pagani & Giovanni, 2017).

## **2.10 Linking the Concepts**

The relationships between service quality, online servicescapes, customer support, customer engagement, and customer satisfaction are complex, interdependent and significantly impact businesses in the digital age. These factors do not function in isolation and often influence each other. For instance, customer satisfaction can be influenced by a positive online servicescape, but the influence can be greater when customer engagement is at its highest level. Engaged customers might also provide feedback, which businesses can use to improve service quality and the online servicescape, thus creating a cycle of improvement that continually enhances customer satisfaction (Arambewela & Hall, 2009; Ballantyne & Nilsson, 2017; Benoit et al., 2017; Blazevic et al., 2014; Bolton et al., 2018; El-Bassiouni et al., 2012; Oliver, 1977, 2014; Parasuraman et al., 1991; Petruzzellis et al., 2006; Verhoef et al., 2010; Wirtz, 1999).

In the context of this study, universities must recognise the synergies among these factors. Investing in service quality, optimising the online servicescape, providing exceptional customer support, and fostering meaningful customer engagement can contribute collectively to enhanced student satisfaction (Arambewela & Hall, 2009; Ballantyne & Nilsson, 2017; Blazevic et al., 2014; Benoit et al., 2017; Bolton et al., 2018; El-Bassiouni et al., 2012; Oliver, 1977; Parasuraman et al., 1991; Petruzzellis et al., 2006; Verhoef et al., 2010; Wirtz 1999). Satisfied students are not only more likely to remain loyal but will also act as brand advocates, amplifying the university's positive image and attracting new students (Palacios et al., 2021; Rotar, 2020; Scott et al., 2008). In the digital era, with students having choices to study anywhere in the world, understanding and leveraging these relationships are pivotal for sustaining a competitive edge and fostering long-term success.

## **2.11 Literature Review Summary**

This chapter has delved into the literature focused on the Australian tertiary education sector, particularly in relation to student satisfaction and the pivotal role of contact centres in enhancing educational satisfaction. Beginning with an overview of the education sector, the chapter has emphasised the importance of student contentment. It

then explored the tertiary education landscape in Australia, and the key factors contributing to student satisfaction.

The chapter then explored service quality, online servicescapes, customer support, engagement strategies, and customer satisfaction metrics in relation to contact centres. The literature review revealed that customer satisfaction in the digital era is influenced by service quality, online servicescapes, support, and engagement. Service quality, determined through accessibility, waiting times, reliability, customer focus, knowing the customer, and empathy influence satisfaction. The adoption of digital technologies, as well as their aesthetics, visual appeal, usability, relevance, personalisation, ease of payment, and perceived security levels also impact satisfaction directly. Effective customer support through live chats and social media contributes to positive satisfaction levels. In addition, engaged customers are more likely to make repeat purchases. These elements are interconnected, forming a cyclical improvement process in which a positive online servicescape, high customer engagement, and effective support collectively contribute to elevated service quality and overall customer satisfaction. Crucially, this chapter has established a link between service quality, online servicescapes, customer support and customer engagement with satisfaction. Understanding these associations is fundamental in the context of maintaining a competitive advantage and cultivating enduring success within the contemporary digital landscape.

## CHAPTER 3: THEORETICAL FRAMEWORK

### 3.0 Chapter Overview

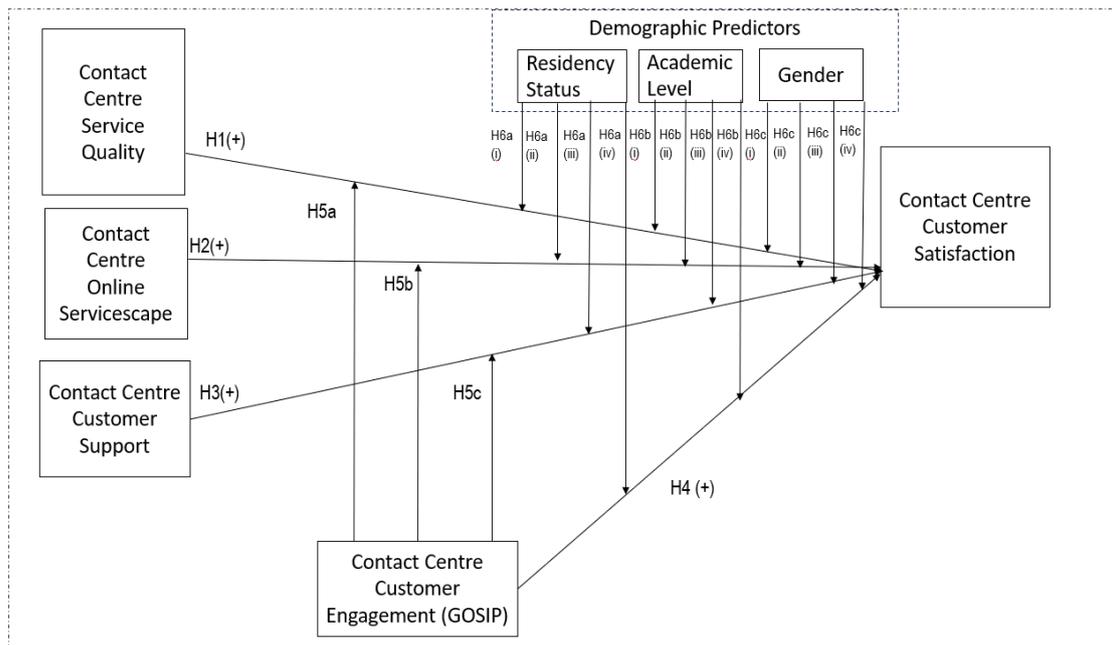
Chapter 2 explored the Australian tertiary education sector, highlighting the significance of contact centres in enhancing student satisfaction. It delved into service quality, the online servicescape, customer support, and engagement strategies, emphasising the interconnected nature of these elements and their crucial role in maintaining a competitive advantage and fostering enduring success in the contemporary digital landscape.

This chapter presents the conceptual framework of this study with theoretical underpinnings and the development of hypotheses.

### 3.1 Conceptual Framework

As previously mentioned, customer satisfaction is influenced by four key elements: service quality, online servicescape, customer support, and customer engagement. Service quality is assessed based on customer expectations and perceptions; online servicescapes utilise digital technologies; customer support encompasses a range of services; and customer engagement evaluates service interactions. In combination, these constructs can enhance overall student satisfaction with digital university contact centres. The framework presented in Figure 5 was developed from earlier service ecosystem models (Bitner, 1992) but has been expanded to encompass the distinctive features of contact centres and to integrate virtual service offerings (Bolton et al., 2018). This extended framework also incorporates the existing disconfirmation model and traditional SERVQUAL dimensions (El-Bassiouni et al., 2012). It serves as the foundation for elucidating customer satisfaction, examining customer expectations, perceptions, actual consumption and, ultimately, determining levels of satisfaction or dissatisfaction (Oliver, 1977).

**Figure 5: Conceptual Framework**



The framework outlines four elements believed to impact student satisfaction when using contact centre services. In a virtual shared service environment, complete satisfaction depends on additional factors (Stein & Ramaseshan, 2016) like customer support, the quality of the online servicescape, and customer engagement to ensure students are content. By examining these connections, research hypotheses could be formulated, contributing to a deeper understanding of student experiences within university contact centres. The conceptual framework depicts the relationship between the dependent variable (customer satisfaction) and the independent variables (customer support, the online servicescape, and service quality), as well as the moderator (customer engagement—GOSIP) for the factors in a servicescape ecosystem.

Furthermore, the conceptual framework for assessing and comparing student satisfaction levels with university contact centres was designed to provide a understanding of the factors influencing satisfaction among diverse student populations known as demographic predictors. In a conceptual framework, demographic predictors refer to variables related to the characteristics of individuals or groups within a population that are used to predict or explain certain outcomes or behaviors (Andrews et al., 2002). These predictors are fundamental components of many social science research studies, especially those focused on understanding human behaviour, societal

trends, or decision-making processes (Bish & Michie, 2010). By examining differences in satisfaction between domestic and international students, the framework was used to identify the unique challenges and preferences that may arise based on cultural or contextual differences. Additionally, the exploration of gender-based variations sought to uncover any disparities in satisfaction that may be linked to specific gender-related expectations. Furthermore, the framework was developed to consider the distinction between undergraduate and postgraduate students, recognising that their academic demands, expectations, and communication needs may differ. Through a systematic analysis of these dimensions, the conceptual framework was designed to offer insights that can inform targeted improvements in university contact centre services, ultimately enhancing the overall satisfaction of students across diverse demographics.

### **3.2 Hypotheses Development**

The literature review suggested that overall contact centre satisfaction is influenced by contact centre service (van Dun et al., 2011), the online servicescape (Heijden, 2003), and customer support (Negash et al., 2003). This research sought to validate whether the same applies in a university setting, using the contact centre as an operating model and students conceptualised as customers (Naylor et al., 2020).

Based on the findings of the literature review and the development of the conceptual framework, a series of hypotheses was formulated, as explained in the sub-sections that follow.

#### **3.2.1 Service Quality and Student Satisfaction with the Contact Centre**

The quality of service in a contact centre plays a pivotal role in shaping customer satisfaction. Customer contentment is intricately linked to their expectations and perceptions of the service they receive. Essentially, how customers perceive their interactions and the emotional experiences associated with those interactions greatly influence their satisfaction levels (Pramedyas et al., 2021).

According to Petruzzellis et al. (2006), the quality of service acts as a catalyst or facilitator for satisfaction, a concept supported by the dimensions outlined in SERVQUAL (Parasuraman et al., 1991).

Customer satisfaction within contact centres is intricately tied to the quality of service provided, which is evaluated through dimensions such as reliability, responsiveness, assurance, empathy, and tangibles, as outlined in the SERVQUAL model (Parasuraman et al., 1991). Meeting or exceeding customer expectations in these dimensions can lead to higher levels of customer satisfaction, fostering positive relationships and customer loyalty (El-Bassiouni et al., 2012).

Research by van Dun et al. (2011) revealed that factors such as reliability, empathy, customer focus, customer knowledge, waiting time the user friendliness of the VRU and accessibility had a direct impact on customer satisfaction in a digital environment. These factors may play key roles in the overall service quality of contact centres. Therefore, the following hypothesis was proposed:

*H1. Contact centre service quality in a digital environment is positively related to customer satisfaction.*

### **3.2.2 Online Servicescapes and Student Satisfaction with the Contact Centre**

The incorporation of digital technologies is crucial in the contemporary service landscape, enhancing service delivery and shaping overall customer satisfaction. This digital online servicescape mirrors certain aspects of physical and social environments, encompassing everything from the visual appearance of online services to virtual interactions between contact centre staff and students (Bolton et al., 2018). In the digital servicescape, the first impression is not made by a firm handshake but by the layout of a website or the design of a mobile application. Hence, meticulous attention to these details is paramount for ensuring a positive customer journey (Eroglu et al., 2003).

One of the fundamental advantages of this digital transformation lies in its ability to enhance service delivery (Ananda et al., 2023). Digital technologies have streamlined processes, enabling services to be delivered with unprecedented speed and accuracy. Tasks that once required substantial time and effort can now be accomplished with a few clicks, leading to unparalleled efficiency (Moliner & Tortosa-Edo, 2023). Moreover, the integration of AI has paved the way for personalised services, with offerings being tailored to individual preferences and needs, thereby significantly augmenting customer satisfaction (Tam & Ho, 2006).

As such, the integration of digital technologies into the service landscape represents a paradigm shift, redefining the way services are conceptualised, delivered, and experienced (Moliner & Tortosa-Edo, 2023). It is not merely a technological advancement but a transformational force that reshapes the very essence of customer interactions (Rababah & Masoud, 2010). As businesses and institutions continue to harness the power of digital innovations, they embark on a journey towards heightened efficiency, unparalleled customer satisfaction, and a future in which the boundaries of service are defined not by physical constraints but by the limitless possibilities of the digital world (Rahi et al., 2020).

Harris and Goode (2010) found that aesthetic appeal, layout and functionality, and the financial security of online service platforms such as website or online self-service tools had strong links with purchase intentions and customer satisfaction. Therefore, the following hypothesis was proposed:

*H2. The online servicescape in a digital environment is positively related to customer satisfaction.*

### **3.2.3 Customer Support and Student Satisfaction with the Contact Centre**

In the context of university contact centres and student satisfaction, the significance of customer support is paramount. With the proliferation of the internet as a fundamental service delivery channel, educational institutions have embraced online platforms, including contact centres, to offer support to students navigating through various academic and administrative processes. This evolution mirrors the broader trend observed in businesses providing online helpdesks for customer assistance (Meyer & Schwager, 2007; Truel et al., 2013).

In an educational setting, students engage in service participation activities online, such as utilising self-service options to access information or complete tasks. This introduces a level of ambiguity, as students may encounter challenges in understanding how to perform specific online tasks effectively. The role of customer support becomes pivotal in this scenario, as it directly influences student satisfaction (Jiang et al., 2019).

The connection between the university contact centre and student satisfaction can be understood through the lens of maintaining a meaningful relationship between the

educational institution and its students. In the virtual environment, the efficacy of frontline information systems and the competence of customer support personnel become crucial factors in managing these relationships (Sheth et al., 2020). Institutions that prioritise effective customer support in this context are more likely to achieve higher levels of student satisfaction.

Research by Negash et al. (2003) underscored the impact of customer support on overall customer satisfaction, particularly in online environments. Their findings suggest that the quality of support services provided can significantly influence the perceptions and satisfaction levels of students engaging with various university processes. Therefore, the following hypothesis was proposed:

*H3. Customer support in a digital environment is positively related to customer satisfaction.*

#### **3.2.4 Contact Centre Customer Engagement (GOSIP) and Student Satisfaction**

In this digital age, where online interactions are the norm, the study of customer engagement in contact centres becomes not just a scholarly pursuit but a strategic imperative (Kumar & Werner, 2016). Institutions that grasp the nuances of these interactions stand poised not only to deliver exceptional service but also to foster enduring relationships with their students, ensuring a positive and enriching educational journey for all involved (Brodie et al., 2011).

The online interaction behaviour of customers can play an important role during service encounters, with positive or negative behavioural attributes influencing customer satisfaction (Blazevic et al., 2014; Verhoef et al., 2010). In the context of students and educational institutions, these interactions gain a heightened level of importance (Yousaf et al., 2022). Students, as customers, are active participants in the service encounter, contributing unique behavioural attributes that are capable of steering the encounter toward either a favourable or unfavourable experience (Zepke, 2013). Their actions online, whether they are seeking academic assistance, lodging complaints, or expressing appreciation, become pivotal moments that can echo the sentiments of the entire service interaction (Forbes-Mewett & Nyland, 2008). The research indicates that customer satisfaction significantly impacts continuance intentions, especially among

those with higher engagement levels. Therefore, the following hypothesis was proposed:

*H4. GOSIP is positive related to customer satisfaction in an online environment.*

Blazevic et al. (2014) highlighted the importance of GOSIP in understanding customer engagement in online environments. Mobile phone access plays a crucial role, with customer-centric activities like social media reviews. Engaged customers are more likely to purchase products and have a greater sense of satisfaction. Busalim et al. (2021) found that social interaction, technological factors, and perceived value significantly influence customer engagement behaviour (Paramita et al., 2021). Therefore, the following hypothesis was proposed:

*H5a. GOSIP moderates the positive relationship between contact centre service quality and customer satisfaction, such that the relationship is strongest when GOSIP is high.*

Petelina-Walsh (2021) found that technology and human interaction during service encounters lead to higher perceptions of social presence that, in turn, can lead to positive behaviour outcomes and stronger relationships, especially in an online environment. Therefore, the following hypothesis was proposed:

*H5b. GOSIP moderates the positive relationship between perceptions of quality online servicescapes and customer satisfaction, such that the relationship is strongest when GOSIP is high.*

Research from McLean et al. (2020) indicated that social presence in online environments can assist in improving relationships and build trust in online platforms such as websites. This can also increase purchase intentions. Their findings also revealed that human social cues conveyed by live chat facilities added warmth, assurance, and customised content and these have a positive impact on customer attitudes, thereby increasing customer satisfaction as well as brand loyalty. Therefore, the following hypothesis was proposed:

*H5c. GOSIP moderates the positive relationship between customer support and customer satisfaction, such that the relationship is strongest when GOSIP is high.*

Assistance through system availability as well as human guidance helps businesses enhance their social presence, particular the sense of ‘being there’. Customer relationships are strengthened through such online customer support interactions (Toader et al., 2020).

Hypotheses H5a, H5b and H5c emanate from the research finding that customers who are highly engaged online exhibit high GOSIP and vice versa (Blazevic et al., 2014).

### **3.2.5 Student Satisfaction and Demographic Differences**

In the process of developing hypotheses to assess and compare student satisfaction levels with university contact centres, several key dimensions were considered. The central focus revolved around the exploration of satisfaction disparities across diverse demographic groups, with a particular emphasis on discerning differences between domestic and international students. Furthermore, the research extended its scrutiny to gender-based distinctions, seeking to unveil any perceptual and interactional differences between male and female students in their engagement with university contact centres. The study also delved into the nuanced realm of academic strata, comparing satisfaction levels between undergraduate and postgraduate students.

As noted in Chapter 2, numerous studies have investigated the satisfaction levels of domestic and international students with various university services (Ammigan & Jones, 2018; Asare-Nuamah, 2017; Korobova & Starobin, 2015; Suh et al., 2022). Based on these findings, it is reasonable to hypothesise that satisfaction levels differ significantly between domestic and international students in the context of university contact centres. Therefore, the following hypothesis was proposed:

*H6a. There are significant differences in effect of contact centre (i) service quality, (ii) online servicescapes, (iii) customer support and (iv) GOSIP with customer satisfaction between student (domestic and international) cohorts.*

Differences in academic needs, expectations, and experiences between undergraduate and postgraduate students have also been well documented in the literature, as discussed in Chapter 2 (Arambewela & Hall, 2011; Douglas et al., 2008; Mannal, 2018; Tsiligiris et al., 2022; Wong & Chapman, 2023). Based on these findings, it is plausible to hypothesise that satisfaction levels vary significantly between undergraduate and

postgraduate students concerning university contact centres. Therefore, the following hypothesis was proposed.

*H6b. There are significant differences in effect of contact centre (i) service quality, (ii) online servicescapes, (iii) customer support and (iv) GOSIP with customer satisfaction between students (undergraduate and postgraduate) cohorts.*

Also discussed in Chapter 2, gender-based differences in satisfaction with university services have been explored in various studies (Malkawi, 2021; Osmani, 2021; Park and Kim, 2020; Sashittal et al., 2011; Yawson and Yamoah, 2020). Based on these findings, it is reasonable to hypothesise that male and female students exhibit significant differences in satisfaction levels in the context of university contact centres. Therefore, the following hypothesis was proposed:

*H6c. There are significant differences in effect of contact centre (i) service quality, (ii) online servicescapes, (iii) customer support and (iv) GOSIP with customer satisfaction between students (male and female) cohorts.*

By formulating hypotheses H6a, H6b and H6c this research aspired to yield a nuanced and comprehensive understanding of the myriad factors influencing student satisfaction with university contact centres.

### **3.3 Theoretical Foundation**

In this section, the proposed conceptual framework emerges as a comprehensive and holistic approach, showcasing its prowess in addressing the multifaceted aspects of student satisfaction under consideration. The framework demonstrates a nuanced understanding of the complexities involved, providing a well-rounded perspective that goes beyond conventional approaches. Its holistic nature stems from the integration of diverse elements related to virtual contact centres, fostering a more inclusive understanding. The theoretical contributions of this framework are noteworthy, introducing novel perspectives and methodologies that distinguish it from existing paradigms. By offering innovative insights and methodologies, the conceptual framework not only advances the current discourse but also sets a new standard for approaching the subject matter, opening avenues for further exploration and scholarly engagement.

### **3.3.1 Technology Acceptance Model (TAM)**

As discussed in Chapter 2, TAM is a widely used theoretical framework in information systems and technology management that explains how users accept and use new technologies. It was developed by Fred Davis in the late 1980s and has been influential in understanding user acceptance and adoption of new technologies (Marangunic & Granić, 2014).

TAM was applied in this framework as it provides a theoretical basis for conceptual frameworks in technology research. Its simplicity, focusing on perceived usefulness (PU) and perceived ease of use (PEOU), makes it accessible for analysis (Fayad & Paper, 2015). TAM's empirical support, tested across various contexts and technologies, enhances its credibility, and its general applicability extends to a broad range of technologies (Zakariyah et al., 2022). It also aligns with this research on virtual contact centres. Known for its predictive power in anticipating user behaviour, TAM has been adapted and modified over the years to accommodate additional factors, showcasing its adaptability (Dickson et al., 2021). In summary, TAM's solid theoretical foundation, simplicity, empirical backing, general applicability, predictive capacity, and adaptability make it a popular choice for building conceptual frameworks for studying technology adoption and acceptance (Sombat et al., 2018).

In the context of this research, TAM was applied to assess the factors influencing student satisfaction and the digitalisation of contact centres. Two key perspectives were considered: the student perspective and the contact centre perspective. From the student perspective, PEOU is a critical factor; students are more likely to embrace digital services in contact centres if the technology is user-friendly and intuitive (Sclerotinia & Andreea-Ioana, 2013). For example, an online platform that simplifies student inquiries can contribute to higher satisfaction levels. Additionally, PU plays a crucial role, as students are more satisfied when digitalised services provide quick, accurate information, and efficient query resolution.

Behavioural intention to use is crucial for the future adoption of digitalised contact centre services. Students' favorable intentions indicate satisfaction and a willingness to continue using digital platforms for their enquiries and support needs (Al-hawari & Mouakket, 2010). In addition, external factors such as social influence and facilitating

conditions also impact student satisfaction and adoption of digitalised contact centre services (Al-hawari & Mouakket, 2010). Recommendations from peers (social influence) and the availability of necessary resources and support (facilitating conditions) can affect how students perceive and use digital services. These external factors contribute to the overall satisfaction and successful implementation of digitalised contact centre services (Sholikhah & Sutirman, 2020).

Applying the TAM framework to student satisfaction and contact centres' digitalisation involved assessing students' perceptions of ease of use and usefulness, understanding their attitudes toward technology use, and considering external factors that might influence their satisfaction and adoption behaviour (Ibrahim et al., 2018). By addressing these factors, the university sector can design and implement digitalised contact centre services that enhance student satisfaction and improve overall operational efficiency (Al-hawari & Mouakket, 2010).

### **3.3.2 Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB)**

As noted in Chapter 2, the TRA and TPB are social psychological theories that explain human behaviour in the context of attitudes, beliefs, intentions, and perceived behavioural control (Yzer, 2017).

The TRA and TPB were applied in this framework as they are widely employed in conceptual frameworks within social psychology, communication studies, and health behaviour research (Smith & Biddle, 1999). Key reasons for their common use include their predictive power, emphasising the attitude-intention-behaviour linkage, acknowledging social influences, applicability across diverse domains, informing interventions for behaviour change, and having substantial empirical support (Khairil bin Bahari et al., 2019). The TPB extends the TRA by incorporating perceived behavioural control, enhancing the comprehensiveness and explanatory power of the model (Tucker et al., 2020). Overall, TRA and TPB serve as valuable tools for researchers exploring the intricate interplay of psychological and social factors influencing human behaviour (Kavoura et al., 2017). When applied to the educational setting, particularly in understanding student satisfaction and the role of contact centres, these theories offer valuable perspectives.

The TRA posits that individual behaviour is determined by intention, influenced by attitude and subjective norms (Ajzen, 2020). In the context of student satisfaction and contact centres, a positive attitude toward contact centres increases the likelihood of students seeking assistance, while positive subjective norms contribute to students' inclination to use these services (Ajzen, 2011). The resulting behavioural intention, influenced by attitude and subjective norms, affects overall satisfaction.

The TPB extends the TRA by introducing perceived behavioural control (Hoyt et al., 2009), which considers the ease or difficulty of performing a behaviour (Kavoura et al., 2017). In the context of student satisfaction and contact centres, students' perceptions of the ease of contacting the centre, coupled with their belief in the centre possessing the necessary skills and resources, influences their intention to use the contact centre and subsequently impacts their satisfaction. The TPB emphasises the connection between behavioural intention and actual behaviour, with satisfaction depending on the effectiveness of the support received (Kavoura et al., 2017).

By integrating these theories, the university sector can gain insights into the factors influencing student satisfaction with contact centres and implement strategies to enhance the quality of support services offered to students, such as helpful and knowledgeable staff. This can create a positive perception and social expectation around utilising contact centres for help, making people more inclined to seek assistance through these channels. Enhancing perceived behavioural control is crucial, and universities can achieve this by making contact centres easily accessible and providing clear instructions and user-friendly interfaces (Tucker et al., 2020). Additionally, implementing feedback mechanisms enables universities to understand student satisfaction, make improvements, and address concerns promptly. Overall, the application of the TRA and TPB can significantly contribute to improving the effectiveness of contact centres in educational settings and enhancing student satisfaction (Smith & Biddle, 1999).

### **3.4 Chapter Summary**

This chapter has provided an overview of the research, beginning with a discussion on the conceptual framework and the development of hypotheses. It delved into various aspects, including service quality, the online servicescape, customer support, customer engagement, and demographic influence on student satisfaction with contact centres. The chapter also explored the theoretical foundation, incorporating the TAM, the TRA, and TPB in order to explain the relationship between the constructs under study.

## CHAPTER 4: RESEARCH METHODOLOGY

### 4.0 Introduction

As already outlined, this research focuses on understanding student satisfaction with university contact centres in a virtual online environment in Australia. Specifically, the research sought to:

- Examine whether the quality of service, perceptions of the online servicescape and levels of customer support impact customer satisfaction.
- Examine whether customer engagement through GOSIP plays a key role in enhancing student satisfaction through contact centre service quality, the contact centre online servicescape and customer support.
- Examine and compare satisfaction levels among university contact centres by analysing variations between domestic and international students, undergraduate and postgraduate students, and exploring gender-based differences.

Within this context, the research has reconceptualised student satisfaction through the realms of digital service delivery, encompassing various aspects of service provision through digital channels and platforms (Fujiwara, 2023). In today's interconnected and technology-driven world, organisations across different industries leverage digital tools to enhance efficiency, accessibility, and the user experience (Bolton et al., 2018).

Chapter 3 presented the conceptual framework and hypotheses developed for this study. This chapter outlines the research methodology and explains the steps that were taken to carry out the fieldwork through a quantitative research approach. It outlines the research paradigm justification, data collection methods and questionnaire development, as well as sampling, scaling, the pilot study, reliability, validity analysis, analysis methods, and ethical considerations in the research process.

### 4.1 Research Paradigm and Justification

A research paradigm alludes to abstract beliefs and principles that shape how a researcher views the world and how they interpret and act within this world. It means seeing the world conceptually through the lens of the researcher in relation to their

chosen methodology, methods and how they analysed the data (Creswell & Creswell, 2018; Twycross, 2004).

Given the nature of the research question, this study adopted a positivist paradigm viewpoint as it sought to understand and observe human behaviour based on objective facts, with people's actions explained through their social norms (Aliyu et al., 2014) using a quantitative data collection. This paradigm approach allows for the inclusion of complexity and contextual factors within the parameters of the study (McChesney & Aldridge, 2019). This is important given that universities have very complex and dynamic operating models (Bolden et al., 2008). Using this paradigm also helps the researcher to understand various relationships between each element within a study and how each influences the other (Schrag, 1992).

Positivist research, in its pure form, starts with a theory that explains cause and effects, which is used to formulate hypotheses and then test these by means of experiments to validate whether the theory works (Straub et al., 2004). This research applied a similar methodology of postpositivist, developing hypotheses that were then tested using the conceptual framework with its various customer experience constructs. It was expected that this approach would facilitate an understanding of the reality and the experience phenomena (Kivunja & Kuyini, 2017) of students related to university contact centres with a shared service operating model. The framework constructs helped the researcher to test whether relationships between those constructs exist.

Considering the focus of this study, a quantitative approach was employed to delve into the phenomenon of student (dis)satisfaction within the university contact centre operating model. The research aims to comprehend this well-documented issue in a specific context, particularly within the framework of the virtual delivery of student services, which presents an unconventional business environment.

In line with Creswell's assertion (2009), the choice of methodology is intricately linked to the nature of the phenomenon under investigation. The determination to employ a quantitative approach stems from the imperative need to understand the intricacies of student dissatisfaction within virtual service delivery settings. Creswell emphasises that the selection of methodology is guided by the research problem and the overall research approach, whether it be inductive or deductive, each necessitating particular

considerations regarding data collection methodologies. Therefore, the quantitative approach emerges as a fitting strategy to unravel the complexities inherent in the student experience within university contact centres operating in virtual environments.

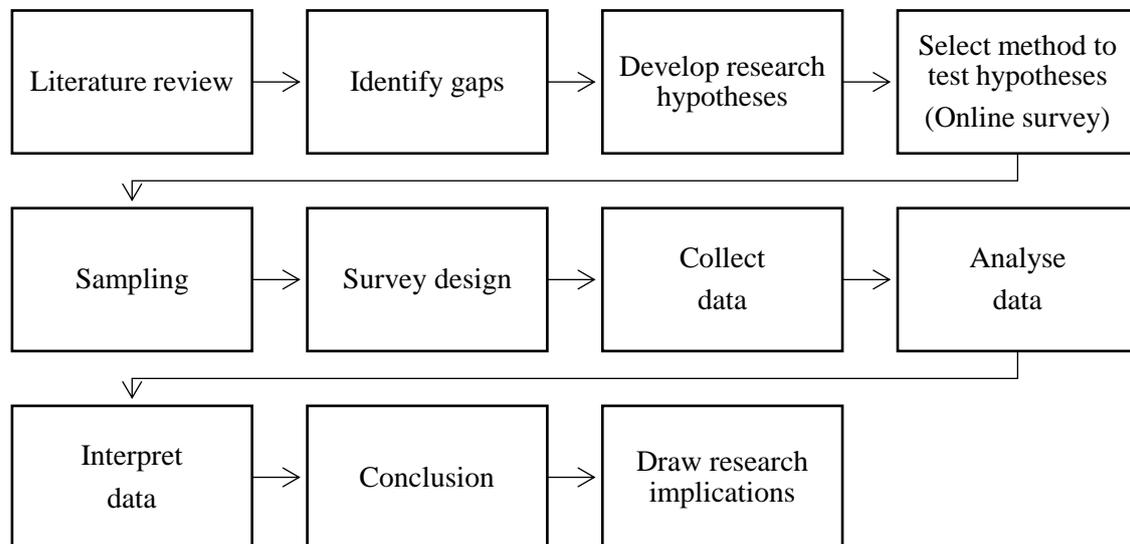
Induction is a bottom-up approach through which specific observations are moved to broader theories and generalisations. By contrast, deduction is a top-down approach through which theory is hypothesised, tested, and then confirmed (Flick & Kennedy, 2018). As such, an inductive research approach is qualitative in nature and takes the form of an interpretivist/constructivist paradigm view. A deductive research approach is quantitative in nature and takes the form of a positivist paradigm view (Kivunja and Kuyini, 2017).

As this research is concerned with understanding student satisfaction from the students' viewpoint, a quantitative research methodology was applied. Human interactions in the university environment are complex due to multifaceted organisational units (Schulz et al., 2018). A quantitative approach in this setting allows for the collection of more comprehensive data that can provide a broader perspective of the overall research problem (Terrel, 2012). Furthermore, this approach allows researchers to record attitudes, feelings and behaviours. In this study, this approach created openness by encouraging students to expand on their responses in the online survey and reflect on why they felt or reacted the way they did. As noted in other studies, this approach facilitates consideration for understanding all the variables under study (Creswell & Creswell, 2018; Twycross, 2004).

The research process illustrated in Figure 6 follows a structured approach inspired by the Agile manifesto, as described by Haseman (2006). This methodology entails breaking down tasks into smaller, manageable components and executing them in iterative sprints, as highlighted by Tavares et al. (2016). Consequently, the design, data collection, and analysis phases of the research were conducted in accordance with this

agile framework, allowing for adaptability, efficiency, and improvement throughout the study.

Figure 6: Research Flow Chart



A research strategy refers to the plan established for conducting a study. It acts as a guiding principle to assist the researcher in answering the research question. Strategies include surveys, experiments, grounded theory and case studies (Griffin & Kacmar, 1991). The research strategy helps in structuring the layout of the research and presenting the work in a specific way (Cuervo-Cazurra et al., 2017). As such, in selecting a strategy, it is important to consider the research question and objectives and how these can be addressed given the resources at hand (e.g., time and facilities) (Grösser, 2013).

## 4.2 Research Design

The research design in this section describes the research method, data collection approach and questionnaire development.

### 4.2.1 Research Method

This research employed a survey research design using a non-experimental approach to conduct quantitative research. The focus was to examine students' satisfaction with contact centres in a virtual environment. Survey research is commonly used to collect

information from a sample of individuals through questions, assessing thoughts, opinions, and feelings. This method provides flexibility in participant recruitment, data collection, and the utilisation of various online survey tools (Ponto, 2015).

As outlined in previous chapters, this study identified independent variables (contact centre service quality, the online servicescape, customer support), a moderator variable (a GOSIP scale), and a dependent variable (customer satisfaction). Before conducting the survey, a predetermined model was established to anticipate relationships among the variables.

There are a number of reasons why a quantitative survey approach was adopted in this study. These reasons include that fact that this approach allows for the collection of factual data and it can reach a larger sample size to validate the hypothesis. This method also allows for accuracy of generalised conclusions since the data gathered provides statistical credibility and the statistical analysis offers more depth in terms of data coverage. Information can be collected quickly through the use of an online survey and data can be analysed immediately, thus avoiding delays. This method also suited the pandemic environment (the time at which this study was conducted) as participants could provide responses to the questions remotely, without having to be in a room with others. Participants also remained anonymous and were thus able to complete the survey with honesty, which is a great benefit in data collection (Almeida et al., 2017). An online survey strategy is a commonly used practice in many businesses that survey their customers for the purpose of improving their business (Ghauri et al., 2020). Data responses through this online method are easy to store through cloud-based platforms (Ball, 2019).

#### **4.2.2 Data Collection Method**

In this study, selection of research participants was outsourced to a company that specialises in online surveys. This company, Dynata (formerly Research Now and Survey Sampling International), is a global online market research firm with 60 years of research experience. It is very well positioned as it is the only provider in Australia to offer sampling across a full range of modes and can recommend the best methodology for research projects. It adheres to high level standards of sampling science. The company has a reach of more than 62 million consumers and business

professionals globally. It is a fully permissioned company with billions of verified data points and sends targeted invitations to its panel members until the desired sample size has been reached. This method of collecting data is more efficient than the traditional approach direct recruitment of participants through paper-based questionnaire (Eikon, 2017) as it will secure 400 valid responses from research participants. It can also save time and money as it does not require complex planning, thereby boosting efficiency in terms of collecting data at short notice and ensuring that privacy is not violated (Eitan, 2016).

Dynata is also an accredited member of the Market Research Society (MRS), which includes more than 6,000 market research and media agencies from all over the world. According to the MRS, Dynata makes a concerted effort to address many of the concerns expressed in the academic literature, including issues surrounding customer experience. As such, Dynata has the required expertise to source good quality data. Dynata managed recruitment of participants in this study, but data was collected by the researcher through the Victoria University (VU) Qualtrics platform.

Participants were provided with the researcher's contact details in case they needed further information. Participation was voluntary, and by completing the online survey and submitting it, the participant provided their consent to participate in the study.

Alternative approaches to data collection were considered but due to time and the pandemic situation, this method of collecting data was considered more efficient than traditional approaches (Etikan, 2017). It was hoped that the method would yield 400 responses from research participants across Australia.

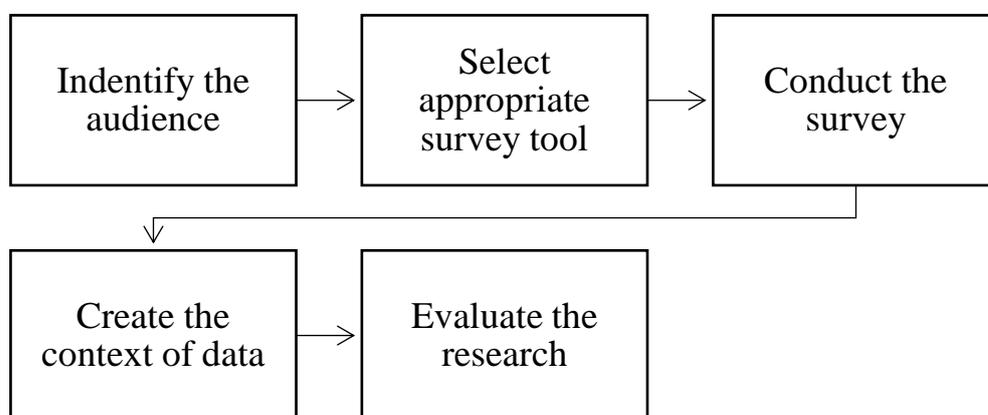
The online survey approach followed a defined process, as shown in Figure 7 and detailed as follows:

- **Identify the audience:** The first step involves understanding the target audience. Previous research, scales, and the sample environment are crucial for establishing a baseline. Knowing the demographics and characteristics of the students provides context for interpreting the results.
- **Select an appropriate survey tool:** When selecting a survey tool, it is important to consider the research objectives, benefits, and limitations of each

tool. An online survey was chosen for this research due to convenience, as outlined above.

- **Conduct the survey:** Emphasising simplicity and clarity in the survey design is crucial in gathering accurate and meaningful responses. In this research, pilot testing was conducted to validate survey functionality, including online form completion and custom features. A successful soft launch was developed with 25 participants and subsequent adjustments were made.
- **Create the context of data:** After gathering data through the selected tool, it is essential to consider how the data will be utilised beyond the thesis writing stage. This implies thinking about practical applications of the findings. For example, in this study, the data could inform university policies, guide improvements in contact centre services, or contribute to broader discussions in the field of education. Hence the data is presented in Chapter 5 in a practical way that is intended to inform the audience.
- **Evaluate the research:** Evaluation involves reflecting on the analysed results, assessing whether they address the research problem effectively, and providing detailed findings with practical implications for relevant industries.

**Figure 7: Steps for Using the Online Survey Approach**



Source: Heir, 2010

As noted above, VU’s Qualtrics software platform was used for the online survey. Qualtrics allows researchers to build, distribute, and analyse surveys through an online mechanism (Pujari et al., 2012; Weber, 2019). Details of the sampling strategy and sample size are provided later in this chapter.

The Qualtrics survey was controlled by the researcher who monitored the responses to ensure 400 completed samples were collected. This monitoring required an audit to identify blank and/or invalid responses. The survey link was linked to Dynata's webpage using the customised feature offered in Qualtrics. This created the following:

- A panellist identification (PID): this is numeric only and should be captured and stored. This is used to identify individual respondents with a permanent ID on the panel. This is particularly helpful for contacting someone in the future, if required.
- A panellist survey identifier (PSID): this is an alphanumeric value, which is an encryption of the project and the PID. It differs for each survey in which the same respondent participates.

Capturing the PID and PSID in Qualtrics was important as it allowed both Dynata and the researcher to reference specific respondents with a single data set. Uniquely identifying respondents allowed Dynata to recognise any issues that might occur during fielding and contact research participants with any additional questions. Dynata recommended capturing both PID and PSID variables and this assisted in the fieldwork, ensuring good quality data was gathered. Data was collected by Dynata who distributed and administered the online survey to the participants within seven business days which was the actual timeframe of this project.

#### **4.2.3 Questionnaire Development**

The design of the questionnaire was informed by the theoretical framework, discussed in Chapter 2. It is recommended that researchers use existing validated measures in their studies (Bryman & Bell, 2011). As such, for the purpose of this research, scales from previous research were used to measure the constructs in the conceptual framework (see Table 3). These were modified to suit the context of this study, where appropriate. The specific measures covered five constructs:

- **Contact centre service quality:** accessibility, waiting, knowing the customer/customer relationship, empathy, reliability, customer focus (van Dun et al., 2011).

- **Online servicescape:** aesthetic appeal, layout and functionality, financial security (Harris & Goode, 2010).
- **Customer support:** customer support/engagement, system support, service benefit, support interaction (Dabholkar & Bagozzi, 2002; Khulthau, 2004; Kiran & Diljit, 2012; Lui, 2003; Marimon et al., 2010; McMillan and Hwang, 2002; Song & Zinkhan, 2008).
- **GOSIP scale** (Blazevic et al., 2014).
- **Customer satisfaction:** traditional survey question to get overall feedback from students.

**Table 3: Construct Measurements**

Main constructs	No. of items	References
<b>Independent variables</b>		
Contact centre service quality	42	Brocato et al., 2012; Durbin, 2006; El-Bassiouni et al., 2012; Ivana et al., 2019; van Dun et al., 2011
Contact centre online servicescape	28	Harris & Goode, 2010; Heijden, 2003
Contact centre customer support	21	Ashfaq et al., 2020; Dabholkar & Bagozzi, 2002; Khulthau, 2004; Lui, 2003; Kiran & Diljit, 2012; Marimon et al., 2010; McMillan & Hwang, 2002; McLean & Wilson 2016; Song & Zinkhan, 2008
<b>Moderator variable</b>		
Contact centre customer engagement (GOSIP)	8	Blazevic et al., 2014; Sheehan et al., 2020; Zepke, 2013
<b>Dependent variable</b>		
Contact centre customer satisfaction	3	Connell & Burgess, 2006; Harris & Goode, 2010; Hult et al., 2022; van Dun et al., 2011

As the design of questions can influence data collection (Blank, 2013), questions should be easy to understand and not be too long. A cover letter explaining the purpose of the data collection should be included (Toraman, 2022), as well as precise instructions on how to complete the survey, to prevent any confusion (Vannette & Krosnick, 2018). Recognising the importance of these factors, the survey used in this study included

introductory information about the research, allowing potential participants to make an informed decision about whether to participate. Students were specifically asked to answer the following screening question:

- Do you wish to proceed with the survey?
  - Yes, I consent—Continue and go to Q1.
  - No, I do not consent—Thank you for your response. Go to close of survey.

The questions were presented in seven sections, as follows:

1. Section A: questions about contact centres in general, for instance, how or why they approached the contact centre, and how many times on average the students used the contact centre.
2. Section B: questions about participants' online social interaction behaviour to discover how engaged they are in digital environments, to gauge the level of engagement.
3. Section C: questions about the overall service quality of the contact centre through the lens of students, including reliability, waiting times, customer focus of the service being provided. This section also included two questions related to customer satisfaction.
4. Section D: questions related to the measurement construct of online servicescapes, including how the student feels about the online services that the university contact centre offers (e.g., self-service FAQs, ASK services, payment services or ordering transcripts online).
5. Section E: questions related to the measurement construct of customer support, including how the student feels about the level of customer support provided, from system support to actual hand holding of enquiries through self-service. This section also included a question related to customer satisfaction.
6. Section F: this section used open-ended question to ask participants to provide suggestions as to how their university contact could improve. This was a tactic to ensure students were prompted to respond to the areas discussed in previous sections so that the participants could provide suggestions from their perspective.

7. Section G: questions about personal demographics, including age, area of study, and where in Australia they were studying. This section was placed in the final section of the survey as some students might not fully complete the survey.

The following sections provide descriptions of each of the constructs of the conceptual model, with individual items for each variable. All measures used existing reliable scales (Breakwell et al., 2012; Larsen, 1995; Sue & Ritter, 2011), which were adapted to fit the context of this research. Item responses were standardised to a five-point Likert scale, with one being 'strongly disagree' and five being 'strongly agree'.

#### ***4.2.1.1 General Online Social Interaction Propensity (GOSIP) Scale***

As determined through the literature review, the GOSIP scale refers to the online interaction behaviour of customers with the assumption that people are ready to consider online channels to engage and interact with others. So, to understand different levels of behaviour through online platforms, the measures were adopted from the study conducted by Blazevic et al. (2014) to measure the level of online interaction (engagement).

**Table 4: Multi-item GOSIP Scale**

Item	Original scale (Blazevic et al., 2014)	Modified scale
GOSIP scale	<ol style="list-style-type: none"> <li>1. In general, I am someone who, given the chance, seeks contact with others online.</li> <li>2. In general, I am someone who answers questions of others in online discussion forums.</li> <li>3. In general, I am someone who enjoys initiating a dialog online.</li> <li>4. In general, I like to get involved in online discussions.</li> <li>5. I find the idea of belonging to an online discussion group pleasant.</li> <li>6. I am someone who likes actively participating in online discussions.</li> <li>7. I am someone who likes interaction with like-minded others online.</li> <li>8. In general, I thoroughly enjoy exchanging ideas with other people online.</li> </ol>	<ol style="list-style-type: none"> <li>1. In general, I am someone who, given the chance, seeks contact with others online.</li> <li>2. In general, I am someone who answers questions of others in online discussion forums.</li> <li>3. In general, I am someone who enjoys initiating a dialog online.</li> <li>4. In general, I like to get involved in online discussions.</li> <li>5. I find the idea of belonging to an online discussion group pleasant.</li> <li>6. I am someone who likes actively participating in online discussions.</li> <li>7. I am someone who likes interaction with like-minded others online.</li> <li>8. In general, I thoroughly enjoy exchanging ideas with other people online.</li> </ol>

#### **4.2.1.2 Online Servicescapes**

The measures of online servicescapes were adopted from Harris and Goode (2010). Their scale was an extended version of the initial e-servicescape (Heijden, 2003). It used a five-point Likert scale with anchors of ‘very dissatisfied’ to ‘very satisfied’. For this research, the same Likert scale was applied. This scale was also used by Venkatesh et al. (2011) in their study of government needs in the design of e-service platforms, in terms of safety, security, and useability features. This is measured in three sub-concepts: aesthetic appeal, layout and functionality, and financial security. Aesthetic appeal relates to how attractive, alluring and impressive websites are very the customer’s perspective, which can influence their purchase decisions (Wang et al., 2010). This includes visual appeal, originality of design and entertainment value. Visual appeal refers to how the online service looks and whether it is appealing enough for the

customer to explore the product further (Lindgard et al., 2011). In a study conducted by Harris and Goode (2010), this scale had a Cronbach's Alpha of 0.8524.

For the purpose of this research, it was determined that the concepts overlapped, consequently only visual appeal was considered.

**Table 5: Multi-item Scale for Visual Appeal**

Item	Original scale (Harris & Goode, 2010)	Modified scale
Visual appeal	<ol style="list-style-type: none"> <li>1. It is visually attractive.</li> <li>2. It does not use visually appealing graphics.</li> <li>3. The way it displays its products is attractive.</li> <li>4. It is aesthetically appealing.</li> </ol>	<ol style="list-style-type: none"> <li>1. The online service provided by the contact centre is visually attractive.</li> <li>2. The online service, such as the website, is visually appealing.</li> <li>3. The online service information display is attractive.</li> <li>4. The online service information is aesthetically appealing.</li> </ol>

Layout and functionality refer to the organisational arrangement of the online platform and how it functions administratively (Koo & Ju, 2009). This is measured in three sub-concepts: usability, relevance of information, and customisation/personalisation, outlined as follows:

- a) **Usability:** This refers to the effectiveness with which the customer can figure out how to utilise the online platform if they are a first-time purchaser or user (Y. M. Li & Yeh, 2010). In a study conducted by Harris and Goode (2010), this scale had a Cronbach's Alpha of 0.8340.

**Table 6: Multi-item Scale for Usability**

Item	Original scale (Harris & Goode, 2010)	Modified scale
Usability	<ol style="list-style-type: none"> <li>1. There are useful navigational aids.</li> <li>2. The links are obvious in their intent and destination.</li> <li>3. There are convenient ways to manoeuvre among related pages and between different sections.</li> <li>4. Navigation through this website is intuitively logical.</li> <li>5. A first-time buyer can make a purchase from this website without much help.</li> <li>6. This website is user-friendly.</li> </ol>	<ol style="list-style-type: none"> <li>1. The online services are useful navigational aids.</li> <li>2. The links for the online website are obvious in their intent and destination.</li> <li>3. There are convenient ways to manoeuvre among related pages and between different sections.</li> <li>4. Navigation through this website is intuitively logical.</li> <li>5. A first-time self-service user can get help from this website without much help.</li> <li>6. The website is user-friendly.</li> </ol>

b) **Relevance of information:** This refers to the communication materials that are on the online platform and relevant to the customers' needs, including details about the services it offers (Harris & Goode, 2010). In Harris and Goode's (2010) study, this scale had a Cronbach's Alpha of 0.7809.

**Table 7: Multi-item Scale for Relevance of Information**

Item	Original scale (Harris & Goode, 2010)	Modified scale
Relevance of information	<ol style="list-style-type: none"> <li>1. Each page clearly indicates what one can expect to find or do.</li> <li>2. Visual information about products is easily accessed.</li> <li>3. There is a great deal of irrelevant information.</li> <li>4. Technical details about products can be easily accessed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Each page clearly indicates what one can expect to find or do.</li> <li>2. Visual information about its service is easily accessed.</li> <li>3. There is a great deal of irrelevant information.</li> <li>4. Technical details about services can be easily accessed.</li> </ol>

c) **Customisation/personalisation:** This refers to customer perceptions of the capacity of the online service to match their needs or tastes and preferences (Grewal et al., 2004). In Harris and Goode’s (2010) study, this scale had a Cronbach’s Alpha of 0.7263.

**Table 8: Multi-item Scale for Customisation/Personalisation**

Item	Original scale (Harris & Goode, 2010)	Modified scale
Customisation/ personalisation	<ol style="list-style-type: none"> <li>1. This website is tailored toward me.</li> <li>2. If I wanted to, I could customise this website to what I like (e.g. changing colours, layout, fonts etc.).</li> <li>3. I feel that this website is designed for me.</li> <li>4. The services of this website are often personalised to me.</li> <li>5. This website treats me as an individual.</li> <li>6. When communicating with this website I am rarely addressed using my correct name.</li> <li>7. This website makes purchase recommendations that match my needs.</li> </ol>	<ol style="list-style-type: none"> <li>1. The online service is tailored toward me.</li> <li>2. If I wanted to, I could customise this website to what I like (e.g., changing colours, layout, fonts etc).</li> <li>3. I feel that the online service is designed for me.</li> <li>4. The services of this online website are often personalised to me.</li> <li>5. This online service website treats me as an individual.</li> <li>6. When communicating with this online service website I am always addressed using my correct name.</li> <li>7. The online service makes select recommendations that match my needs.</li> </ol>

Financial Security alludes to customers’ impressions of safety in terms of payment procedures, privacy and data collection (Harris & Goode, 2010). This scale consisted of ease of payment and perceived security, outlined as follows:

a) **Ease of payment:** This aims to measure whether the payment process is efficient and easy to use (Harris & Goode, 2010). From Harris and Goode’s (2010) study, this scale had a Cronbach’s Alpha of 0.7696.

**Table 9: Multi-item Scale for Ease of Payment**

Item	Original scale (Harris & Goode, 2010)	Modified scale
Ease of payment	<ol style="list-style-type: none"> <li>1. It has efficient payment procedures.</li> <li>2. The payment facilities of this website are easy to use.</li> <li>3. Paying for goods involves entering a lot of details.</li> </ol>	<ol style="list-style-type: none"> <li>1. The website has efficient payment procedures to pay my fees.</li> <li>2. The fee payment facilities of this website are easy to use.</li> <li>3. Paying for fee involves entering a lot of details.</li> </ol>

b) **Perceived Security:** This aims to capture the perception of customers about security concerns for online services, such as what security information is required to perform the transaction safely (Casalo et al., 2007). In Harris and Goode’s (2010) study, this scale had a Cronbach’s Alpha of 0.6861.

**Table 10: Multi-item Scale for Perceived Security**

Item	Original scale (Harris & Goode, 2010)	Modified scale
Perceived security	<ol style="list-style-type: none"> <li>1. It seems very secure.</li> <li>2. I have no concerns about buying things from this website.</li> <li>3. The security systems of this website seem rigorous.</li> <li>4. When buying from this website I am not reassured by the security procedures.</li> </ol>	<ol style="list-style-type: none"> <li>1. The fee payment methods seem very secure.</li> <li>2. I have no concerns about paying for things from the contact centre self-service website.</li> <li>3. The security systems of this website seem rigorous.</li> <li>4. When using this website, I am not reassured by the security procedures.</li> </ol>

#### **4.2.1.3 Contact Centre Service Quality**

The measures of contact centre service quality were adopted from the study of van Dun, et al. (2011). The scale was a modification of the original service quality scale, which was an extended version of the initial SERVQUAL tool (van Dun et al., 2011). This scale used a seven-point Likert scale anchored by ‘strongly disagree’ and ‘strongly agree’. For this research, a five-point Likert scale was applied to be consistent with other research constructs. All the Cronbach Alpha coefficients exceeded the threshold of 0.7 but were below 0.9. The concept was measured by accessibility, waiting, knowing

the customer, empathy, reliability and customer focus. The variable VRU was removed for the context of this research.

Accessibility refers to easy access to contact details for the centre and the hours of operation (van Dun et al., 2011).

**Table 11: Multi-item Scale for Accessibility**

<b>Item</b>	<b>Original scale (van Dun et al., 2011)</b>	<b>Modified scale</b>
Accessibility	<ol style="list-style-type: none"> <li>1. The phone number of the contact centre of organisation X is easy to find.</li> <li>2. The opening hours of the contact centre of organisation X are sufficient.</li> <li>3. The access to the contact centre is always available.</li> </ol>	<ol style="list-style-type: none"> <li>1. The phone number is easy to find.</li> <li>2. The opening hours of my university contact centre are sufficient.</li> <li>3. The access to the contact centre is available whenever I need it.</li> </ol>

Waiting refers to the time customers must wait when they contact the centre, which can include how long they are expected to wait in the queue (van Dun et al., 2011).

**Table 12: Multi-item Scale for Waiting**

<b>Item</b>	<b>Original scale (van Dun et al., 2011)</b>	<b>Modified scale</b>
Waiting	<ol style="list-style-type: none"> <li>1. When I call, the waiting time is made clear to me.</li> <li>2. The waiting time of the contact centre of organisation X is acceptable.</li> <li>3. The costs of calling the contact centre are acceptable.</li> </ol>	<ol style="list-style-type: none"> <li>1. When I contact, the waiting time is made clear to me.</li> <li>2. The waiting time of the contact centre is acceptable.</li> <li>3. The costs of contacting the contact centre are acceptable.</li> </ol>

Knowing the customer refers to aspects such as asking whether the answer was clear or whether the customer has any other questions, as well as understanding the needs of customers (van Dun et al., 2011). This construct is also known as the customer relationship.

**Table 13: Multi-item Scale for Knowing the Customer**

<b>Item</b>	<b>Original scale (van Dun et al., 2011)</b>	<b>Modified scale</b>
Knowing the customer	As soon as I talk to an employee, I notice that the employee: 1. knows me as their customer 2. immediately has my data at his disposal 3. has insight into my personal data 4. has insight into my product data 5. knows when and why I contacted the contact centre previously 6. knows what other contacts I have had with the organisation.	As soon as I am in touch with a university contact centre staff member, I notice that the contact centre staff member: 1. knows me as their student 2. immediately has my data at his/her disposal 3. has insight into my personal data 4. has insight into my course/unit enrolment 5. knows when and why I contacted the contact centre previously 6. knows what other contacts I have had with my university.

Empathy refers to aspects such as friendliness, listening, and understanding. This also includes employees making customers feel special and providing them with personal attention (van Dun et al., 2011). It has been suggested that customers should be served specifically and given as much individual consideration (El-Bassiouni et al., 2012; Parasuraman et al., 1991).

**Table 14: Multi-item Scale for Empathy**

<b>Item</b>	<b>Original scale (van Dun et al., 2011)</b>	<b>Modified scale</b>
Empathy	The employee I talk to: 1. says his name 2. is friendly 3. is patient 4. understands me correctly 5. listens well 6. takes me seriously 7. puts himself in my situation 8. knows my needs 9. gives me personal attention 10. makes me feel my question is important 11. takes my level of knowledge into account 12. is solution oriented 13. thinks along with me.	The contact centre staff member I have contacted virtually via phone, online, email or chatbot: 1. says his/her name 2. is friendly 3. is patient 4. understands me correctly 5. listens well 6. takes me seriously 7. puts himself/herself in my situation 8. knows my needs 9. gives me personal attention 10. makes me feel my question is important 11. takes my level of knowledge into account 12. is solution oriented 13. thinks along with me.

Reliability comprises concepts such as answering the question and being able to trust the employee's knowledge, which represents the core goal of customer contact centres (van Dun et al., 2011). It also demonstrates the ability of the business to perform as promised, reliably and precisely (El-Bassiouni et al., 2012; Parasuraman et al., 1991).

**Table 15: Multi-item Scale for Reliability**

Item	Original scale (van Dun et al., 2011)	Modified scale
Reliability	<ol style="list-style-type: none"> <li>1. The employee can quickly find the information to answer my question.</li> <li>2. The employee tells me what I can expect.</li> <li>3. The employee knows his own organisation well.</li> <li>4. I can trust the knowledge of the employee.</li> <li>5. The employee can answer all my questions.</li> <li>6. The employee can promise next steps that the organisation actually follows through.</li> <li>7. I do not have to call more than once to receive an answer to my question.</li> <li>8. When I speak to an employee, my question is answered at once.</li> <li>9. When the employee is not able to answer my question, I am redirected to an employee who can.</li> <li>10. I receive written confirmation of important agreements.</li> <li>11. The employee asks the right questions to get to the heart of my question/problem.</li> </ol>	<ol style="list-style-type: none"> <li>1. The contact centre staff can quickly find the information to answer my question.</li> <li>2. The contact centre staff tell me what I can expect.</li> <li>3. The contact centre staff know my university well.</li> <li>4. I can trust the knowledge of the contact centre staff.</li> <li>5. The contact centre staff can answer all my questions.</li> <li>6. The contact centre staff provide me with information on the steps that will be followed to resolve my enquiry.</li> <li>7. I do not have to contact more than once to receive an answer to my question.</li> <li>8. When I speak to contact centre staff, my question is answered at once.</li> <li>9. When the contact centre staff are not able to answer my question, I am redirected to another contact centre staff who can.</li> <li>10. I receive written confirmation of important advice or guidance.</li> <li>11. The contact centre staff ask the right questions to get to the heart of my question/problem.</li> </ol>

Customer focus refers to aspects such as giving proactive advice or providing information to enhance customer satisfaction (van Dun et al., 2011).

**Table 16: Multi-item Scale for Customer Focus**

Item	Original scale (van Dun et al., 2011)	Modified scale
Customer focus	<ol style="list-style-type: none"> <li>1. The employee asks me whether the answer is clear.</li> <li>2. The employee asks me whether my question has been answered.</li> <li>3. The contact centre of the organisation learns from the signals it receives from its customers.</li> <li>4. I receive proactive advice on what products would suit my situation.</li> <li>5. The contact centre of organisation X always keeps its promises.</li> <li>6. The information I receive is consistent, even when I talk to another employee.</li> </ol>	<ol style="list-style-type: none"> <li>1. The contact centre staff ask me whether the answer is clear.</li> <li>2. The contact centre staff ask me whether my question has been answered.</li> <li>3. My university contact centre learns from the signals it receives from its students.</li> <li>4. I receive proactive advice on what services would suit my situation.</li> <li>5. My university contact centre always keeps its promises.</li> <li>6. The information I receive is consistent, even when I have to contact another contact centre staff member.</li> </ol>

#### ***4.2.1.4 Customer Support***

The measures of customer support were adopted from various studies, as follows:

- McLean and Wilson (2016), which investigated the role of online customer support when service offerings are provided online and what factors can enhance online customer experience. It used a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree).
- Ashfaq et al. (2020), which investigated customer experiences with chatbots and their satisfaction in terms of customer service. It used a seven-point Likert scale anchored by one (strongly disagree) to seven (strongly agree).
- Marimon et al. (2010), which investigated online service quality for online supermarkets and what factors enhanced customer satisfaction. It used a five-point Likert scale anchored of one (poor) to five (excellent).

- Kiran and Diljit (2012), which investigated the service performance of a web-based library service. It used a seven-point Likert scale anchored by one (strongly disagree) to seven (strongly agree).

Customer support consists of social interaction, support interaction, system support and service benefit.

Customer social interaction refers to getting assistance in searching and using information, especially self-service information (Klaus, 2013).

**Table 17: Multi-item Scale for Customer Social Interaction**

Item	Original scale (Khulthau, 2004; Lui, 2003; McMillan & Hwang, 2002; Song & Zinkhan, 2008)	Modified scale
Customer social interaction	<ol style="list-style-type: none"> <li>1. It would have been useful to be able to ask for direction in locating the information.</li> <li>2. It would have been useful to be able to talk to people who know about the topic.</li> <li>3. It would have been useful to ask for advice while searching for the information.</li> <li>4. It would have been useful to have assistance in identifying the correct material.</li> <li>5. It would have been useful if the website facilitated two-way communication.</li> <li>6. It would have been useful if the website gives me the opportunity to talk back.</li> <li>7. It would have been useful if the website facilitates instant (live) communication.</li> <li>8. It would have been useful if the website enabled conversation.</li> </ol>	<ol style="list-style-type: none"> <li>1. It was useful to be able to ask for direction in locating the information related to my course.</li> <li>2. It was useful to be able to talk to people who know about the topic I am enquiring about.</li> <li>3. It was useful to ask for advice while searching for the information.</li> <li>4. It would have been useful to have assistance in identifying the correct material related to my enquiry.</li> <li>5. It would have been useful if the self-service website facilitated two-way communication.</li> <li>6. It would have been useful if the self-website gives me the opportunity to talk back.</li> <li>7. It would have been useful if the self-service website facilitates instant (live) communication.</li> <li>8. It would have been useful if the website enabled conversation.</li> </ol>

Support interaction refers to the capability of customers to connect with the business through various communication channels, such as customer requests, comparisons of services or product features and pricing. One mode of interaction could be face to face (Negash et al., 2003). In a study conducted by Ashfaq et al. (2020), this scale had a Cronbach’s Alpha of 0.818.

**Table 18: Multi-item Scale for Support Interaction**

Items	Original scale (Dabholkar & Bagozzi, 2002)	Modified scale
Support interaction	<ol style="list-style-type: none"> <li>1. Human contact in providing services makes the process enjoyable for me.</li> <li>2. Personal attention by the service employee is very important to me.</li> <li>3. I like interacting with the person who provides the service.</li> <li>4. It bothers me to use a chatbot when I could talk to a person instead.</li> </ol>	<ol style="list-style-type: none"> <li>1. Human contact in providing services makes the process enjoyable for me.</li> <li>2. Personal attention by contact centre staff is very important to me.</li> <li>3. I like interacting with the people who provide the service at my university contact centre.</li> <li>4. It bothers me to use a chatbot or other online service like email when I could talk to a person instead.</li> </ol>

System support refers to getting assistance in system-related service (Negash et al., 2003). In a study conducted by Marimon et al. (2010), this scale had a Cronbach’s Alpha of 0.887.

**Table 19: Multi-item Scale for System Support**

Item	Original scale (Marimon et al., 2010)	Modified scale
System support	<ol style="list-style-type: none"> <li>1. This site is always available for business.</li> <li>2. This site launches and runs right away.</li> <li>3. This site does not crash.</li> <li>4. Pages at this site do not freeze after I enter my order information.</li> </ol>	<ol style="list-style-type: none"> <li>1. The chatbot and self-service such as ASK FAQ is always available for me to use.</li> <li>2. The functions on the chatbot or self-service launch and run right away.</li> <li>3. The online service site does not crash.</li> <li>4. Online services do not freeze.</li> </ol>

Service benefit refers to the overall service provided by the business in terms of relevant assistance (Kiran & Diljit, 2012). In a study conducted by Kiran and Diljit (2012), this scale had a Cronbach's Alpha of 0.897.

**Table 20: Multi-item Scale for Service Benefits**

Item	Original scale (Kiran & Diljit, 2012)	Modified scale
Service benefits	<ol style="list-style-type: none"> <li>1. Using web-based services, I can easily get what I am looking for most of the time.</li> <li>2. Using web-based services, I can get the information I am looking for in minimal time and effort.</li> <li>3. Using web-based services, I can get the exact information I'm looking for.</li> <li>4. The web-based services have innovative features that are interesting to use.</li> <li>5. Using web-based services makes me feel the library is truly dedicated to fulfilling my needs.</li> </ol>	<ol style="list-style-type: none"> <li>1. With my university contact centre, I can easily get what I am looking for most of the time.</li> <li>2. With help provided by my university contact centre virtually through a chatbot or online enquiry, I can get the information I am looking for in minimal time and effort.</li> <li>3. Using my university contact centre service, I can get the exact information I'm looking for.</li> <li>4. My university contact centre services have innovative features that are interesting to use.</li> <li>5. Using services provided by my university contact centre makes me feel that the university is dedicated to fulfilling my needs.</li> </ol>

#### 4.2.1.5 Customer Satisfaction

As discovered through literature review, customer satisfaction is a crucial metric for businesses, indicating the level of satisfaction and fulfillment customers experience when interacting with a business's contact centre staff (Marr and Neely, 2010). So, to understand this, traditional surveys and questionnaires, method was used so that participants, provide structured feedback (Connell & Burgess, 2006). The measures were adopted from study conducted by Kiran and Dilji (2012); Marimon et al. (2010) and van Dun et al. (2011).

**Table 21: Multi-item Scale for Customer Satisfaction**

<b>Item</b>	<b>Original scale (Kiran &amp; Dilji, 2012; Marimon et al., 2010; van Dun et al., 2011)</b>	<b>Modified scale</b>
Customer satisfaction	<ol style="list-style-type: none"><li>1. The employee asks me whether I am satisfied at the end of the conversation.</li><li>2. When I have had contact with the contact centre, sometime after this contact I am asked whether this contact was to my satisfaction.</li><li>3. I feel very happy when I get what I want from the web-based services.</li></ol>	<ol style="list-style-type: none"><li>1. The contact centre staff ask me whether I am satisfied at the end of the conversation.</li><li>2. When I have had contact with my university contact centre, sometime after this contact I am asked whether this contact was to my satisfaction.</li><li>3. I feel very happy when I get what I want from the service provided by my university contact centre.</li></ol>

#### 4.3 Sampling

Samples are smaller sets of objects from a given population that are used to generalise the truth about that population (Gray, 2014). An important first step to sampling is to identify the target population from which the sample will be drawn. This helps shape the research project and allows for generalisability of the findings across the target population (Asiamah et al., 2017). The purpose of this research was to gain a general understanding about virtual contact centre environments in Australia. As such, the target population were university students that consisted of both undergraduate and postgraduate students across all eight states and territories in Australia, with a

consideration of domestic and international student cohorts to allow for better representation in the sample. Previous researchers have noted that understanding the first-year service encounter plays a critical role in overseeing transition to tertiary university life (McKenzie & Egea, 2016). However, for the purpose of this research, both first year students and later students were considered, to allow for greater understanding of the operating model.

Determining the appropriate sample size is vital in order to validate the research findings (Bartlett et al., 2001) and this can be a challenge for many researchers. Inappropriate sample size, whether too small or too excessive, can influence the quality of the research output (Ryan, 2013). For the purpose of this research, the sample size was determined based on percentage of the Australian student population size (Muthen & Bengt, 2002).

A larger sample size is recommended when testing and validating complex models (MacCallum et al., 2001). Some statisticians suggest that at least 100 is a good sample size (Bissell & Plews, 1980; Surhone et al., 2010). A number of studies suggest that a sample size of 400 is recommended for structural equation modeling (SEM) (MacCallum et al., 2001). Given the nature of this research, it was determined that a minimum sample size of 400 would be appropriate.

A non-probability quota sampling technique was applied to ensure that certain subgroups of the population were adequately represented in the sample (Cochran, 1977). This technique was utilised to gain representative data from different types of students, including domestic and international students, and postgraduate and undergraduate students. It ensured some degree of representation from all the strata of the student population (Wagner, 1991).

According to the Department of Education (2020), the majority of the university student population in Australia is concentrated in two states, namely Victoria (VIC) and New South Wales (NSW), which account for more than 60% of the total university student population. By contrast, Tasmania (TAS) and the Northern Territory (NT) account for less than 4% of the student population. Table 22 provides a summary of the targeted sample allocation for each state that was calculated based on the number of relatively

proportioned to the total university student population in each state only as the study focused on university sector hence non- higher education population was excluded.

**Table 22: Sample Allocation Summary**

<b>Targeted sample</b>			
<b>States/territories</b>	<b>Student population</b>	<b>% Relative to population</b>	<b>Target sample of 400</b>
VIC	453,381	31.4%	125
NSW	433,902	30.0%	120
QLD	248,212	17.2%	69
WA	129,531	9.0%	36
SA	89,054	6.2%	25
ACT	42,585	2.9%	12
TAS	36,484	2.5%	10
NT	12,023	0.8%	3
<b>Total</b>	<b>1,445,172</b>	<b>100%</b>	<b>400</b>

Source: Department of Education (2020)

#### **4.4 Pilot Study**

Pilot testing allows researchers to capture feedback from participants to ensure that survey questions and instructions work, that respondents can understand the content correctly and that the survey has a sense of coherency (Lancaster et al., 2004). In this study, the logical flow of the survey was corrected following the pilot study. The survey was linked to the Dynata webpage using the customised feature offered in Qualtrics with the creation of the PSID and PID. These were also tested to ensure that they worked at Dynata’s end and were captured correctly at the researcher’s end. This was followed by a soft launch of the survey with 25 research participants. Once this was fully completed, the results were screened to check for errors and anomalies. With no anomalies being detected, a full launch was conducted and the survey was made available for seven days. A total of 429 valid completed surveys were collected.

#### **4.5 Reliability and Validity Analysis**

For the purpose of this research, the following techniques were used to confirm the reliability and validity of the data.

#### **4.5.1 Data Normality Distribution**

Prior to analysing data, it is vital to check that any of the ‘assumptions’ incurred on individual tests are not violated. A common assumption is that the data collected is normally distributed, when the shape of the data distribution corresponds to the normal distribution in the sense that data have a symmetric bell-shaped curve (Hair et al., 2011). The univariate normality for every element was verified using skewness and kurtosis estimates. Skewness of less than three and kurtosis of less than ten are considered univariate normality (Ahad et al., 2011). After verifying each element's univariate normality, the coefficient of kurtosis was examined for multivariate normality. Standardised coefficients greater than three indicate non-normality (Mukherjee & Richardson, 2020). For this study, except for the two string text items (gender and suggestion items), normality tests were carried out for all other questions in the online survey. The results of the normality tests are discussed in the next chapter and are presented in Appendix B.

#### **4.5.2 Reliability and Validity**

One of the most imperative principles for evaluating the quality of research results and tests is validity and reliability (Gliem & Gliem, 2003). Validity determines whether the questions measure what they are meant to measure and how truthful the results are. Reliability determines whether the actual measurement instrument's give consistent answers (Golafshani, 2003). It has been established that measurements must be reliable and precise so that the same results can be obtained by another researcher using the same instruments or measurements. So, for the purpose of this study, a Cronbach's Alpha reliability measure was deployed as Likert scales were used for construct items (Gliem & Gliem, 2003) and it is the most prevalent indicator of scale reliability and demonstrates the interrelationship between several items (Gliem & Gliem, 2003; Golafshani, 2003). Cronbach's Alpha values range from zero to one (0-1) and it is recommended that the values should be 0.70 or higher (Vaske et al., 2017). However, it has also been suggested that a lower threshold of 0.60 is acceptable (Vaske et al., 2017). This study therefore adopted the recommended threshold of 0.60.

During confirmatory factor analysis (CFA) in SEM, the process entailed examining the reliability of individual indicators, reliability of constructs, convergent validity,

discriminant validity, and overall fit of the model (Benitez et al., 2020). Convergent validity can be assessed by reviewing the items' factor loadings, average variance extracted (AVE), as well as construct reliability (CR) (Hair et al. 2010). The results are discussed in the next chapter.

#### 4.6 Response Rate

The response rate is critical for gauging the effectiveness and representativeness of the research. It is defined as the proportion of individuals who actively participated in the study relative to the total number of eligible or approached participants (Baruch & Holtom, 2008). The response rate serves as a key indicator of engagement within the target population.

Understanding and monitoring the response rate in this research was paramount for ensuring the credibility, reliability, and validity of the study's findings (Johnson & Owens, 2014). It reflected the willingness of students to provide feedback on their encounters with the university contact centre, thereby influencing the generalisability of the results to the broader student population.

To track the response rate, the researcher meticulously recorded and analysed the total number of participants approached (Ghauri & Gronhaug, 2002) versus those who completed the survey. This information is instrumental in assessing the extent to which the study captures the perspectives of the intended audience and whether any biases may exist in the collected data findings (Johnson & Owens, 2014). A high response rate enhances the study's credibility, as it suggests a more comprehensive representation (Hair et al. 2011), ultimately contributing to the robustness of the research outcomes.

As shown in Table 23, of the 902 respondents approached, 212 declined to participate, resulting in 690 useable cases were, achieving a response rate of 76%.

**Table 23: Summary of Response Rate**

<b>Response</b>	<b>N</b>
Approached	902
Collected	690
Screened out	212
<b>Response rate</b>	<b>76%</b>

## **4.7 Analytical Methods**

The analytical methods employed in this research were descriptive analysis, multi-group analysis, and modelling analysis. Descriptive analysis involved using the Statistical Package for the Social Sciences (SPSS) to profile respondents based on demographics, contact centre usage, and satisfaction levels. Multi-group analysis, conducted through AMOS software, compared structural effects across different student categories (domestic vs international, undergraduate vs postgraduate, and gender differences). Modelling analysis consisted of exploratory factor analysis (EFA), CFA, and SEM. EFA is applied to identify underlying constructs and patterns in the data, while CFA confirms the measurement models' reliability and validity. SEM was used to analyse structural relationships and test hypotheses regarding the impact of service quality, the online servicescape, and customer support on student satisfaction. The analysis proceeded sequentially from descriptive statistics to factor analysis and, finally, SEM to provide a comprehensive understanding of the factors influencing student satisfaction with university contact centres. The research employed these various analytical methods to address specific gaps in the understanding of student satisfaction with university contact centres in the Australian higher education context.

### **4.7.1 Descriptive Analysis**

This refers to a method of analysing data that will help describe certain patterns (Loeb et al., 2017). This method was used for profiling the respondents in their demographic cohorts (domestic vs international students; undergraduate vs postgraduate) and where they were studying. SPSS was used to perform the descriptive analyses. Interpretation of data was carried out through the basic statistical techniques of relative frequencies, count, means and data distribution across three aspects:

- Participant demographics: to capture the overall demographics of students (Section G of the online survey).
- Participants' use of university contact centre: to capture overall use of the service in general (Section A of online survey).
- Satisfaction levels in relation to university contact centres: which involved assessing how students perceived specific variables or constructs in the conceptual framework in relation to contact centre service quality, online

servicescapes and customer support (Section B, C, D, and E of the online survey).

#### **4.7.2 Modelling Analysis**

This study undertook various steps in the modelling process which were outlined herein more detail. The tools used for factor analysis and SEM were the SPSS and AMOS, a statistical software tool for analysing data (Reddy, 2019). In summary, the modelling process involved:

- EFA: to examine whether all items of a construct share a single underlying factor (Yong, 2013).
- CFA: to confirm the unidimensionality of the constructs (Hair et al., 2011). This was conducted in the following steps:
  - One-factor congeneric model analysis to ensure the unidimensionality of each construct as single latent factor (Reuterberg & Gustafsson, 1992).
  - Measurement modelling, which is multi-variant analysis to examine the relationship between the latent variables and what it measures.
- SEM: a path analysis technique used to explain the causal relationships among constructs and validate the hypotheses for this project (Thakkar, 2020).

#### **4.7.3 Factor Analysis**

This statistical method is used for simplifying various constructs to discover patterns in each set of variables. Factor analysis helps to understand to what extent items from the designed scale may reflect an underlying hypothetical construct or constructs, known as factors. This helps to simplify the data, such as reducing the number of variables in regression models (J. O. Kim & Mueller, 1979). The primary objective of EFA is to reduce data through exploring the pattern of responses, while the objective of CFA is measurement model confirmation (J. O. Kim & Mueller, 1979). The differences between EFA and CFA are as follows:

- EFA results in factor identification, CFA starts with the conception of the theoretical constructs meant for confirmation and progresses to structural modelling after validation of the composite measurement models.

- EFA gives only Cronbach's Alpha reliability, CFA includes composite reliability, measurement of reflective models, convergent validity, discriminant validity, and structural modelling (Hair et al. 2011; Ul Hadia et al., 2016).

For the purpose of this study, both EFA and CFA were crucial to validate the points highlighted.

### ***Exploratory Factor Analysis (EFA)***

This refers to a method of analysing data that has a large set of variables, to identify the underlying relationships between the variables under study and to check if all items are loading on the same factor per construct. This method of analysing data helps to uncover complex patterns in the factor matrix and to check which items are showing low loadings and having multiple factors (Yong, 2013). This research used scales from previous research and while EFA was not needed it is still recommended to conduct EFA, especially when the scale has been modified and adapted to suit the research content (Hair et al., 2011). Hence, EFA was executed to confirm that each item loaded onto the appropriate construct items and that the construct was reliable (Hair et al., 2011; Yong & Pearce, 2013). EFA was the preliminary step taken in this research to explore the factorability of the 125 items influencing customer satisfaction in Australian universities.

Principal axis factoring (PAF) with a direct-oblimin rotation was the chosen method and the analysis was performed using SPSS. This method was chosen as it is a common way to conduct EFA in study areas where the majority of variables used in behavioural research are not normally distributed (Micceri, 1998).

A correlation matrix was used to assess sampling accuracy in the EFA analysis. This matrix gives an indication of the correlation degree between different variables or similarities between variables (Hair et al., 2011). For the purpose of this study, the two correlation matrix measures used in EFA were Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity. The KMO value ranges from 0–1; 0.6 is deemed the minimum value required (Baldner & McGinley, 2014). Bartlett's test of sphericity, on the other hand, must have probability-tested significance at  $p < .05$ . In addition to this, a large sample size is essential for ensuring the reliability of the correlation matrix

(MacCallum et al., 2001) so, for this study, a final sample size of 429 was appropriate for EFA analysis.

Eigenvalues were then used to determine the number of factors to be retained and excluded because eigenvalues represent the amount of total variance explained by a factor. Any factor with an eigenvalue greater than 1 explains more variance than a single observed variable, which means that a substantial amount of variance is explained, and that factor should be retained (Hair et al., 2011). Based on recommendations, an eigenvalue greater than 1 was used to decide which factors to retain in this study.

EFA is used to explore the factor structure of a measure and examine its internal reliability (Yong & Pearce, 2013). As noted above, while EFA is not necessary when adopting a valid and reliable measurement scale from existing literature, it is generally recommended for scale development (Hair et al., 2011). In this study, scales from prior research were adapted to measure the constructs and modified to suit the context of the university environment in Australia. The scales from prior research were used in different industries (e.g., banking, retail, tourism, insurance, and health) and in different geographic settings than those relevant to this study. Also, some items (interactivity, originality of design, entertainment value, and VRU) overlapped with other items so they were removed, as explained in Chapter 2. Other items were reworded to suit the university setting, which changed the actual linguistic meaning of the questions. Hence, EFA was executed to confirm that each item loaded onto the appropriate construct items and that the construct was reliable (Hair et al., 2010; Yong & Pearce, 2013). For this research, the conceptual framework consisted of five main constructs with some sub-constructs. EFA was used to analyse the interrelationship of all measured items to their respective constructs.

Two primary extraction methods are used in EFA: maximum likelihood and PAF. Maximum likelihood estimation assumes that variables (items) are normally distributed. However, the majority of variables used in behavioural research are not normally distributed (Micceri, 1998). PAF does not contain any distributional assumptions and is thus recommended for use when any variables or items are non-normally distributed (Fabrigar et al., 1999). As a result, PAF was chosen for this study. The EFA analysis was performed using the dataset of 429 valid cases. As a preliminary

step to EFA, factor analysis using PAF and direct oblimin rotation (Ul Hadia et al., 2016) was conducted.

### ***Confirmatory Factor Analysis (CFA)***

Once EFA had been identified as the possible construct for the study, the next step was to confirm these factors through the CFA in AMOS. This was to ensure the reliability and validity of the measuring instruments prior to conducting a SEM analysis. The process began with a one-factor congeneric model analysis to ensure the unidimensionality of each construct, followed by the measurement model (also known as the multifactor model) analysis.

The one-factor congeneric model is the simplest form of measurement model that represents the regression weights of the set of observed indicator variables on a single latent variable (Reuterberg & Gustafsson, 1992). Each observed variable should only be represented by one latent variable, and congeneric modelling assumes that each indicator measures the same latent variable with possibly different scales, different degrees of precision and different errors (Hair et al., 2011). Therefore, a one-factor congeneric model can demonstrate the best fit of the model when observed variables associated with the construct are valid.

Once all one-factor congeneric models had been tested, these constructs were combined into multifactor models. These are also known as measurement models, which refer to the implicit or explicit models that relate the latent variable to its indicators (Graham, 2003). Multifactor model analyses were then carried out to ensure the measurement models adequately explained the sample data and there was no factor cross loading. The multifactor models were evaluated based on the measurement model validity. The final step involved putting together all components to form a structural model and test the feasibility of the model. The study hypotheses were tested after the identification of structural paths. CFA was the chosen method as it is capable of testing (confirming) specific hypotheses or theories concerning the structure underlying a set of variables through a complex and sophisticated set of techniques (Hair et al., 2012).

In this study, CFA was executed to validate the structure of the scale following EFA. To allow the researcher to test how well the measured variables represent the constructs, it

is recommended that CFA be carried out before executing SEM (Hair et al., 2010; Schreiber et al., 2016).

The CFA process entails examining the reliability of individual indicators, constructs, convergent validity, discriminant validity, and the overall fit of the model (Schreiber et al., 2016). It also helps determine whether the data fit the priori hypothesised model and the extent to which the priori hypothesised model represents the data (Schermelleh-Engel et al., 2003). Therefore, model fit needs to be carried out to reflect how well a specified model reproduces the covariance matrix among the observed variables (Hair et al., 2010). The two types of global fit statistics to evaluate the model fit are the model test statistics and the approximate fit indexes (Schermelleh-Engel et al., 2003). As there is no one single index that can perfectly predict a model in SEM (Hair et al., 2010), a combination of fit indexes will provide more detailed and accurate evaluation of the model fit (Schermelleh-Engel et al., 2003). Categories that are used to evaluate fitness are absolute fit, incremental fit and parsimonious fit. Each category includes several fitness indices that can reflect the model's current fitness. As a rule of thumb, the following guidelines should be used to evaluate model fit:

- Chi-Square  $\chi^2$ : the specified model is assumed to be correct and thus fails to reject the null hypothesis or the lack of statistical significance of  $p > 0.05$ .
- Chi-square fit statistic/degrees of freedom (CMIN/DF): the ratio  $\chi^2/df$  should be as small as possible. As no absolute standards exists, a ratio between 2 and 3 is indicative of a “good” or “acceptable” data-model fit, respectively.
- Comparative fix index (CFI): the recommended value of CFI is greater than 0.90 to indicate a well-fitting model.
- Standardised root mean square residual (SRMR): a value below the recommended threshold of 0.08 is accepted as a good overall model fit.
- RMSEA: a value less than 0.05 indicates a good fit; a value between 0.05 and 0.08 represents reasonable errors of approximation in the population.

- Goodness-of-fit index (GFI): 0.95 is indicative of good fit relative to the baseline model, while values greater than .90 are usually interpreted as indicating an acceptable fit.
- Adjusted goodness-of-fit index (AGFI): 0.90 is indicative of good fit relative to the baseline model, while values greater than .85 may indicate an acceptable fit.
- TLI: 0.97 is indicative of good fit relative to the independence model, whereas values greater than .95 may be interpreted as an acceptable fit (Barrett, 2007; Wu et al., 2009).

In consideration of both the sample size and the model complexity of this research, the CMIN, its DF and p value, the RMSEA, the CFI and the value of the CMIN/DF were chosen over other indices for this research. This combination consisted of one absolute fit index (e.g., the GFI, AGFI, the RMSEA, or the SRMR), one incremental fit index (the CFI or the TLI), one GFI (the CFI) and one badness-of-fit index (the RMSEA or the SRMR). This combination of fit indices was considered suitable to evaluate the model in this research (Hair et al., 2010).

In addition, to improve the model fit, bootstrapping and Mardia's coefficient were also considered as prerequisites in SEM for data to be normally distributed, as non-normal data reduce the reliability of SEM. This means that all data are univariate distributed, all joint distributions of any pair of variables are bivariate normal, and all bivariate scatterplots are linear with homoscedastic residuals. Removing outliers would improve the normality of data (Correa Ferraz et al., 2022). When Mardia's coefficient is greater than 5, it is an indication of multivariate non-normal distribution of data. In this study, Bollen-Stine bootstrapping was applied to correct non-normality. Bootstrapping is used to estimate standard errors in regression analyses without making any distribution assumptions (Sharma & Kim, 2013). The purpose of the Bollen-Stine bootstrap was to correct the standard error and fit statistics bias that occurred because of non-normality. The process involved repeatedly resampling the sample population with replacements to approximate what would happen if the entire population were sampled. The number of bootstrap samples used in this study was 1,000. If the Bollen-Stine outcome showed that each item in the model remained statistically significant at a 5% level of

significance ( $p > 0.05$ ), there was insufficient evidence to reject the hypothesised model and thus the suggested model is a good fit (Enders, 2005).

#### **4.7.4 Structural Equation Modelling (SEM)**

SEM combines factor analysis and multiple regression analysis (Thakkar, 2020). This method of analysing data helps the researcher to test the theoretical model. By employing a process of rigorous hypothesis testing, researchers are empowered to delve deeper into their enquiries, thereby uncovering intricate connections among various constructs. This approach allows for the expansion of existing knowledge by elucidating complex relationships. (Barrett, 2007).

SEM was used in this research as it offset measurement error. Thus, it gave a more reliable estimation than the regression techniques of how well the data supported the model (Cher & Ping, 2013). Furthermore, SEM has become a relevant statistical instrument in the social sciences and behavioural sciences. SEM can model nomological networks using abstract principles demonstrated through constructs and integrates these constructs in a structural model to study their relationships (Benitez et al., 2020). Before performing SEM analysis, it is necessary to define the model correctly. The direction, nature of the relationships between constructs and their respective indicators must be accurately depicted, as an incorrect model specification can lead to inaccurate results that affect the process of building theory (Stein et al., 2017). Hair et al. (2011) outlined the steps used to undertake SEM analysis, as follows:

1. Defining individual constructs: this involves developing the construct and defining the actual measurements for the constructs.
2. Developing the overall measurement model: this involves specifying the measurement models enabled through use of diagrams to construct latent variables.
3. Designing a study to produce empirical results: this involves research design (sample size, type of data) and model estimation (e.g., how to develop the model structure, determining the appropriate estimation technique and using appropriate technology for data analysis).
4. Assessing the measurement model's validity: this involves testing and validating the developed model through:

- a. GFI, which describes how well the specified model reproduces an observed covariance matrix among the indicator items (Cheung & Rensvold, 2002).
- b. Construct validity, which is the extent to which the desired set of measured items reflects the theoretical constructs that have been designed to measure them (Bearden et al., 2011).

Six of the study hypotheses were evaluated using the structural path model. Firstly, model fit was assessed followed by path analysis. To test the hypotheses, a t value ( $t \pm 1.96$ ) and a significance level ( $p < 0.05$ ) were used to identify whether each hypothesis was supported (Byrne, 2010).

In summary, data was analysed in the following order:

1. Descriptive statistics: used to conduct general statistical analysis of respondent profiles.
2. Factor analysis: used for simplifying various constructs (service quality of contact centres, perceptions of online servicescapes and customer support, with the moderator of GOSIP).
3. SEM: used to test various relationships and to determine if there were any connections between them (e.g., between each sub-construct) and the overall dependent variable, customer satisfaction.

#### **4.7.4 Multi-Group Analysis**

Multi-group analysis methods were employed to conduct comparisons aimed at evaluating the structural effects within three distinct student categories. This encompassed, exploring potential variations among domestic and international students. Additionally, the analysis delved into gender differences among students, examining the structural effects that might differ based on gender. The comparison also extended to differentiate between undergraduate and postgraduate students, shedding light on potential disparities in structural outcomes within these academic levels. To execute these multi-group comparisons, AMOS software was utilised, leveraging its group feature to discern and assess significant differences across the specified student categories. The analytical approach adopted non-parametric tests, as suggested by

Thakkar (2020), enabling the comparison of two or more independent groups and providing valuable insights into the nuanced variations in structural effects within the diverse student populations under investigation.

The following steps were taken for the multi-group analysis, adapted from Hair et al. (2011):

1. Model specification: The initial model, a SEM, was developed in AMOS using the graphical interface. Relationships between variables were specified, and parameters were estimated.
2. Created groups: Through AMOS, groups for model comparison were identified based on demographic characteristics for the following parameters:
  - Gender: male, female
  - Student residency type: international and domestic students
  - Student academic level: undergraduate and postgraduate
3. A grouping variable was created in the dataset, assigning each case to its respective group with appropriate coding (e.g., 1 for Group 1, 2 for Group 2).
4. Set up multi-group analysis in AMOS: The actual SEM model developed was then run using the analysis properties in the dialogue box, and the 'Groups' tab was accessed.
5. Estimated parameters: After specifying the groups, the analysis was run in AMOS, estimating parameters separately for each group. Results for each group were examined, focusing on parameter estimates, fit indices, and other relevant statistics. This assessment helped in determining whether there were significant differences in the structural relationships across groups.
6. Compare groups: Parameter estimates between groups were compared, examining differences in path coefficients, variances, or covariances. Similar to the methods used in SEM and CFA, model fit was assessed by evaluating fit indices such as chi-square, comparative fit index (CFI), the Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA) for each group (Hair et al., 2010). Formal statistical tests, such as the chi-square difference test, were conducted to determine if differences in model fit across groups were

statistically significant (Brown et al., 2017; Byrne, 2004; Hair et al., 2010; Smith et al., 2016).

#### **4.8 Ethical Considerations**

The major ethical issues in conducting research are informed consent, beneficence, respect for anonymity and confidentiality, and respect for privacy. Failure to address such issues means putting the rights of research participants at risk (Walker, 2007). For the purpose of this research, the following ethical issues were addressed:

- **Informed consent:** information was built into the research questionnaire and documented to explain informed consent to participants. The researcher ensured that all participants received adequate information about the research. The front page of the online survey explained what the research was about and how their responses could help improve university contact centres. Assurance was made that their participation was voluntary and they had the right to refuse to respond to any question. All participants were given the contact details of the chief investigators in case any issues arose during their participation. Dynata distributed the consent and participation forms when they send out the online survey link.
- **Beneficence:** the researcher ensured that the study would not harm anyone physically, mentally, or socially, as it sought to maximise the benefit for participants. Their input in terms of data collection had a positive influence, enhancing service delivery for their benefit as well as for others around them. The questions were designed in a way that made the participants comfortable, and questions that could cause stress or emotional disturbance were avoided.
- **Respect for anonymity, confidentiality and privacy:** participants received assurance in writing that they would remain anonymous, that their information would be kept confidential, and the data would be stored in a secure place using complex passwords.
- **Language:** given the nature of the study, participants came from various cultures; as such, the questions were designed in very simple, clear English (Walker, 2007).

## **4.9 Chapter Summary**

This chapter has outlined the research methodology applied in this study, which was a positivist paradigm and a quantitative approach. It has also documented the process of instrument development and validation, and the techniques used for collecting quantitative data through an online survey. Modification of the scales through step by step processes was also explained in detail. The methods of analysing data were also discussed, as were the ethical issues relevant to the research and how these were addressed.

## **CHAPTER 5: DATA ANALYSIS**

### **5.0 Chapter Overview**

This chapter presents the research outcomes from the national online survey undertaken for this study. The data analysis presented in this chapter comprises descriptive statistics and a discussion of the profile of respondents and their perceptions of using contact centres. This is followed by a discussion of the EFA and CFA for all items included in the conceptual framework. The assessed validity of the model is then discussed before moving on to hypotheses testing using SEM, moderation analysis as well as multigroup analysis.

### **5.1 Preparation and Examination of Data**

Data was prepared and examined in various stages. Firstly, the data was cleaned to ensure it was complete and appropriate for the analysis. Cases that were incomplete or not applicable were removed from the data and missing values were also examined and treated. Second, the data was screened for normality and outliers.

#### **5.1.1 Data Cleaning**

After data had been collected, the next important step was to prepare the data for analysis. To ensure the completeness and accuracy of the data prior to conducting any analysis, the researcher undertook several audit checks in data coding (see Appendix D for the survey codebook) and screening to ensure accuracy. Missing data are regarded as values that are unavailable for analysis and can result from researcher or respondent actions, such as not responding to a question or data being erroneous (Batista & Monard, 2003). Several practices are used to treat missing values. The most common solution is to retain the missing value when the number of missing data is small and non-random. Otherwise the researcher can choose to remove cases with missing values or to replace the missing values (Hair et al., 2011). For this research, data was cleaned in stages. Firstly, the researcher removed all cases of those who were ineligible to participate (167) as they had not used a university contact centre in the previous 24

months. Secondly, based on the remaining cases, the percentage of variables missing a response for each participant case was calculated.

The missing values calculation method used by the researcher aligned with the steps developed by Hair et al., (2011), which explained the rules of thumb for imputation of missing data (see Figure 8).

**Figure 8: Rule of Thumb for Imputation of Missing Data**

<b>RULES OF THUMB 3</b>	
<b>Imputation of Missing Data</b>	
• <b>Under 10%</b>	Any of the imputation methods can be applied when missing data are this low, although the complete case method has been shown to be the least preferred
• <b>10% to 20%</b>	The increased presence of missing data makes the all-available, hot deck case substitution, and regression methods most preferred for MCAR data, whereas model-based methods are necessary with MAR missing data processes
• <b>Over 20%</b>	If it is deemed necessary to impute missing data when the level is over 20 percent, the preferred methods are: <ul style="list-style-type: none"><li>• The regression method for MCAR situations</li><li>• Model-based methods when MAR missing data occur</li></ul>

Source: Hair et al., 2011

The rule of thumb for imputation of missing data in the context of this study on student satisfaction with a university contact centre involved judiciously addressing missing values to ensure the reliability and validity of the research findings. Researchers must carefully consider the nature and extent of missing data, choose appropriate imputation methods, and conduct sensitivity analyses to enhance the overall quality of the study (Hair et al., 2011). The results of the missing data calculations are presented in Table 24.

**Table 24: Frequency and Percentages of Missing Values**

<b>% Missing</b>	<b><i>N</i></b>	<b>%</b>	<b>Cumulative %</b>
0.81	2	0.4	0.4
1.63	1	0.2	0.6
2.44	2	0.4	1.0
3.25	3	0.6	1.5
4.07	1	0.2	1.7
4.88	8	1.5	3.3
5.69	16	3.1	6.4
6.50	17	3.3	9.6
7.32	54	10.4	20.0
8.13	72	13.9	33.9
8.94	248	47.8	81.7
11.38	1	0.2	81.9
13.01	4	0.8	82.7
87.80	1	0.2	82.9
94.31	2	0.4	83.2
95.12	5	1.0	84.2
95.93	30	5.8	90.0
99.19	52	10.0	100
<b>Total</b>	<b>519</b>	<b>100</b>	

Research indicates that it is common to have missing value rates of 15% to 20% in educational and psychological studies (Enders, 2003). Therefore, a filter variable was created to exclude cases for which there was less than 20% of variables with missing values. This resulted in exclusion of 266 cases. As shown in Table 24, there was a clear cut-off point, with the majority of cases falling into two categories that described the distribution of cases based on the percentage of missing values in the study variables (Hair et al., 2011). Table 25 provides a summary of the data cleaning and selection process showing that, of the 690 cases, five cases were missing a response, 94 were incomplete by 85% and 167 had not used a contact centre in the previous 24 months (24.2%). After excluding these individuals, 429 participant responses remained for analysis. The two categories of cases, as mentioned above, are summarised as follows:

**Less than 20% missing values (n = 429; 82.7%):**

- There were 429 cases (individual observations or data points) in the dataset.
- These cases had less than 20% missing values in the study variables (e.g., demographic details not filled in by the respondents).

- This group represents 82.7% of the total cases.

**More than 85% missing variable values:**

- Another group of cases had a percentage of missing values greater than 85%, meaning the majority of the survey was not filled out. This indicates that the respondents abandoned or dropped out of the survey.
- The specific count (n) for this group is not provided, but the existence of these cases is noted.
- This group represents the remaining percentage of cases that fall outside the less than 20% category.

This information is important for understanding the data quality and completeness of the dataset. The delineation between these two groups helps identify subsets of the data with relatively low and high levels of missing information. This can have implications for the analysis and interpretation of the study.

**Table 25: Data Cleaning and Selecting**

Category	Number of responses	Decision	Reason for decision
Not applicable and filtered at the beginning of data cleaning process	167	Screened out	Did not use university contact centre in the previous 24 months so they were deleted and screened out.
Incomplete	94	Removed from analysis	Incomplete responses as more than 85% of variable values were missing.
Incomplete by 6%	5	Retain for EFA and CFA purposes and to keep valuable data	As percentage completed was greater than 94%, valuable data was retained for complex analysis. Section not completed was generally the demographic section, which could be a possible reason not to disclose data from the respondents.
Applicable	429	Used in the analysis	Valid responses.
Total responses recorded in Qualtrics survey software	690		

### 5.1.2 Data Normality Analysis

After cleaning the data, normality was assessed using skewness, kurtosis and the Shapiro-Wilk test for all the variables as an added step for data screening (Hair et al., 2010). The results of the Shapiro-Wilks and Kolmogorov-Smirnov tests are presented in Appendix B, which show that all constructs produced a significance level of less than  $< .05$ , indicating non-normality. However, this is quite common in larger samples and relates to a greater number of observations or data points collected for a study or analysis and the data distribution can be ignored (Brito & Duarte Silva, 2012; Hair et al., 2010;). The values of skewness and kurtosis were also checked for all variables, and these indicated a violation of normality (see Appendix B). While the assessment of skewness and kurtosis in this study revealed values exceeding the conventional threshold of  $\pm 1.0$ , indicating a departure from normality, it is important to recognise that the assumption of normality is not always a prerequisite for the validity of statistical analyses (Hair et al., 2010). In certain cases, non-normality may be acceptable and, in fact, expected, based on the nature of the data or the research design. The decision to deviate from the normality assumption is justified with larger sample sizes. The central limit theorem often comes into play, suggesting that the sampling distribution of the mean will be approximately normal, even if the underlying population distribution is not (Hair et al., 2010). In such cases, researchers might be more comfortable deviating from the normality assumption. Moreover, alternative statistical methods that are robust to non-normality, such as bootstrapping, were employed to improve data normality (Correa Ferraz et al., 2022). This approach acknowledges the real-world variability of data distributions and strengthens the generalisability of the results, making them more applicable to diverse scenarios (Sharma & Kim, 2013).

Normality was further checked by observing the quantile–quantile (QQ) plots and the histograms' shapes and distribution curves for all items in the survey, except the two string text items. The QQ plots and histograms reflected that all the variables varied in terms of normality. All the variables were more or less normally distributed. While most of the histograms were mound-shaped, some of the QQ plots and histograms indicated a slight violation of normal. However, it can be noted that the effect of normality

diminishes when the sample size exceeds 200 cases (Hair et al., 2010), which is relevant to this study as the initial sample size for data analysis was 429.

## 5.2 Data Analysis Process

SPSS version 28 and AMOS version 28 were used for analysing the data. Descriptive analysis and reliability tests were conducted using SPSS, while the factor analysis and structural model analysis were performed in AMOS.

## 5.3 Sample Representation

The target population of the study was Australian university students. Quota sampling was used to ensure representation of the proportion of students across all states. As shown in Table 26, the gaps between percentages relative to the overall student population and percentages relative to the sample collected were small. When adding up the difference, it was zero, which indicated that in some states, data collected was higher than expected. It should also be noted that five participants did not report their location, but the data was still valuable as more than 94% of the responses were completed.

**Table 26: Summary of Sample Recruitment by Target Achieved**

States	Student population	% Relative to population	Target sample 400	Actual	% Relative actual	% Difference in target
VIC	453,381	31	125	114	27	4
NSW	433,902	30	120	131	31	-1
QLD	248,212	17	69	85	20	-3
WA	129,531	9	36	25	6	3
SA	89,054	6	25	39	9	-3
ACT	42,585	3	12	7	2	1
TAS	36,484	3	10	14	3	-1
NT	12,023	1	3	9	2	-1
<b>Total</b>	<b>1,445,172</b>	<b>100</b>	<b>400</b>	<b>424</b>	<b>100</b>	<b>0</b>
Missing item				5		
Total initial sample used for analysis				429		

## **5.4 Descriptive Analysis**

The following descriptive analyses outline the respondent data in two categories. Firstly, the population demographics are discussed. These are the personal characteristics of the respondents in terms of gender, residency status, location, their age, and student cohort types (e.g. domestic or international, postgraduate or undergraduate). Second, the overall contact centre demographics are discussed. This addresses whether enquiries were resolved on first contact, the method of contact and the duration of the enquiry resolutions.

### **5.4.1 Sample Demographics**

Table 27 presents the population profiles of the sample students in this study. The background variables consisted of gender, age, student cohort type in terms of level of study, residency status, and location of responses by states.

Three quarters of participants were domestic students (N = 330, 77.8%) and the remainder were international students (N = 94, 22.2%). There were slightly more female (N = 226, 53.3%) than male participants. Age range was fairly evenly distributed, with about half of the respondents aged between 18 and 25 years and the other half aged 26 and over. The most common location was New South Wales (N = 131, 30.9%), followed by Victoria (N = 114, 26.9%). Nearly two thirds of the cohort were undergraduates (N = 272, 64.2%).

**Table 27: Summary of Sample Demographics**

<b>Variable</b>	<b>N</b>	<b>Percent</b>
<b>Residency Status</b>		
International	94	22.2
Domestic	330	77.8
<b>Gender</b>		
Female	226	53.3
Male	190	44.8
Other	8	1.9
<b>Age</b>		
18-21	104	24.5
22-25	115	27.1
26-29	92	21.7
Above 30	113	26.7
<b>Location</b>		
New South Wales	131	30.9
Victoria	114	26.9
Queensland	85	20.0
South Australia	39	9.2
Western Australia	25	5.9
Tasmania	14	3.3
Northern Territory	9	2.1
Australian Capital Territory	7	1.7
<b>Student cohort</b>		
Undergraduate	272	64.2
Postgraduate	152	35.8

The sample of 429 valid cases consisted of a fair representation of participants from all eight states and territories in Australia, from different groupings across cohorts of study (undergraduate or postgraduate), gender and Australia's 41 universities. When reflecting on data collected against the actual university student population (Department of Education, 2019), an overall consistency was achieved. This indicates that the data collected captured a fair representation of the overall Australian university student population.

**Table 28: Comparison Between Entire Population and the Research Findings**

Variable	Research findings		2019 data	
	N	Percent	N	Percent
<b>Residency status</b>				
International	94	22.2	394,798	27.3
Domestic	330	77.8	1,050,374	72.7
<b>Gender</b>				
Female	226	53.3	894,985	61.9
Male	190	44.8	550,187	38.1
Other	8	1.9	N/A	N/A
<b>Age</b>				
18-21	104	24.5	633,678	43.9
22-25	115	27.1	412,249	28.5
26-29	92	21.7	147,368	10.2
Above 30	113	26.7	251,877	17.4
<b>Location</b>				
New South Wales	131	30.9	433,902	30.0
Northern Territory	9	2.1	12,023	0.8
Queensland	85	20	248,212	17.2
South Australia	39	9.2	89,054	6.2
Tasmania	14	3.3	36,484	2.5
Australian Capital Territory	7	1.7	42,585	2.9
Victoria	114	26.9	453,381	31.4
Western Australia	25	5.9	129,531	9.0
<b>Student cohort</b>				
Undergraduate	272	64.2	1,142,484	79.1
Postgraduate	152	35.8	302,688	20.9

Source: Population data from Department of Education (2020). Sample data gathered by researcher

#### 5.4.2 Participants' Use of University Contact Centres

This section presents the overall contact centre profiling in terms of how the contact centres were used. The background variables included items like whether an enquiry was resolved on first contact, the duration of enquiry resolution, how students approached their university contact centre, and for what reasons they approached them.

Table 30 presents the overall contact centre profiling of students. In terms of participant use of contact centres, almost half the sample reported using online only (N = 194,

45.2%), while less than a quarter reported using telephone only (N = 101, 23.5%). Some participants used both methods (N = 134, 31.2%). In terms of the time taken to resolve the enquiry, 31.5% of the responses indicated that the enquiry was resolved within one day and 27.3% indicated that it was resolved within two days. More than 70% of participants' enquiries were answered on first contact. Participants contacted their university contact centre for various reasons. In this item, respondents were asked to select from a range of reasons and this demonstrated that students had multiple enquiries. The enquiries were analysed and ordered from highest to lowest, as shown in Table 29.

**Table 29: Order of Contact Centre Enquiries**

Order of enquiries from highest to lowest	Service utilisation/enquiry	Number	Percentage
1	Admission	133	31.0
2	Enrolment matters	107	24.9
3	Pre-application	90	21.0
4	Services and support	82	19.1
5	Completion and graduation	77	17.9
6	Course advise	60	14.0
7	Result issues	49	11.4
8	Course timetable	47	11.0
9	Orientation	36	8.4
10	Other matters	30	7.0
11	Credit for prior learning	1	0.2
12	Course transfer	1	0.2

This data could be used to assist universities in planning for the effective use of their resources based on the needs of their customers. Capturing the administrative experiences of students brings new insights and adds to the data collected through other means, such as the Social Research Centre for the QILT survey and the International Student Barometer.

**Table 30: Frequencies for Participant Use of Contact Centres**

Variable	N	Percentage
<b>Method of contact</b>		
Online platform such as chat, web enquiry	194	45.2
Telephone	101	23.5
Both	134	31.2
<b>Duration status of enquiry taken to resolve</b>		
Within 1 day	135	31.5
2 days	117	27.3
3 days	87	20.3
4 to 6 days	40	9.3
+11 days	29	6.8
7 to 10 days	21	4.9
<b>Enquiry resolved on first contact</b>		
Yes	310	72.3
No	119	27.7
<b>Service utilisation</b>		
Admission	133	31.0
Enrolment matters	107	24.9
Pre-application	90	21.0
Services and support	82	19.1
Completion and graduation	77	17.9
Course advise	60	14.0
Result issues	49	11.4
Course timetable	47	11.0
Orientation	36	8.4
Other matters	30	7.0
Credit for prior learning	1	0.2
Course transfer	1	0.2

### 5.5 National Satisfaction Levels in Relation to University Contact Centres

The study used a five-point Likert scales (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree) and the statements in the constructs were all positively worded. So, when the mean fell below the midpoint of the scale, which was (3), this denotes disagreement with the statements while anything above the midpoint indicates agreement with the statements (Boone, 2017). Descriptive statistics were carried out to understand the overall perception of students about their university contact centre and a national average satisfaction level was calculated. This was achieved by working out the mean of each construct item and then calculating the percentage for the overall satisfaction level by converting the mean of the item

constructs into percentages for all 429 cases. To represent satisfaction levels from 0% to 100%, the researcher assigned each point a percentage value as follows: strongly disagree: 0%, disagree: 25%, neutral: 50%, agree, 75%, strongly Agree: 100%. This allowed participants to choose the point that best represents their satisfaction level, ranging from completely dissatisfied (0%) to completely satisfied (100%) (Boone, 2017).

### 5.5.1 Perception of Contact Centre Service Quality

In terms of contact centre service quality, all the scores were above the midpoint (3), which indicates that, in general, the participants were satisfied. The overall national aggregate was 71.39% with a mean of 3.57. As shown in Table 31, the data revealed that students rated accessibility, waiting, reliability, and empathy above knowing the customer and customer focus. The participants gave empathy the highest rating, with a mean of 3.66 (73.18%), followed by waiting, with mean of 3.62 (72.45%). The lowest ranking was for knowing the customer, with a mean of 3.49 (69.74%), followed by customer focus, with a mean of 3.49 (70.72%).

**Table 31: National Aggregate Scoring of Contact Centre Service Quality**

Construct items	Mean	Satisfaction level (%)	Std. deviation
Accessibility	3.56	71.14	0.84
Waiting	3.62	72.45	0.79
Reliability	3.56	71.13	0.72
Customer focus	3.54	70.72	0.74
Knowing the customer	3.49	69.74	0.77
Empathy	3.66	73.18	0.77
<b>Overall average</b>	<b>3.57</b>	<b>71.39</b>	<b>0.77</b>

### 5.5.2 Perceptions of Online Servicescapes

In terms of online servicescapes, all the scores were above the midpoint (3), which indicates that, in general, the participants were satisfied. The overall satisfaction rate at the national level was 70.50%, with a mean of 3.52. As shown in Table 32, students rated visual appeal, usability, relevance of information and ease of payment above perceived security and personalisation. The participants gave usability the highest rating, with a mean of 3.60 (72%), followed by relevance of information, with mean of

3.55 (71.07%). The lowest ranking was for perceived security, with a mean of 3.48 (69.51%), followed by personalisation, with a mean of 3.47 (69.48%).

**Table 32: National Aggregate Scoring of Online Servicescape**

<b>Construct items</b>	<b>Mean</b>	<b>Satisfaction level (%)</b>	<b>Std. deviation</b>
Usability	3.60	72.00	0.79
Relevance of information	3.55	71.07	0.76
Visual appeal	3.53	70.62	0.80
Ease of payment	3.52	70.30	0.79
Personalisation	3.47	69.48	0.77
Perceived security	3.48	69.51	0.77
<b>Overall average</b>	<b>3.52</b>	<b>70.50</b>	<b>0.78</b>

### 5.5.3 Perception of Customer Support

In terms of customer support, all the scores were above the midpoint (3), which indicates that, in general, the participants were satisfied. The overall customer support national aggregate was 71.21%, with mean of 3.56. As shown in Table 33, students rated customer social interaction, support interaction and system support above service benefit. The participants gave customer social interaction the highest rating, with a mean of 3.59 (71.89%), followed by system support, with mean of 3.57 (71.42%). The lowest ranking was for service benefit, with a mean of 3.52 (70.48%), followed by support interaction, with a mean of 3.55 (71.04%).

**Table 33: National Aggregate Scoring of Customer Support**

<b>Construct items</b>	<b>Mean</b>	<b>Satisfaction level (%)</b>	<b>Std. deviation</b>
Customer social interaction	3.59	71.89	0.72
Support interaction	3.55	71.04	0.79
System support	3.57	71.42	0.80
Service benefit	3.52	70.48	0.77
<b>Overall average</b>	<b>3.56</b>	<b>71.21</b>	<b>0.77</b>

### 5.5.4 Overall Customer Engagement (GOSIP)

In terms of overall customer engagement across individual factor items, the scores were above the midpoint (3), which indicates that, in general, the participants were engaged.

The overall customer engagement national aggregate was 68.42, with mean of 3.42 (see Table 34).

**Table 34: National Aggregate Scoring of Customer Engagement (GOSIP)**

<b>Factor items</b>	<b>Mean</b>	<b>Satisfaction level (%)</b>	<b>Std. deviation</b>
GOSIP1_ In general, I am someone who, given the chance, seeks contact with others online	3.38	67.51	1.116
GOSIP2_ In general, I am someone who answers questions of others in online discussion forums	3.29	65.78	1.096
GOSIP3_ In general, I am someone who enjoys initiating a dialog online	3.31	66.20	1.085
GOSIP4_ In general, I like to get involved in online discussions	3.40	67.97	1.095
GOSIP5_ I find the idea of belonging to an online discussion group pleasant	3.46	69.18	1.046
GOSIP6_ I am someone who likes actively participating in online discussions	3.39	67.83	1.059
GOSIP7_ I am someone who likes interaction with like-minded others online	3.62	72.35	0.995
GOSIP8_ In general, I thoroughly enjoy exchanging ideas with other people online	3.53	70.54	1.008
<b>Overall Average</b>	<b>3.42</b>	<b>68.42</b>	<b>0.802</b>

### 5.5.5 Overall Customer Satisfaction

In terms of overall customer satisfaction across individual factor items, the scores were above the midpoint (3), which indicates that, in general, the participants were satisfied. The overall customer satisfaction national aggregate was 70.44%, with mean of 3.52 (see Table 35).

**Table 35: National Aggregate Scoring of Customer Satisfaction**

<b>Factor items</b>	<b>Mean</b>	<b>Satisfaction level (%)</b>	<b>Std. deviation</b>
CSAT1_The contact centre staff ask me whether I am satisfied at the end of the conversation	3.51	70.26	1.006
CSAT2_When I have had contact with my university contact centre, sometime after this contact I am asked whether this contact was to my satisfaction	3.43	68.67	0.987
CSAT3_I feel very happy when I get what I want from the service provided by my university contact centre	3.62	72.40	1.024
<b>Overall Average</b>	<b>3.52</b>	<b>70.44</b>	<b>1.01</b>

### 5.6 Testing the Conceptual Model

The process of SEM could be thought of as a four-stage process: model specification, model estimation, model evaluation, and model modification (Hair et al., 2010). The SEM includes two basic components: the measurement model, which specifies the indicators for each variable; and the structural model, which is the path model that relates independent to dependent variables (Stein et al., 2017). Both were utilised in this study. EFA and CFA were conducted to confirm the factorial stability and multidimensionality of the proposed factors. Then, SEM was conducted to validate the structural model and test the hypotheses formulated for relationships among the key constructs in the conceptual framework.

### 5.7 Exploratory Factor Analysis (EFA)

EFA was performed for each factor and all extracted only one factor. All items were above 0.30, meaning that each item shared some common variance with other items. The results of these tests, which show that all conditions of data appropriateness where there was one constructs which was less than 0.7 alpha and had communality less than 0.3 which relates customer satisfaction construct. The following section presents the results of the EFA for all the five constructs measured in this research.

### **5.7.1 Contact Centre Service Quality**

EFA was conducted to explore whether the six constructs conceptualised within the dimensions of contact centre service quality would emerge empirically. The EFA results confirmed the existence of all six constructs. The first factor of all constructs had an eigenvalue over 1, with a steep decline in value for component 2. The first factor explained the total variance as follows and as presented in Appendix E:

- 68.1% for Accessibility
- 64.2% for Waiting
- 55.0% for Reliability
- 59.9% for Customer focus
- 61.0% for Knowing the customer
- 59.6% for Empathy

The factor matrix (see Table 36) indicated that all the items loaded on the expected factor had values above 0.4, with factor loadings ranging from 0.817 to 0.574. All the items had communalities above 0.2, with the lowest being 0.330. Cronbach's Alpha for all constructs were above 0.700, indicating an acceptable level of reliability.

**Table 36: Exploratory Factor Analysis for Contact Centre Service Quality**

Item no.	Construct / Item name	Factor loading	Communality	Cronbach's Alpha
<b>Accessibility</b>				
ASS1	The phone number is easy to find	0.796	0.633	0.764
ASS2	The opening hours of my university contact centre are sufficient	0.712	0.507	
ASS3	The access to the contact centre is available whenever I need it	0.662	0.438	
<b>Waiting</b>				
WAI2	The waiting time of the contact centre is acceptable	0.789	0.623	0.720
WAI3	The costs of contacting the contact centre are acceptable	0.645	0.416	
WAI1	When I make contact, the waiting time is made clear to me	0.613	0.376	
<b>Reliability</b>				
REL2	The contact centre staff tell me what I can expect	0.772	0.596	0.917
REL3	The contact centre staff knows my university well	0.761	0.579	
REL5	The contact centre staff can answer all my questions	0.756	0.571	
REL4	I can trust the knowledge of the contact centre	0.749	0.562	
REL6	The contact centre staff provide me with information on the steps that will be followed to resolve my enquiry	0.728	0.530	
REL1	The contact centre staff can quickly find the info	0.724	0.525	
REL11	The contact centre staff ask the right questions to get to the heart of my question/problem	0.724	0.524	
REL9	When the contact centre staff is not able to answer my question, I am redirected to other contact centre staff who can	0.714	0.510	

<b>Item no.</b>	<b>Construct / Item name</b>	<b>Factor loading</b>	<b>Communality</b>	<b>Cronbach's Alpha</b>
REL8	When I speak to contact centre staff, my question is answered at once	0.693	0.480	
REL10	I receive written confirmation of important advice or guidance	0.605	0.366	
REL7	I do not have to contact more than once to receive an answer to my question	0.574	0.330	
<b>Customer focus</b>				
CF5	My university contact centre always keeps its promises	0.755	0.570	0.866
CF3	My university contact centre learns from the signals it receives from its students	0.723	0.523	
CF1	The contact centre staff ask me whether the answer is clear	0.720	0.515	
CF6	The information I receive is consistent, even when I have to contact other contact centre staff	0.718	0.518	
CF2	The contact centre staff ask me whether my question has been answered	0.715	0.512	
CF4	I receive proactive advice on what services would suit my situation	0.694	0.481	
<b>Knowing the customer/ Customer relationship</b>				
KNC2	immediately has my data at his/her disposal	0.793	0.629	0.871
KNC3	has insight into my personal data	0.786	0.617	
KNC4	has insight into my course/unit enrolment	0.729	0.532	
KNC5	knows when and why I contacted the contact centre previously	0.711	0.506	
KNC6	knows what other contacts I have had with my university	0.681	0.463	
KNC1	knows me as their student	0.677	0.459	
<b>Empathy</b>				
EMP10	makes me feel my question is important	0.817	0.668	0.943
EMP8	knows my needs	0.803	0.645	

Item no.	Construct / Item name	Factor loading	Communality	Cronbach's Alpha
EMP1 1	takes my level of knowledge into account	0.780	0.609	
EMP5	listens well	0.777	0.604	
EMP1 2	is solution oriented	0.764	0.583	
EMP6	takes me seriously	0.763	0.582	
EMP9	gives me personal attention	0.762	0.581	
EMP4	understands me correctly	0.746	0.557	
EMP3	is patient	0.735	0.540	
EMP2	is friendly	0.734	0.538	
EMP7	puts himself/herself in my situation	0.731	0.535	
EMP1 3	thinks along with me	0.696	0.484	
EMP1	says his/her name	0.627	0.393	

The coefficient was significant at  $p < 0.05$  and the KMO  $> 0.5$ , which is deemed adequate. The lowest KMO was for accessibility and waiting (See Table 37).

**Table 37: KMO and Bartlett's Test for Contact Centre Service Quality**

Construct	Kaiser-Meyer-Olkin measure of sampling adequacy	Bartlett's test of sphericity		
		Approx. chi-square	df	Sig.
Accessibility	0.690	330.605	3	0.000
Waiting	0.667	258.664	3	0.000
Reliability	0.939	2417.606	55	0.000
Customer focus	0.887	1045.083	15	0.000
Knowing the customer	0.864	1155.681	15	0.000
Empathy	0.946	3792.750	78	0.000

### 5.7.2 Online Servicescapes

EFA was conducted for the online servicescape construct to explore whether the six constructs conceptualised within the dimensions would emerge empirically. As shown in Table 38, the EFA results confirmed the existence of all six constructs. The first factor of all constructs had an eigenvalue over 1 and then there was a steep decline in value for the rest of the components. The first factor explained the total variance as follows:

- 68.6% for Visual appeal
- 64.0% for Usability

- 61.8% Relevance of information
- 59.5% Customisation/personalisation
- 64.9% Ease of payment
- 60.1% Perceived security

**Table 38: Eigenvalues and Variance Explained for Online Servicescapes**

Total variance explained							
Construct	Factor	Initial eigenvalues			Extraction sums of squared loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Visual appeal	1	2.746	68.661	68.661	2.339	58.486	58.486
	2	0.570	14.244	82.905			
	3	0.390	9.748	92.653			
	4	0.294	7.347	100.000			
Usability	1	3.845	64.086	64.086	3.415	56.925	56.925
	2	0.655	10.909	74.995			
	3	0.451	7.520	82.515			
	4	0.391	6.510	89.025			
	5	0.356	5.930	94.955			
	6	0.303	5.045	100.000			
Relevance of information	1	2.473	61.821	61.821	1.983	49.580	49.580
	2	0.648	16.205	78.026			
	3	0.491	12.282	90.309			
	4	0.388	9.691	100.000			
Customisation/personalisation	1	4.167	59.528	59.528	3.700	52.862	52.862
	2	0.772	11.024	70.553			
	3	0.477	6.808	77.361			
	4	0.468	6.686	84.047			
	5	0.431	6.152	90.199			
	6	0.367	5.244	95.443			
	7	0.319	4.557	100.000			
Ease of payment	1	1.948	64.939	64.939	1.476	49.195	49.195
	2	0.638	21.273	86.212			
	3	0.414	13.788	100.000			
Perceived security	1	2.404	60.109	60.109	1.892	47.293	47.293
	2	0.691	17.286	77.395			
	3	0.509	12.722	90.116			
	4	0.395	9.884	100.000			

Extraction method: PAF

Table 39 shows that all items loaded on the first factor and the values were above 0.4. All the items had communalities above 0.2, with the lowest being 0.308. Cronbach's Alpha for all constructs was above 0.700, indicating an acceptable level of reliability.

**Table 39: Exploratory Factor Analysis for Online Servicescapes**

Item no.	Construct / Item name	Factor 1 loading	Communality	Cronbach's Alpha
<b>Visual appeal</b>				
VIAS3	The online service information display is attractive	0.844	0.712	0.847
VIAS2	The online service, such as the website, is visually appealing	0.773	0.598	
VIAS4	The online service information is aesthetically appealing	0.721	0.520	
VIAS1	The online service provided by the contact centre is visually attractive	0.714	0.510	
<b>Usability</b>				
USAB2	The links for the online website are obvious in their intent and destination	0.780	0.608	0.887
USAB6	The website is user-friendly	0.777	0.604	
USAB5	A first-time self-service user can get help from this website without much help	0.753	0.567	
USAB4	Navigation through this website is intuitively logical	0.751	0.564	
USAB3	There are convenient ways to manoeuvre among related pages and between different sections	0.741	0.549	
USAB1	The online services are useful navigational aids	0.724	0.524	
<b>Relevance of information</b>				
RINF2	Visual information about its service is easily accessed	0.804	0.646	0.791
RINF4	Technical details about services can be easily accessed	0.706	0.498	
RINF1	Each page clearly indicates what one can expect to find or do	0.685	0.469	
RINF3	There is a great deal of irrelevant information	0.609	0.370	
<b>Customisation/personalisation</b>				
PERS4	The services of this online website are often personalised to me	0.778	0.606	0.885
PERS5	This online service website treats me as an individual	0.761	0.578	
PERS3	I feel that the online service is designed for me	0.751	0.563	
PERS1	The online service is tailored toward me	0.733	0.538	
PERS7	The online service makes select recommendations that match my needs	0.708	0.501	
PERS2	If I wanted to, I could customise this website to what I like (e.g., changing colours, layout, fonts etc)	0.683	0.466	
PERS6	When communicating with this online service website I am always addressed using my correct name	0.669	0.447	

<b>Ease of payment</b>				
EPY2	The fee payment facilities of this website are easy to use	0.838	0.703	0.729
EPY1	The website has efficient payment procedures to pay my fees	0.682	0.465	
EPY3	Paying for fee involves entering a lot of details	0.555	0.308	
<b>Perceived security</b>				
PS2	I have no concerns about paying for things from the contact centre self-service website	0.750	0.563	0.777
PS1	The fee payment methods seem very secure	0.733	0.537	
PS3	The security systems of this website seem rigorous	0.686	0.471	
PS4	When using this website, I am not reassured by the security procedures	0.566	0.321	

As shown in Table 40, the coefficient was significant at  $p < 0.05$  and the KMO  $> 0.5$ , which is deemed adequate. The lowest KMO was for ease of payment at 0.652 and highest was for customisation/personalisation at 0.897.

**Table 40: KMO and Bartlett's Test for Online Servicescape**

<b>Construct</b>	<b>Kaiser-Meyer-Olkin measure of sampling adequacy</b>	<b>Bartlett's test of sphericity</b>		
		<b>Approx. chi-square</b>	<b>df</b>	<b>Sig.</b>
Visual appeal	0.784	731.869	6	0.000
Usability	0.885	1293.072	15	0.000
Relevance of information	0.770	505.262	6	0.000
Customisation/personalisation	0.897	1410.274	21	0.000
Ease of payment	0.652	283.387	3	0.000
Perceived security	0.755	466.397	6	0.000

### 5.7.3 Customer Support

EFA was conducted for the customer support construct to explore whether the four constructs conceptualised within the dimensions would emerge empirically. As shown in Table 41, the EFA results confirmed the existence of all four constructs. The first factor for all constructs had an eigenvalue over 1 and then there was a steep decline in value for the rest of the components. The first factor explained the total variance as follows:

- 53.4% for Customer social interaction

- 59.9% for Support interaction
- 63.7% for System support
- 61.7% for Service benefit

**Table 41: Eigenvalues and Variance Explained for Customer Support**

Total variance explained							
Construct	Factor	Initial eigenvalues			Extraction sums of squared loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Customer social interaction	1	4.274	53.423	53.423	3.749	46.868	46.868
	2	0.844	10.545	63.969			
	3	0.665	8.316	72.285			
	4	0.569	7.115	79.400			
	5	0.461	5.768	85.168			
	6	0.445	5.564	90.732			
	7	0.404	5.049	95.781			
	8	0.338	4.219	100.000			
Support interaction	1	2.398	59.946	59.946	1.886	47.147	47.147
	2	0.654	16.344	76.290			
	3	0.501	12.527	88.816			
	4	0.447	11.184	100.000			
System support	1	2.549	63.732	63.732	2.085	52.123	52.123
	2	0.663	16.575	80.307			
	3	0.473	11.836	92.144			
	4	0.314	7.856	100.000			
Service benefit	1	3.089	61.785	61.785	2.613	52.267	52.267
	2	0.589	11.788	73.573			
	3	0.521	10.413	83.986			
	4	0.471	9.428	93.414			
	5	0.329	6.586	100.000			

Extraction method: PAF

All items loaded on the first factor and values were above 0.4. All the items had communalities above 0.2, with the lowest being 0.312 (see Table 42). Cronbach's Alpha was above 0.700, indicating an acceptable level of reliability.

**Table 42: Exploratory Factor Analysis for Customer Support**

Item no.	Construct / Item name	Factor 1 loading	Communality	Cronbach's Alpha
<b>Customer social interaction</b>				
CSI3	It was useful to ask for advice while searching for the information	0.761	0.580	0.875
CSI1	It was useful to be able to ask for direction in locating the information related to my course	0.722	0.522	
CSI2	It was useful to be able to talk to people who know about the topic I am enquiring about	0.719	0.518	
CSI7	It would have been useful if the self-service website facilitates instant (live) communication	0.687	0.472	
CSI6	It would have been useful if the self-website gives me the opportunity to talk back	0.659	0.435	
CSI4	It would have been useful to have assistance in identifying the correct material related to my enquiry	0.650	0.422	
CSI5	It would have been useful if the self-service website facilitated two-way communication	0.637	0.405	
CSI8	It would have been useful if the website enabled conversation	0.630	0.396	
<b>Support interaction</b>				
SINT1	Human contact in providing services makes the process enjoyable for me	0.756	0.571	0.773
SINT3	I like interacting with the people who provide the service at my university contact centre	0.734	0.539	
SINT2	Personal attention by contact centre staff is very important to me	0.681	0.464	
SINT4	It bothers me to use a chatbot or other online service like email when I could talk to a person instead	0.558	0.312	
<b>System support</b>				
SYS3	The online service site does not crash	0.815	0.665	0.810
SYS4	Online services do not freeze	0.749	0.561	
SYS2	The functions on chatbots or self-service launch and run right away	0.680	0.463	
SYS1	The chatbot and self-service such as ASK FAQ is always available for me to use	0.629	0.396	
<b>Service benefit</b>				
SB2	With help provided by my university contact centre virtually through a chatbot or online enquiry, I can get the information I am looking for in minimal time and effort	0.760	0.578	0.845
SB3	Using my university contact centre service, I can get the exact information I'm looking for	0.728	0.529	
SB5	Using services provided by my university contact centre makes me feel that the university is dedicated to fulfilling my needs	0.720	0.519	
SB1	With my university contact centre, I can easily get what I am looking for most of the time	0.710	0.504	

SB4	My university contact centre services have innovative features that are interesting to use	0.695	0.483	
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The coefficient was significant at  $p < 0.05$  and the KMO  $> 0.5$ , which is deemed adequate (see Table 43).

**Table 43: KMO and Bartlett's Test for Customer Support**

Construct	Kaiser-Meyer-Olkin measure of sampling adequacy	Bartlett's test of sphericity		
		Approx. chi-square	df	Sig.
Customer social interaction	0.901	1385.577	28	0.000
Support interaction	0.780	445.380	6	0.000
System support	0.752	587.823	6	0.000
Service benefit	0.830	815.360	10	0.000

#### 5.7.4 GOSIP

EFA was conducted for the eight items using PAF extraction, and varimax rotation. Only the first factor had an eigenvalue over 1, with a steep decline in value for component 2. The first factor explained 57.2% of the total variance in the set of items. The coefficient was significant at  $p < 0.05$  (approx.  $X^2(28) = 1601.745$ ,  $p = 0.000$ ), and the KMO correlation of the dataset was 0.912, which indicated that this is adequate (see Table 45).

As shown in Table 44, all factor loading was ordered from highest to lowest. All items loaded over .4 on the first factor, indicating that all items fit well on the theoretically proposed single factor. Cronbach's Alpha for this scale was 0.892, indicating an acceptable level of reliability.

**Table 44: Exploratory Factor Analysis for GOSIP Factors**

Item no.	Construct / Item name (GOSIP 1-8)	Factor 1 loading	Communality	Cronbach's Alpha
GOSIP4	In general, I like to get involved in online discussions	0.800	0.640	0.892
GOSIP8	In general, I thoroughly enjoy exchanging ideas with other people online	0.746	0.556	
GOSIP6	I am someone who likes actively participating in online discussions	0.743	0.553	
GOSIP3	In general, I am someone who enjoys initiating a dialog online	0.721	0.520	
GOSIP5	I find the idea of belonging to an online discussion group pleasant	0.709	0.503	
GOSIP2	In general, I am someone who answers questions of others in online discussion forums	0.706	0.499	
GOSIP7	I am someone who likes interaction with like-minded others online	0.689	0.475	
GOSIP1	In general, I am someone who, given the chance, seeks contact with others online	0.595	0.354	
Extraction method: PAF a. 1 factor extracted. 4 iterations required.				

**Table 45: KMO and Bartlett's Test for GOSIP**

<b>Kaiser-Meyer-Olkin measure of sampling adequacy</b>		0.912
<b>Bartlett's test of sphericity</b>	Approx. chi-square	1601.745
	df	28
	Sig.	0.000

### 5.7.5 Customer Satisfaction

An EFA was conducted for the three items using unrotated PAF. Only one factor had an eigenvalue greater than 1 (see Table 46), with the elbow of the scree plot occurring after the first. The first factor accounted for 60.7% of the total variance.

**Table 46: Eigenvalues and Variance Explained for Customer Satisfaction**

Total variance explained						
Factor	Initial eigenvalues			Extraction Sums of Squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.823	60.764	60.764	1.277	42.573	42.573
2	0.694	23.131	83.895			
3	0.483	16.105	100.000			
Extraction method: PAF						

All items loaded over 0.4 (see Table 47), indicating that the first factor was a good fit for all items. As shown in Table 47, the Cronbach's Alpha for this scale was .674, close to 0.7 (with a difference of 0.026), indicating an acceptable level of reliability as this scale was developed from scratch using the item questions.

**Table 47: Exploratory Factor Analysis for Customer Satisfaction**

Item no.	Construct / Item name	Factor 1 loading	Communality	Cronbach's Alpha
CSAT2	When I have had contact with my university contact centre, sometime after this contact I am asked whether this contact was to my satisfaction	0.731	0.534	0.674
CSAT1	The contact centre staff ask me whether I am satisfied at the end of the conversation	0.706	0.499	
CSAT3	I feel very happy when I get what I want from the service provided by my university contact centre	0.494	0.244	
Extraction method: PAF a. 1 factors extracted. 10 iterations required.				

The coefficient was significant at  $p < 0.05$  (approx.  $X^2(3) = 209.835$ ,  $p = 0.000$ ) and the KMO correlation of the dataset was 0.640 (see Table 48), which is deemed adequate.

**Table 48: KMO and Bartlett's Test for Customer Satisfaction**

<b>Kaiser-Meyer-Olkin measure of sampling adequacy</b>		0.640
<b>Bartlett's test of sphericity</b>	Approx. chi-square	209.835
	df	3
	Sig.	0.000

## **5.8 Confirmatory Factor Analysis (CFA)**

This section provides the results of the CFA conducted for each main construct.

### **5.8.1 One-Factor Congeneric Model for all Constructs**

One-factor congeneric model analyses was performed to ensure the unidimensionality of each construct. This was followed by multifactor analyses. The one-factor congeneric model or a unidimensional model is the simplest form of measurement model that represents the regression weights of the set of observed indicator variables on a single latent variable (Reuterberg & Gustafsson, 1992). According to Hair et al. (2010), an individual observed variable should only be represented by one latent variable. A one-factor congeneric model can demonstrate the best fit of the model when observed variables associated with the construct are valid. As such, this process was carried out to see how the items loaded and to get insights as to which items caused issues for model fit. This was performed using the maximum likelihood method in AMOS. For this analysis, the variance of the latent variable was set to 1, which allowed the path from the latent variable to its items to be freely estimated. The results (see Appendix F) provided insights that some items were overlapping as model fit could be achieved by deleting the items or co-varying it with other items. It was decided not to delete any items at this stage as the items behaved differently when they were tested on their own compared to when they were brought together with other constructs (Dragovic, 2004; Reuterberg & Gustafsson, 1992). As such, this exercise was carried out to find out the cause for model misspecification. Furthermore, in SEM, the priority is to ensure the construct in the model is reliable and valid, with the model having a strong theory that should be compatible with the data available. This would avoid having to delete more items from the model (Awang et al., 2015).

### **5.8.2 The Measurement Model for Contact Centre Service Quality**

Initially, the assessment of all items for the contact centre service quality model revealed a poor fit. The model initially comprised forty-two items with factor loadings ranging from 0.81 to 0.582. Modification indices revealed that 17 items were the cause of the model misspecification as the fit result for the model indicated the following: chi-square = 2110.254,  $p = 0$ ,  $\chi^2/df = 2.625$ ; SRMR = 0.039; RMSEA = 0.062; CFI =

0.891; GFI = 0.806; AGFI = 0.782; and TLI = 0.883. Modification analysis revealed that these items correlated highly or were redundant where it did not provide additional information about the construct and may contribute to multicollinearity issues. As such, deleting redundant items based on statistical evidence streamlined the model and improve its interpretability (Hair et al., 2010). It was decided, therefore, to delete 17 items based on the modification indices, as they overlapped with other items (see Table 49).

**Table 49: Items Removed for Contact Centre Service Quality**

Construct name	Item removed
Customer focus	CF6_ The information I receive is consistent, even when I have to contact other contact centre staff
Empathy	EMP2_ is friendly
	EMP4_ understands me correctly
	EMP6_ takes me seriously
	EMP7_ puts himself/herself in my situation
	EMP8_ knows my needs
	EMP10_ makes me feel my question is important
	EMP11_ takes my level of knowledge into account
Knowing the customer	EMP13_ thinks along with me
	KNC1_ knows me as their student
	KNC2_ immediately has my data at his/her disposal
Reliability	KNC6_ knows what other contacts I have had with my university
	REL1_ The contact centre staff can quickly find the info
	REL4_ I can trust the knowledge of the contact centre
	REL6_ The contact centre staff provide me with information on the steps that will be followed to resolve my enquiry
	REL8_ When I speak to contact centre staff, my question is answered at once
	REL11_ The contact centre staff ask the right questions to get to the heart of my question/problem

After this iteration and implementing bootstrapping, the goodness of fit was achieved as the results for the model indicated the following: chi-square = 566.478,  $p = 0.271$ ,  $\chi^2/df = 2.162$ ; SRMR = 0.118; RMSEA = 0.052; CFI = 0.947; GFI = 0.907; AGFI = 0.884; TLI = 0.939; Mardia's coefficient = 338.692; and Bollen-Stine = 0.012.

The model was left with 25 items, which demonstrated that all items were statistically significant with acceptable factor loadings above 0.50, as suggested by Hair et al.

(2010). Squared multiple correlations were all above 0.3. This was achieved by deleting the 17 overlapping items, as explained above.

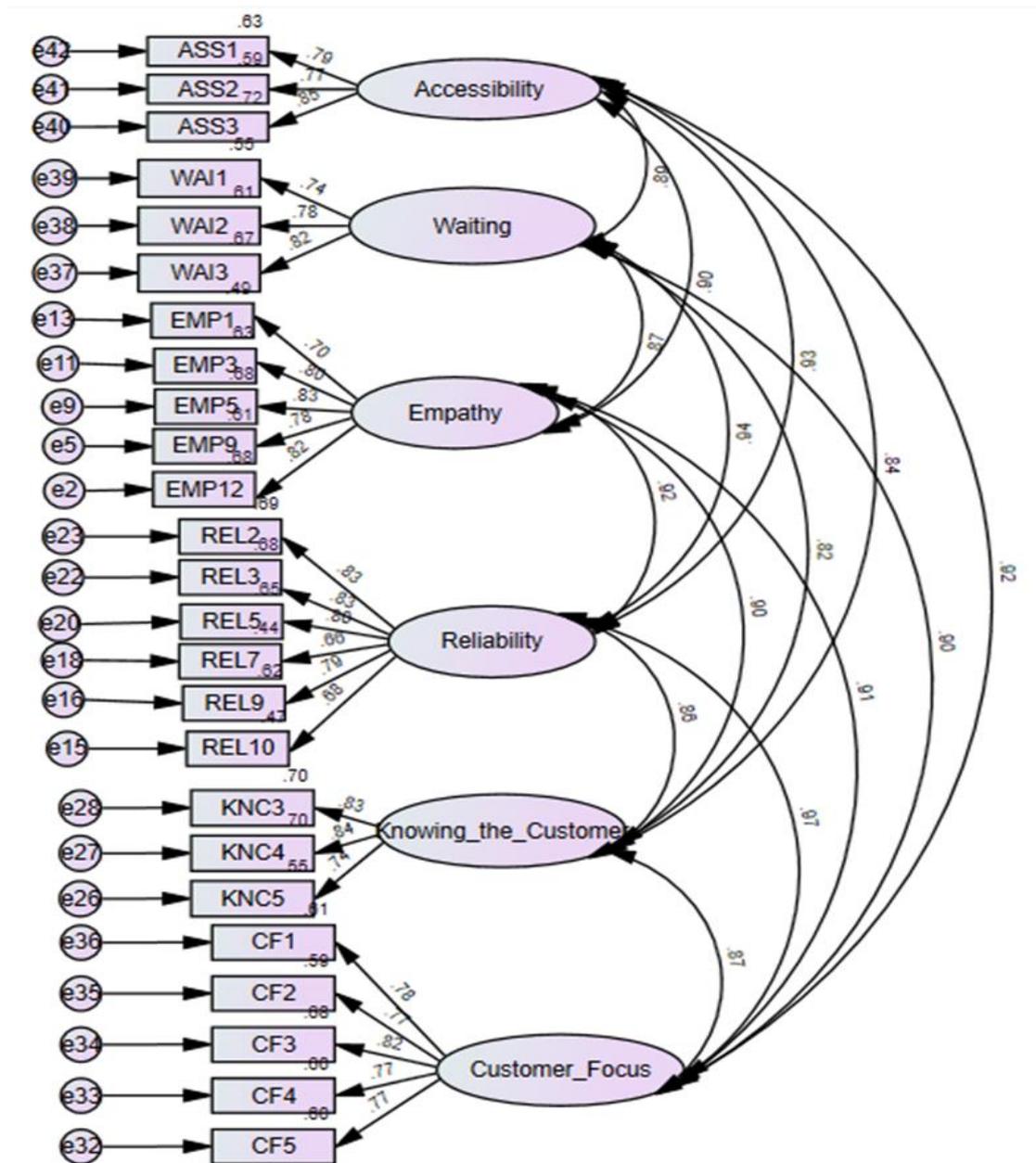
The measurement model and the CFA results for contact centre service quality scale are presented in Table 50 and Figure 9.

**Table 50: Confirmatory Factor Analysis for Contact Centre Service Quality**

Item	Questions	Standardised factor loadings (SFL)	Squared multiple correlation (SMC)
<b>Accessibility</b>			
ASS1	The phone number is easy to find	0.729	0.531
ASS2	The opening hours of my university contact centre are sufficient	0.703	0.495
ASS3	The access to the contact centre is available whenever I need it	0.733	0.538
<b>Customer focus</b>			
CF1	The contact centre staff ask me whether the answer is clear	0.721	0.52
CF2	The contact centre staff ask me whether my question has been answered	0.708	0.501
CF3	My university contact centre learns from the signals it receives from its students	0.757	0.573
CF4	I receive proactive advice on what services would suit my situation	0.695	0.483
CF5	My university contact centre always keeps its promises	0.717	0.513
<b>Empathy</b>			
EMP1	says his/her name	0.635	0.404
EMP3	is patient	0.731	0.535
EMP5	listens well	0.773	0.598
EMP9	gives me personal attention	0.758	0.574
EMP12	is solution oriented	0.765	0.585
<b>Knowing the customer</b>			
KNC3	has insight into my personal data	0.791	0.625
KNC4	has insight into my course/unit enrolment	0.749	0.560
KNC5	knows when and why I contacted the contact centre previously	0.703	0.494
<b>Reliability</b>			
REL2	The contact centre staff tell me what I can expect	0.766	0.586
REL3	The contact centre staff knows my university well	0.765	0.585
REL5	The contact centre staff can answer all my questions	0.749	0.561
REL7	I do not have to contact more than once to receive an answer to my question	0.582	0.339
REL9	When contact centre staff are not able to answer my question, I am redirected to other contact centre staff who can	0.718	0.515

REL10	I receive written confirmation of important advice or guidance	0.602	0.362
<b>Waiting</b>			
WAI1	When I make contact, the waiting time is made clear to me	0.655	0.428
WAI3	The costs of contacting the contact centre are acceptable	0.685	0.501
WAI2	The waiting time of the contact centre is acceptable	0.708	0.469

**Figure 9: The Measurement Model for Contact Centre Service Quality Factors**



### 5.8.3 The Measurement Model for Online Servicescapes

CFA for online servicescapes was carried out in two phases as it had various constructs underlying each construct.

The first order multifactor model of online servicescapes revealed a poor fit for all items. The model initially comprised 28 items with factor loadings ranging from 0.809 to 0.58. Modification indices revealed that eight items were the cause of the model misspecification as the fit result for the model indicated the following: chi-square = 962.366,  $p = 0$ ,  $\chi^2/df = 2.873$ ; SRMR = 0.041; RMSEA = 0.066; CFI = 0.916; GFI = 0.85; AGFI = 0.819; and TLI = 0.905. It was decided to delete the eight items as these overlapped with other items based on modification indices.

From the personalisation construct, the following items were removed:

PERS2 *If I wanted to, I could customise this website to what I like (e.g., changing colours, layout, fonts etc.)*

PERS3 *I feel that the online service is designed for me*

PERS7 *The online service makes select recommendations that match my needs*

From the perceived security construct, the following item was removed:

PS4 *When using this website, I am not reassured by the security procedures*

From the relevant information construct, the following item was removed:

RINF3 *There is a great deal of irrelevant information*

From the usability construct, the following items were removed:

USAB1 *The online services are useful navigational aids*

USAB2 *The links for the online website are obvious in their intent and destination*

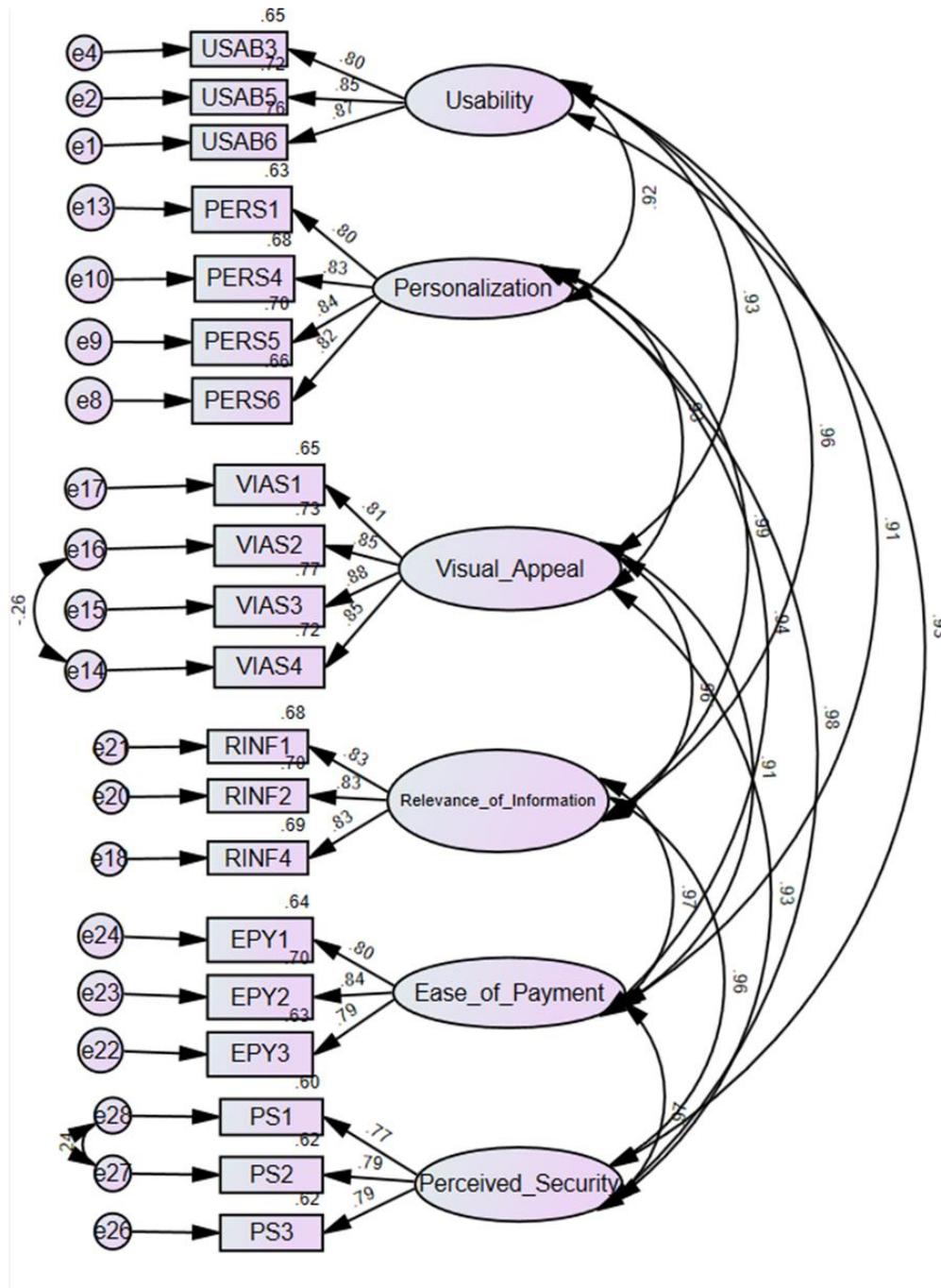
USAB4 *Navigation through this website is intuitively logical*

After this iteration and implementing bootstrapping, the goodness of fit was achieved, with the results for the model indicating the following: chi-square = 469.199,  $p = 0$ ,

$\chi^2/df = 2.97$ ; SRMR = 0.155; RMSEA = 0.068; CFI = 0.937; GFI = 0.905; AGFI = 0.873; TLI = 0.928; Mardia's coefficient = 240.127; and Bollen-Stine = 0.001.

The first order measurement model for the online servicescape factors is presented in Figure 10.

**Figure 10: First Order Measurement Model for Online Servicescape Factors**

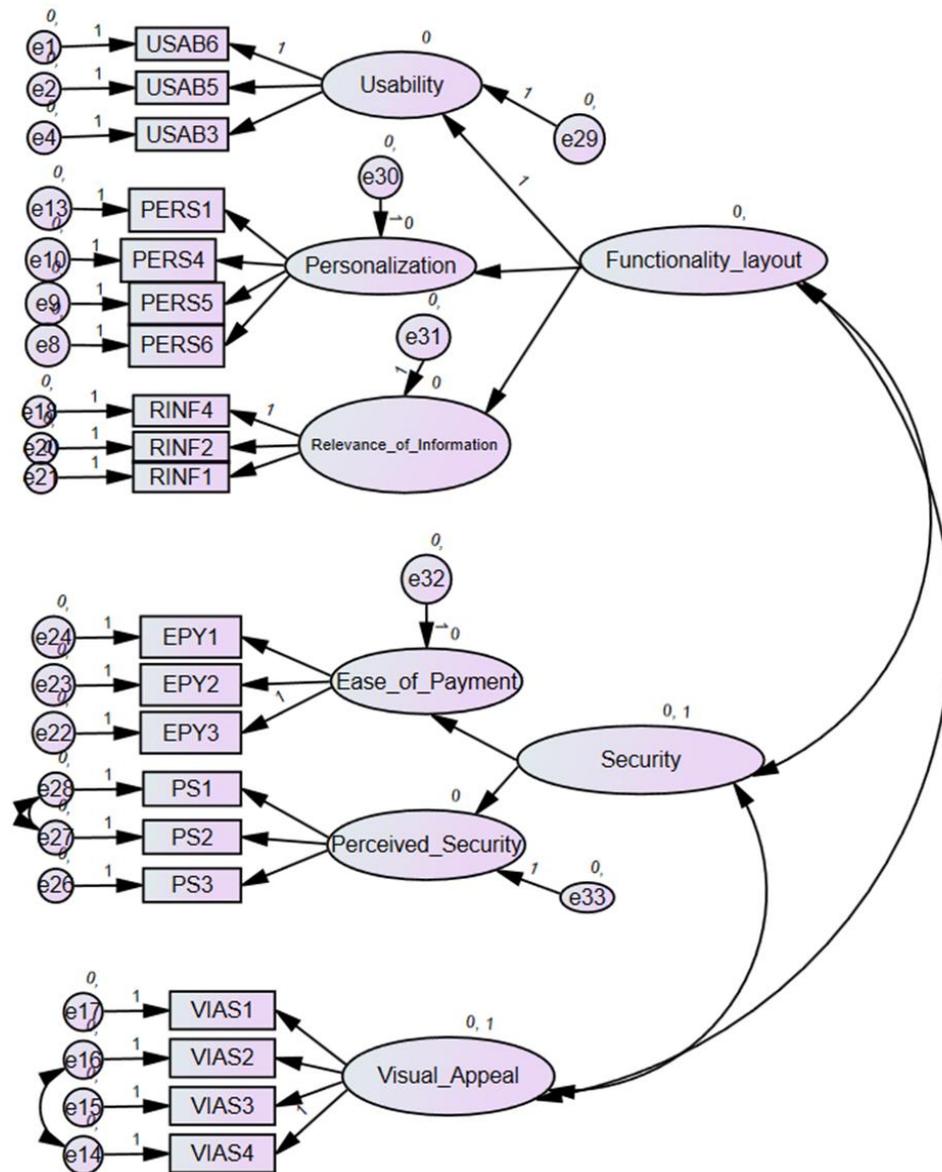


The second order multifactor model of online servicescapes revealed a poor fit for all items despite the items being group into various constructs. The model initially comprised 28 items with factor loadings ranging from 0.809 to 0.58. Modification indices revealed that eight items were the cause of the model misspecification as the fit result for the model indicated the following: chi-square = 475.69,  $p = 0$ ,  $\chi^2/df = 2.901$ ; SRMR = 0.16; RMSEA = 0.067; CFI = 0.937; GFI = 0.901; AGFI = 0.873; and TLI = 0.927. To be consistent with first order, it was decided to delete the same eight factor items based on modification indices, as they overlapped with other items.

After this iteration and implementing bootstrapping, the goodness of fit was achieved, as the results for the model indicated the following: chi-square = 460.836,  $p = 0$ ,  $\chi^2/df = 2.827$ ; SRMR = 0.158; RMSEA = 0.065; CFI = 0.94; GFI = 0.903; AGFI = 0.876; TLI = 0.93; Mardia's coefficient = 240.127; and Bollen-Stine = 0.001.

The second order measurement model for the online servicescape factors is presented in Figure 11.

**Figure 11: Second Order Measurement Model for Online Servicescape Factors**



All items were statistically significant with acceptable factor loadings above 0.50, as suggested by Hair et al. (2010). Squared multiple correlations were all above 0.3. The CFA results for the online servicescape scale are presented in Table 51.

**Table 51: Confirmatory Factor Analysis for the Online Servicescape Scale**

Item	Questions	SFL	SMC
<b>Ease of payment</b>			
EPY1	The website has efficient payment procedures to pay my fees	0.721	0.520
EPY2	The fee payment facilities of this website are easy to use	0.751	0.565
EPY3	Paying for fees involves entering a lot of details	0.61	0.372
<b>Personalisation</b>			
PERS1	The online service is tailored toward me	0.715	0.511
PERS4	The services of this online website are often personalised to me	0.752	0.566
PERS5	This online service website treats me as an individual	0.754	0.569
PERS6	When communicating with this online service website I am always addressed using my correct name	0.719	0.517
<b>Perceived security</b>			
PS1	The fee payment methods seem very secure	0.693	0.480
PS2	I have no concerns about paying for things from the contact centre self-service website	0.706	0.498
PS3	The security systems of this website seem rigorous	0.703	0.494
<b>Relevance of information</b>			
RINF1	Each page clearly indicates what one can expect to find or do	0.743	0.552
RINF2	Visual information about its service is easily accessed	0.762	0.581
RINF4	Technical details about services can be easily accessed	0.709	0.503
<b>Usability</b>			
USAB3	There are convenient ways to manoeuvre among related pages and between different sections	0.733	0.537
USAB5	A first-time self-service user can get help from this website without much help	0.754	0.569
USAB6	The website is user-friendly	0.767	0.589
<b>Visual appeal</b>			
VIAS1	The online service provided by the contact centre is visually attractive	0.736	0.542
VIAS2	The online service, such as the website, is visually appealing	0.764	0.584
VIAS3	The online service information display is attractive	0.809	0.654
VIAS4	The online service information is aesthetically appealing	0.75	0.562

#### 5.8.4 The Measurement Model for Customer Support

Initial assessment of all items for the customer support model revealed a poor fit. The model initially comprised 21 items with factor loadings ranging from 0.766 to 0.559. Modification indices revealed that five items were the cause of the model

misspecification as the fit result for the model indicated the following: chi-square = 556.667,  $p = 0$ ,  $\chi^2/df = 3.042$ ; SRMR = 0.047; RMSEA = 0.069; CFI = 0.918; GFI = 0.884; AGFI = 0.853; and TLI = 0.906. It was decided to delete the five items based on modification indices, as they overlapped with other items.

From the customer social interaction construct, the following items were removed:

*CSI5\_ It would have been useful if the self-service website facilitated two-way communication*

*CSI6\_ It would have been useful if the self-website gives me the opportunity to talk back*

*CSI8\_ It would have been useful if the website enabled conversation*

From the support interaction construct, the following item was removed:

*SINT4\_ It bothers me to use a chatbot or other online service like email when I could talk to a person instead*

From the system support construct, the following item was removed:

*SYS4\_ Online services do not freeze*

After this iteration and implementing bootstrapping, the goodness of fit was achieved with the results for the model indicating the following: chi-square = 263.665,  $p = 0.133$ ,  $\chi^2/df = 2.333$ ; SRMR = 0.037; RMSEA = 0.056; CFI = 0.957; GFI = 0.932; AGFI = 0.908; TLI = 0.948; Mardia's coefficient = 167.619; and Bollen-Stine = 0.026.

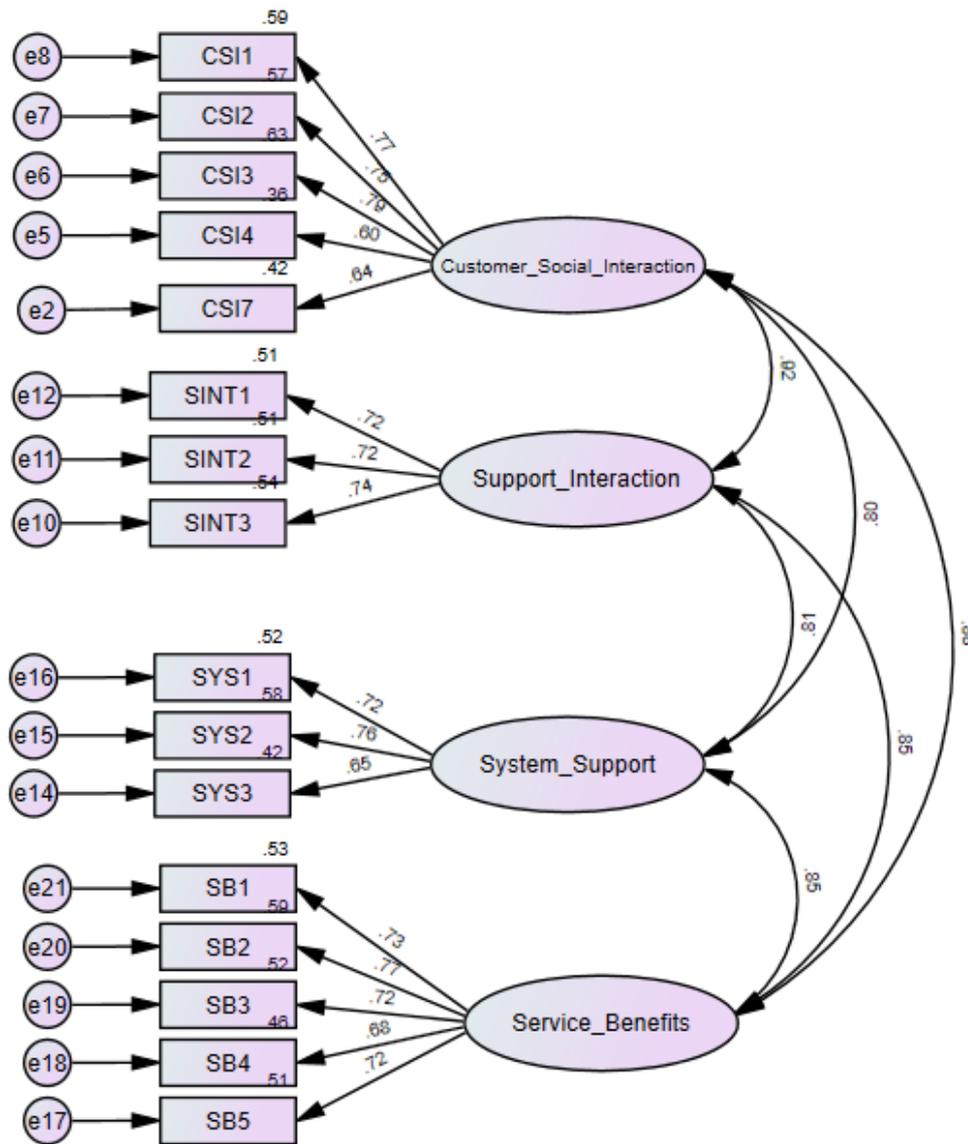
All items were statistically significant with acceptable factor loadings above 0.50, as suggested by Hair et al. (2010). Squared multiple correlations were all above 0.3.

The measurement model and the CFA results for the customer support scale are presented in Table 52 and Figure 12.

**Table 52: Confirmatory Factor Analysis for Customer Support**

Item	Questions	SFL	SMC
<b>Customer social interaction</b>			
CSI1	It was useful to be able to ask for direction in locating the information related to my course	0.742	0.550
CSI2	It was useful to be able to talk to people who know about the topic I am enquiring about	0.723	0.523
CSI3	It was useful to ask for advice while searching for the information	0.766	0.586
CSI4	It would have been useful to have assistance in identifying the correct material related to my enquiry	0.633	0.401
CSI7	It would have been useful if the self-service website facilitates instant (live) communication	0.668	0.446
<b>Service benefits</b>			
SB1	With my university contact centre, I can easily get what I am looking for most of the time	0.732	0.536
SB2	With help provided by my university contact centre virtually through a chatbot or online enquiry, I can get the information I am looking for in minimal time and effort	0.762	0.580
SB3	Using my university contact centre service, I can get the exact information I'm looking for	0.726	0.527
SB4	My university contact centre services have innovative features that are interesting to use	0.681	0.464
SB5	Using services provided by my university contact centre makes me feel that the university is dedicated to fulfilling my needs	0.71	0.505
<b>Support interaction</b>			
SINT1	Human contact in providing services makes the process enjoyable for me	0.721	0.52
SINT2	Personal attention by contact centre staff is very important to me	0.713	0.508
SINT3	I like interacting with the people who provide the service at my university contact centre	0.736	0.542
<b>System support</b>			
SYS1	The chatbot and self-service such as ASK FAQ is always available for me to use	0.696	0.485
SYS2	The functions on chatbot or self-service launch and run right away	0.731	0.535
SYS3	The online service site does not crash	0.729	0.531

**Figure 12: The Measurement Model for Customer Support Factors**

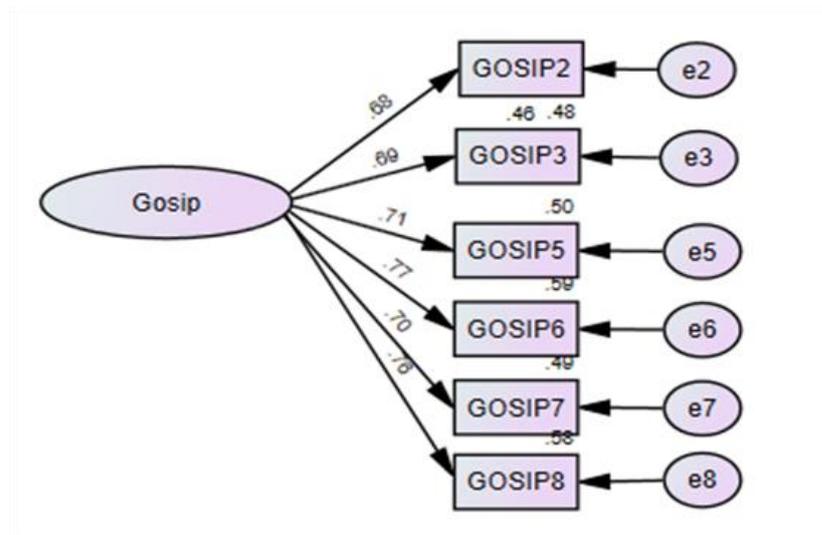


### 5.8.5 The Measurement Model for GOSIP

The initial assessment of all items for the GOSIP model revealed a poor fit. The model initially comprised eight items with factor loadings ranging from 0.804 to 0.684. Modification indices revealed that one item GOSIP was the cause of the model misspecification as the fit result for the model indicated the following: chi-square = 90.334,  $p = 0$ ,  $\chi^2/df = 4.517$ ; SRMR = 0.043; RMSEA = 0.091; CFI = 0.956; GFI = 0.95; AGFI = 0.91; and TLI = 0.935. It was decided to delete the one item, namely GOSIP1, *In general, I am someone who, given the chance, seeks contact with others online*, as it overlapped with other items. After this iteration and implementing bootstrapping, the goodness of fit was achieved as the results for the model indicated the following: chi-square = 24.904,  $p = 0.19$ ,  $\chi^2/df = 2.767$ ; SRMR = 0.03; RMSEA = 0.064; CFI = 0.984; GFI = 0.982; AGFI = 0.958; TLI = 0.974; Mardia's coefficient = 14.984; and Bollen-Stine = 0.099.

All items were statistically significant with acceptable factor loadings above 0.50, as suggested by Hair et al. (2010). Squared multiple correlations were all above 0.3. The measurement model and the CFA results for the GOSIP scale are presented in Figure 13 and Table 53.

**Figure 13: The Measurement Model for GOSIP Factors**



**Table 53: Confirmatory Factor Analysis for GOSIP**

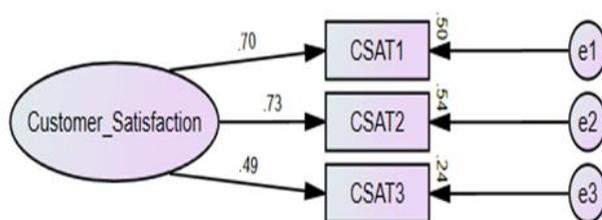
Item	Questions	SFL	SMC
GOSIP2	In general, I am someone who answers questions of others in online discussion forums	0.706	0.498
GOSIP3	In general, I am someone who enjoys initiating a dialog online	0.722	0.521
GOSIP4	In general, I like to get involved in online discussions	0.804	0.647
GOSIP5	I find the idea of belonging to an online discussion group pleasant	0.716	0.512
GOSIP6	I am someone who likes actively participating in online discussions	0.75	0.562
GOSIP7	I am someone who likes interaction with like-minded others online	0.684	0.467
GOSIP8	In general, I thoroughly enjoy exchanging ideas with other people online	0.738	0.545

**5.8.6 The Measurement Model for Customer Satisfaction**

The goodness of fit test indicated an acceptable level for customer satisfaction as this scale was developed from scratch using the item questions: RMSEA = 0.402; GFI = 1 and CFI = 1. Other items could not be calculated as the degrees of freedom were not positive.

With the exception of item 3 (which was 0.494), the items were statistically significant with acceptable factor loadings above 0.50 as suggested by Hair et al. (2010). It was decided to keep these items because the fitness indices for the measurement model had already achieved the required level as the GFI, CFI and RMSEA demonstrated good fit. The measurement model and the CFA results for the customer satisfaction scale are presented in Figure 14 and Table 54.

**Figure 14: The Measurement Model for Customer Satisfaction Factors**



**Table 54: Confirmatory Factor Analysis for Customer Satisfaction**

Item	Questions	SFL	SMC
CSAT1	The contact centre staff ask me whether I am satisfied at the end of the conversation	0.705	0.497
CSAT2	When I have had contact with my university contact centre, sometime after this contact I am asked whether this contact was to my satisfaction	0.733	0.537
CSAT3	I feel very happy when I get what I want from the service provided by my university contact centre	0.494	0.244

## 5.9 Construct Validity

A core requirement for theory building and testing is the establishment of the reliability and validity of constructs in a research model (Brocato et al., 2012); construct validity helps facilitate this. Construct validity is the extent to which a set of measured items actually reflects the theoretical latent construct those items are designed to measure (Hair et al., 2010). In other words, evidence of construct validity suggests that items in the model measure the theory accurately. It is measured through convergent and discriminant validity (Rahman et al., 2015).

### 5.9.1 Convergent Validity

In terms of convergent validity, this was assessed by reviewing standard factor loading items, AVE, as well as the CR. In general, to indicate adequate convergent validity, factor loading estimates should be 0.5 or higher; the AVE should be 0.5 or higher; and the CR should be 0.7 or higher (Hair et al., 2010).

In terms of factor loadings, of all items in the construct were above the general rule of thumb of 0.50 or higher for factor loadings (see Tables 50 to 54), as suggested by Hair et al. (2011). All constructs in this study's measurement model had AVE values ranging from 0.718 to 0.548, which met the required threshold of greater than 0.5. The CR values for all constructs were higher than the acceptable level of 0.7, ranging from 0.916 to 0.784. Cronbach's Alpha was computed for all constructs after CFA analysis as factor items were deleted due to the overlapping of items. All constructs were above 0.7, ranging from 0.889 to 0.72, except for customer satisfaction at 0.674, which is acceptable.

In summary, all constructs provided a good fit, with high factor loadings above 0.70, AVE greater than 0.50, CR values above 0.70 and Cronbach's Alpha values within the acceptable range of 0.7. Therefore, this measurement model achieved adequate convergent validity.

**Table 55: Convergent Validity Results**

Item	CR	AVE	Cronbach's Alpha
GOSIP	0.916	0.609	0.889
Empathy	0.89	0.619	0.847
Reliability	0.895	0.59	0.848
Knowing the customer	0.846	0.648	0.799
Customer focus	0.889	0.616	0.844
Waiting	0.823	0.608	0.72
Accessibility	0.846	0.648	0.764
Usability	0.88	0.71	0.803
Visual appeal	0.91	0.718	0.847
Personalisation	0.89	0.669	0.824
Relevance of information	0.869	0.69	0.774
Ease of payment	0.852	0.657	0.729
Perceived security	0.826	0.612	0.765
Customer satisfaction	0.784	0.548	0.674
Customer social interaction	0.884	0.656	0.835
Service benefits	0.902	0.648	0.845
Support interaction	0.846	0.647	0.767
System support	0.848	0.651	0.754

### 5.9.2 Discriminant Validity

Discriminant validity refers to how theoretical concepts measuring the degree to which a construct is different from other constructs in a model (Henseler et al., 2015). The Fornell-Larcker criterion used to be the method of assessing discriminant validity, but recent studies have argued that, given it was established more than 30 years ago, it is no longer a good measure. The Heterotrait-Monotrait ratio (HTMT) is now more commonly used (Benitez et al., 2020; Henseler et al., 2015), especially in the marketing field. This is a new approach for assessing discriminant validity by way of calculating the HTMT ratio, which measures similarities between latent variables. This is done by computing the mean value of the item correlations diagonally relative to the geometric mean of the average correlations for the items measuring the same construct (Henseler et al., 2015). As per the general rule of thumb, evidence for discriminant validity is

shown if HTMT values are lower than 0.85, a strict threshold, or 0.90 a lenient threshold. As the model in this study relates to the marketing domain and this is experimental research using various multi-item scales (capturing the perceptions of customers after service usage), HTMT analysis was considered appropriate. It was carried out for three main constructs separately (see Tables 56 to 58). This was also conducted to ensure consistency with EFA and CFA, which was carried out on constructs at the individual level. The HTMT analysis revealed that, overall, most constructs were below 0.9, except for the following four items:

- customer focus with reliability (0.936)
- relevance of information with usability (0.927)
- perceived security with personalisation (0.930)
- perceived security with ease of payment (0.919)

However, this approach does not always provide strong evidence of discriminant validity because correlations as high as 0.9 can still produce a significant difference in fit (Hair et al., 2010). The key criterion for the HTMT test has to do with whether the HTMT ratio exceeds 1.0 (Henseler et al., 2015). In this case, all HTMT ratios were below 1.0. Furthermore, it has been proposed that one way to get proper discriminatory loading is to select or develop scales that yield high lambda loadings, which can have high reliability estimates. However, this results in capturing only part of the reality. As such, it is recommended to capture broad domains that can project a better reality in construct modelling (Stein et al., 2017), which was what this study sought to capture.

**Table 56: Contact Centre Service Quality Discriminant Validity Results**

	Empathy	Reliability	Knowing the customer	Customer focus	Waiting	Accessibility
Empathy						
Reliability	0.864					
Knowing the customer	0.805	0.778				
Customer focus	0.845	0.936	0.805			
Waiting	0.763	0.891	0.671	0.819		
Accessibility	0.793	0.87	0.715	0.838	0.772	

**Table 57: Online Servicescape Discriminant Validity Results**

	Usability	Personalisation	Visual appeal	Relevance of info.	Ease of payment	Perceived security
Usability						
Personalisation	0.848					
Visual appeal	0.874	0.837				
Relevance of info.	0.927	0.867	0.859			
Ease of payment	0.845	0.833	0.866	0.886		
Perceived security	0.835	0.93	0.891	0.875	0.919	

**Table 58: Customer Support Discriminant Validity Results**

	Customer social interaction	Support interaction	System support	Service benefits
Customer social interaction				
Support interaction	0.892			
System support	0.722	0.736		
Service benefits	0.824	0.800	0.794	

Discriminant validity analysis was not applicable for GOSIP as this is only one construct and this limits its statistical power, as such, it cannot be computed (Stein et al., 2017). Furthermore, there is strong theoretical support and a well-established body of literature suggesting clear distinctions between the constructs under investigation (Blazevic et al., 2014). Therefore, the distinctiveness of the constructs is evident without the need for statistical confirmation (Hair et al., 2011)).

### 5.9.3 Multi-Collinearity Analysis

A widely used diagnostic tool to test multi-collinearity is the variance inflation factor (VIF), which indicates how the variance of the corresponding coefficient is inflated due to data collinearity (Jou et al., 2014). Therefore, it has been recommended that the indicators should not be too correlated due to high collinearity (Becker et al., 2014) as this can lead to bias in weight estimation and statistical significance (Hair et al., 2010). A VIF value of 5 and above signals collinearity problems amongst the formative indicators (Hair et al., 2011). Hence, to further confirm the results, discriminant validity multicollinearity among these independent variables examined variable inflation

factors for all predictors on the dependent variable. No VIFs greater than 5 were observed. As this is far less than the threshold of 10 (see Table 59), this suggests that the collinearity in the formative construct did not reach critical levels. Addressing multicollinearity is crucial for obtaining reliable and interpretable results, reinforcing confidence in the findings due to the absence of variable inflation (Becker et al., 2014).

**Table 59: Collinearity Variance Inflation Factor Values**

Indicators	Collinearity statistics	
	Tolerance	VIF
(Constant)_ Customer satisfaction		
Accessibility	0.509	1.964
Empathy	0.389	2.571
Knowing the customer	0.476	2.103
Customer focus	0.539	1.856
Waiting	0.539	1.856
Reliability	0.544	1.837
Service benefit	0.533	1.877
System support	0.580	1.725
Support interaction	0.533	1.877
Customer social interaction	0.580	1.725
Visual appeal	0.434	2.304
Usability	0.434	2.304
Perceived security	0.520	1.923
Ease of payment	0.492	2.034
Personalisation	0.492	2.034
Relevance of information	0.520	1.923

## 5.10 Structural Model Analysis and Hypotheses Testing

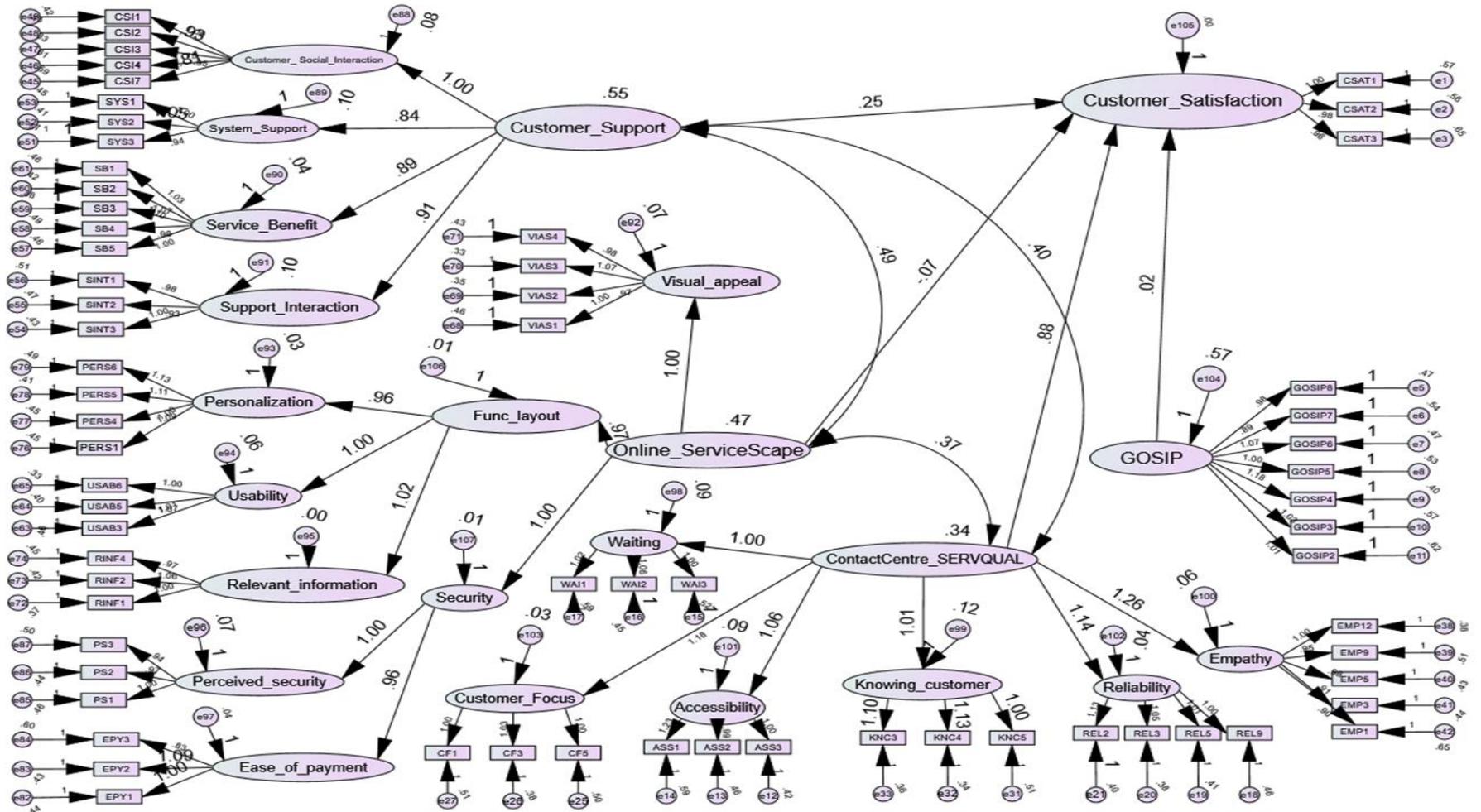
The final step of the four-step SEM modelling involved testing the structural model. A structural model imputes relationships between latent variables and specifies how these variables are directly or indirectly influenced or related to each other (Stein et al., 2017). The structural model was used to test the hypotheses regarding how constructs are theoretically linked and the significance of causal relationships.

### 5.10.1 Structural Model Fit and Diagram Path

Figure 15 presents the structural model of key factors influencing customer satisfaction. The hypothesised SEM combined the three main measurement models (online servicescape, contact centre service quality, and customer support); the moderator was GOSIP. A path diagram with the standardised estimates for the structural model is

illustrated in Figure 15. The rectangle items represent the observed variables and measured variables. The ellipses are the latent variables while the measurement of errors is in circles. The causal paths are shown in single-headed arrows while the double-headed arrows represent the correlations between the latent constructs. This is shown in a later model that uses composite variables to form latent factors.

Figure 15: Overall SEM Analysis of Student Satisfaction with University Contact Centres in Australia



The overall fit of the structural model (see Figure 15) was satisfactory, with all relevant fit indices addressing recommended threshold requirements. The results for the model indicated the following: chi-square = 298.515,  $p = 0.094$ ,  $\chi^2/df = 2.369$ ; SRMR = 0.024; RMSEA = 0.057; CFI = 0.976; GFI = 0.926; AGFI = 0.900; TLI = 0.971; Mardia's coefficient = 186.175; and Bollen-Stine = 0.007.

### 5.10.2 Structural Paths and Hypotheses Testing

Once the structural model had been established and statistically well fitted, the subsequent step was to test the study hypotheses by exploring the path significance of each causal relationship. This process also included examining the variance explained by each path in the model. Table 60 provides a summary of the causal paths of the proposed model. The first column displays all the causal paths identified in this model. The hypotheses column shows the hypotheses represented by each causal path.

**Table 60: Structural Paths for the Model of Student Satisfaction with University Contact Centres**

Structural paths	Hypotheses	Estimate	SE	Critical ratio	P	Significant	Supported
Customer_satisfaction<--- ContactCentre_SERVQUAL	H1	0.692	0.075	9.2	***	Yes	Yes
Customer_satisfaction<--- Online_servicescape	H2	0.173	0.038	4.59	***	Yes	Yes
Customer_satisfaction<--- Customer_support	H3	0.219	0.037	5.872	***	Yes	Yes
Customer_Satisfaction<--- GOSIP	H4	0.023	0.032	0.712	0.476	No	Not supported

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

The results of the structural path model were then used to test the research hypotheses regarding student satisfaction with their university contact centre in terms of contact centre service quality, customer support, and online servicescapes, with GOSIP as the moderator. The estimates column shows the unstandardised parameter estimates or regression weights/coefficients of the structural paths. SE is the estimate of standard error of the regression weight, while critical ratio is a t value obtained by dividing the estimate of the covariance by its SE. Critical ratio values greater than  $\pm 1.96$  indicate the

statistical significance. So, to test the hypotheses, a t value ( $t \pm 1.96$ ) and a significance level ( $p < 0.05$ ) were used to identify whether each hypothesis was supported (Byrne, 2010). Notably,  $p < 0.001$  indicates that a hypothesis is strongly supported (Su & Yang, 2010). A p value of 0.05 significance level is also recommended by Arbuckle (2011) for hypothesis testing.

The following hypotheses were all supported (see Table 60): H1, customer satisfaction to contact centre service quality ( $\beta = 0.075$ ,  $t = 9.2$ ,  $p < .001$ ); H2, customer satisfaction to online servicescape ( $\beta = 0.38$ ,  $t = 4.59$ ,  $p < .001$ ); H3, customer satisfaction to customer support ( $\beta = 0.037$ ,  $t = 5.872$ ,  $p < .001$ ). H4 hypothesis was rejected as the direct influence of customer satisfaction to GOSIP is not significant ( $\beta = 0.032$ ,  $t = 0.712$ ,  $p < 0.05$ ).

### **5.10.3 Moderation Analysis**

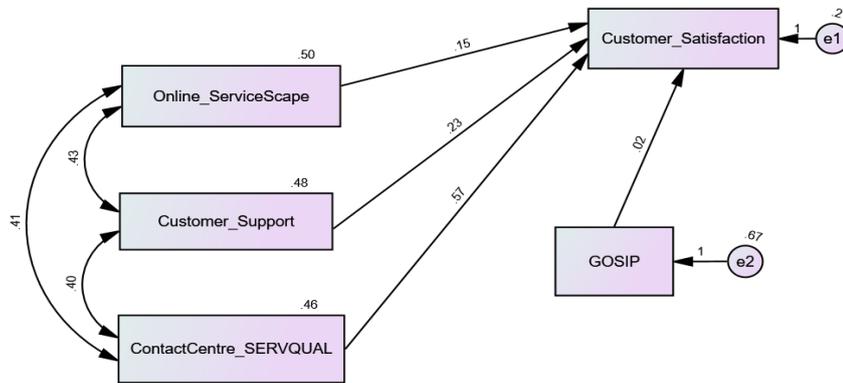
To test hypotheses 5a, 5b and 5c moderation analysis was conducted. The hypothesised moderated mediation model shown in Figure 16 was developed by simplifying the structural model. This enabled regression analysis with the unstandardised factor examined to evaluate the moderation effect. Calculation was carried out on SPSS to standardise the composite factor items. This technique of standardising composite factor items is classified as normalisation, which is a scaling technique that can be helpful for prediction or forecasting purposes (Patro & Sahu, 2015). Standardised factors are both centred around zero and are scaled so that they have a standard deviation of 1 (Dawson, 2013).

The z-score of GOSIP was multiplied with respective constructs and then tested one by one to examine the effects. Tests were then taken in a single model using a bootstrapping approach to assess the significance of the indirect effects at differing levels of the moderator (Hayes, 2013).

Moderation analyses tested the conditional indirect effect of a moderating variable (i.e., GOSIP) on the relationship between a predictor (i.e., customer support, online servicescape, and contact centre service quality) and an outcome variable (customer satisfaction). An index of moderated mediation was used to test the significance of the moderated mediation (i.e., the difference of the indirect effects across levels of GOSIP)

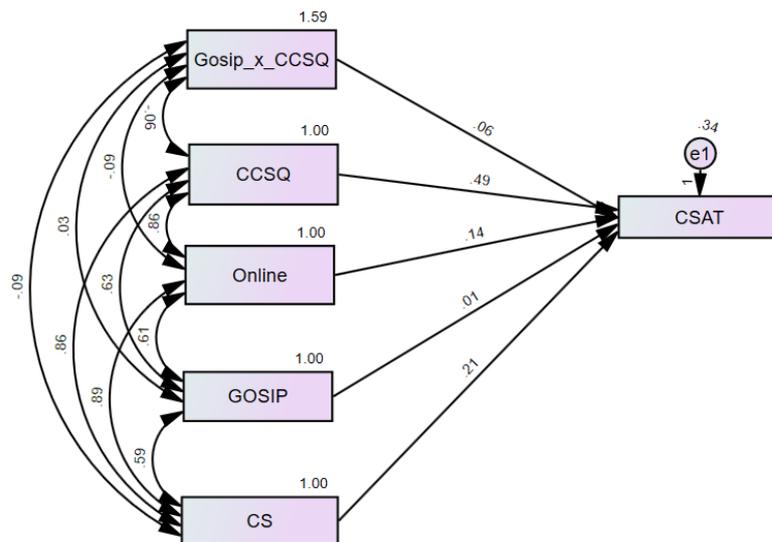
and the significant effects were supported by the absence of zero within the confidence intervals (Dawson, 2013; Hayes, 2015).

**Figure 16: Simplified SEM of Student Satisfaction with University Contact Centres in Australia**



GOSIP was found to moderate the effect of contact centre service quality and customer satisfaction with the unstandardised beta for contact centre service quality to customer satisfaction ( $b = 0.490$ ); GOSIP to customer satisfaction ( $b = 0.010$ ); contact centre service quality\_x\_GOSIP to customer satisfaction ( $b = 0.060$ ). This demonstrates that GOSIP strengthens the positive relationship between contact centre service quality and customer satisfaction. The results are shown in Figure 21 and Table 63.

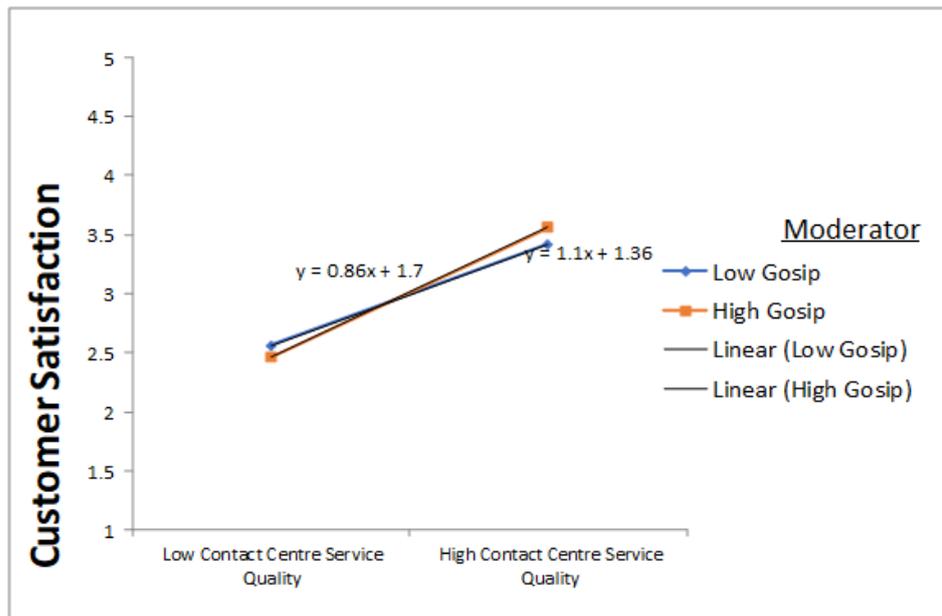
**Figure 17: SEM for GOSIP Moderating Contact Centre Service Quality**



**Table 61: Unstandardised Effects of GOSIP Moderating Customer Contact Centre Service Quality**

Variable name	
Independent variable:	Contact centre service quality
Moderator:	GOSIP
Dependent variable:	Customer satisfaction
<b>Unstandardised regression coefficients</b>	
Contact centre service quality-->Customer satisfaction	0.490
GOSIP-->Customer Satisfaction	0.010
Contact centre service quality_x_GOSIP-->Customer satisfaction	0.060
Intercept / Constant:	3

**Figure 18: Effects of GOSIP Moderating Customer Contact Centre Service Quality**

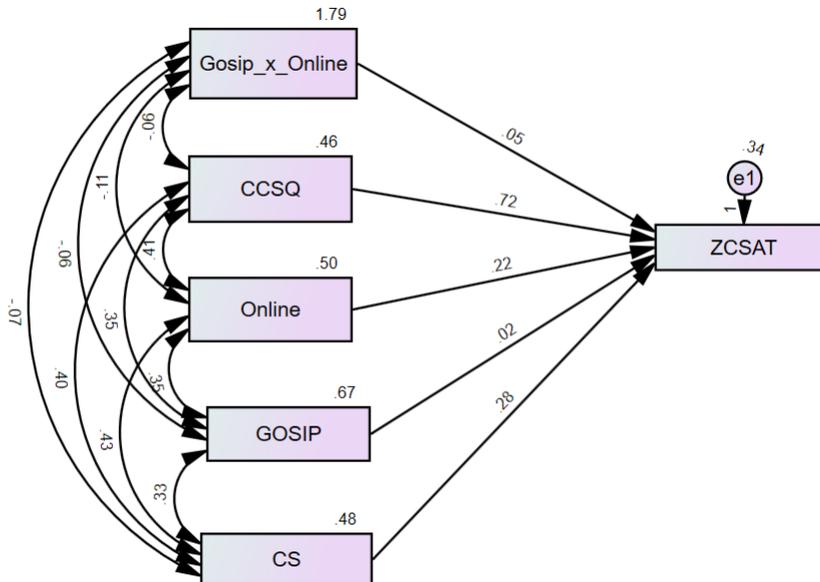


The coefficient (0.060) suggests that the relationship between contact centre service quality and customer satisfaction is moderated by GOSIP. When the interaction term is positive, it indicates a stronger relationship between contact centre service quality and customer satisfaction with higher levels of general online social interaction propensity (GOSIP), and conversely, a weaker relationship when GOSIP is low. Specifically, for every unit increase in the interaction of contact centre service quality and GOSIP, customer satisfaction is expected to increase by 0.060 units, holding other variables constant.

Hypothesis H5a is supported by the moderation analysis, showing that GOSIP moderates the positive relationship between contact centre service quality and customer satisfaction. Specifically, the relationship is strongest when GOSIP is high, indicating that the impact of contact centre service quality on customer satisfaction is even more pronounced with higher levels of GOSIP. GOSIP was found to moderate the effect of online servicescape and customer satisfaction with the unstandardised beta for online servicescapes to customer satisfaction ( $b = 0.150$ ); GOSIP to customer satisfaction ( $b = 0.020$ ); online servicescape\_x\_GOSIP to customer satisfaction ( $b = 0.050$ ). This demonstrates that GOSIP strengthens the positive relationship between online

servicescape, thereby positively influencing customer satisfaction. The results are shown in Figure 19 and Table 62.

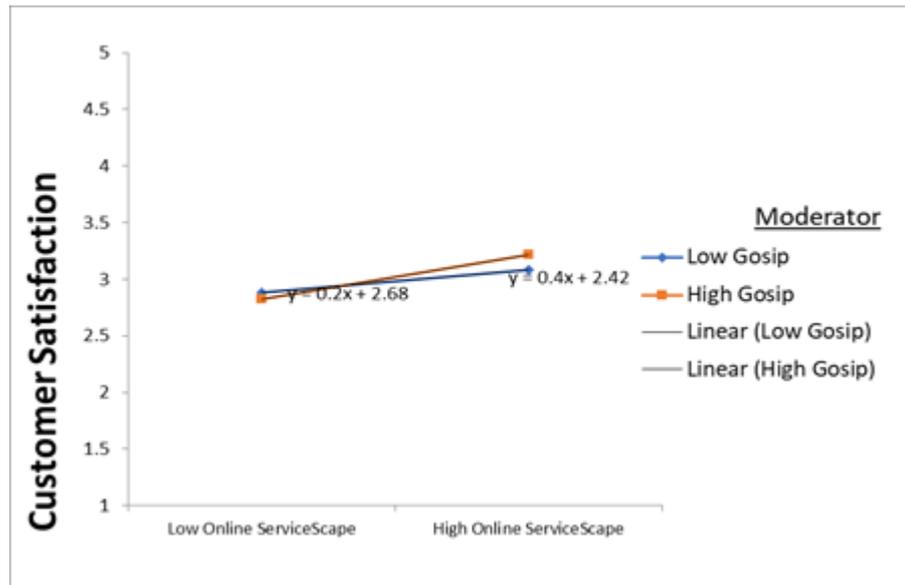
**Figure 19: SEM for GOSIP Moderating Online Servicescape**



**Table 62: Unstandardised Effects of GOSIP Moderating Online Servicescape**

Variable name	
Independent variable:	Online servicescape
Moderator:	GOSIP
Dependent variable:	Customer satisfaction
<b>Unstandardised regression coefficients</b>	
Online servicescape-->Customer satisfaction	0.150
GOSIP-->Customer satisfaction	0.020
Online servicescape_x_GOSIP-->Customer satisfaction	0.050
Intercept / Constant:	3

**Figure 20: Effects of GOSIP Moderating Online Servicescape**

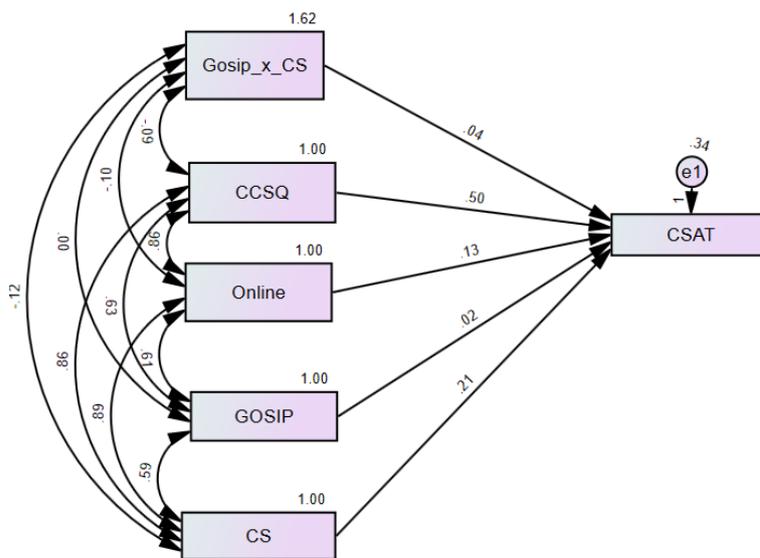


This coefficient demonstrates the moderating effect of GOSIP on the relationship between online servicescape and customer satisfaction. It suggests that when GOSIP is high, the positive relationship between online servicescape and customer satisfaction is strengthened. Specifically, for every unit increase in the interaction of online servicescape and GOSIP, customer satisfaction is expected to increase by 0.050 units, holding other variables constant.

Hypothesis H5b was supported (see Figure 18) as moderation analysis demonstrates that GOSIP moderates the positive relationship between perceptions of the online servicescape quality and customer satisfaction, such that the relationship is strongest when GOSIP is high, indicating that the impact of online servicescape on customer satisfaction is even more pronounced with higher levels of GOSIP.

GOSIP was found to moderate the effect of customer support and customer satisfaction with the unstandardised beta for customer support to customer satisfaction ( $b = 0.210$ ); GOSIP to customer Satisfaction ( $b = 0.020$ ); customer support\_x\_GOSIP to customer satisfaction ( $b = 0.040$ ). The results are shown in Figure 21 and Table 63.

**Figure 21: SEM for GOSIP Moderating Customer Support**



**Table 63: Unstandardised Effects of GOSIP Moderating Customer Support**

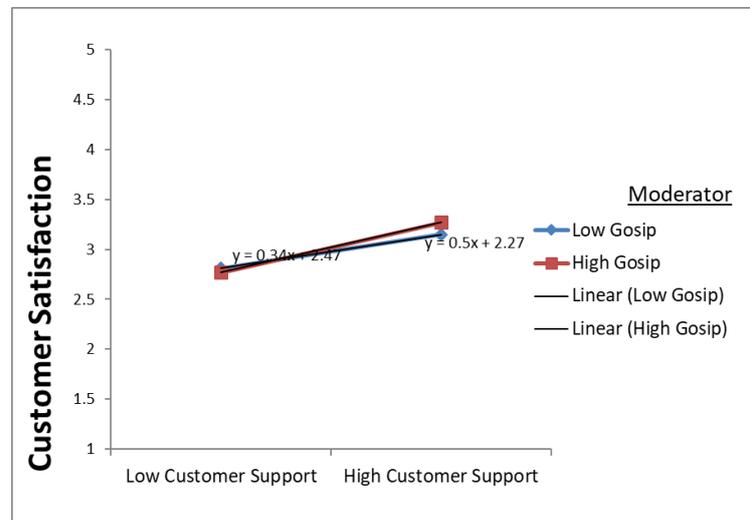
Variable name	
Independent variable:	Customer support
Moderator:	GOSIP
Dependent variable:	Customer satisfaction
<b>Unstandardised regression coefficients</b>	
Customer support-->Customer satisfaction	0.210
GOSIP-->Customer satisfaction	0.020
Customer support_x_GOSIP-->Customer satisfaction	0.040
Intercept / Constant:	3

This coefficient represents the interaction effect between customer support and GOSIP on customer satisfaction. It indicates how the relationship between customer support and customer satisfaction changes as GOSIP varies. When GOSIP is high, the positive relationship between customer support and customer satisfaction is enhanced where for each one-unit increase in both customer support and GOSIP, customer satisfaction is predicted to increase by an additional 0.040 units beyond the effects of customer support and GOSIP individually, holding other variables constant.

Hypothesis H5c was supported, as shown in Figure 20, as GOSIP moderates the positive relationship between customer support and customer satisfaction, such that the

relationship is strongest when GOSIP is high, indicating that the impact of customer support on customer satisfaction is even more pronounced with higher levels of GOSIP.

**Figure 22: Effects of GOSIP Moderating Customer Support**



#### 5.10.4 Multi-Group Analysis

Multi-group comparisons were undertaken to compare the results of structural effects of three student categories to test hypotheses H6a, H6b and H6c:

- residency status -domestic and international students (H6a)
- academic level-undergraduate and postgraduate students (H6b)
- gender differences-male and females (H6c)

Multi-group comparisons were undertaken using the group feature of AMOS to determine whether there were significant differences across these groups. The analyses included non-parametric tests, developed to compare two or more independent groups (Thakkar, 2020).

This section presents three tables that display the regression coefficients (beta values) for various independent variables in relation to the dependent variables. The subscripts indicate the directionality of the relationship, with "→" denoting the independent variable's impact on the dependent variable (Brown et al., 2017; Byrne, 2004; Hair et al., 20; Smith et al., 2016).

## Domestic and International Students

Overall, the results showed that there were differences between the two groups only in the following:

- The positive relationship between online servicescape and customer satisfaction was only significant for domestic students ( $\beta = 0.109$ )
- The positive relationship between customer support and customer satisfaction was only significant for domestic students ( $\beta = 0.048$ )

**Table 64: Differences Between Domestic and International Student Cohorts**

Path name	Domestic beta	International beta	Difference in betas
Contact centre service quality → Customer satisfaction	0.474***	0.631***	-0.157
Online servicescape → Customer satisfaction	0.171*	0.062	0.109
Customer support → Customer satisfaction	0.191*	0.143	0.048
GOSIP → Customer satisfaction	0.011	0.007	0.004

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

The results shown in Table 64 represent the beta coefficients derived from a regression analysis to assess the relationship between the construct items for both domestic and international students.

**H6a (i) Contact centre service quality → Customer satisfaction:** Both domestic ( $\beta = 0.474$ ,  $p < 0.001$ ) and international ( $\beta = 0.631$ ,  $p < 0.001$ ) students exhibit a statistically significant positive relationship between contact centre service quality and customer satisfaction. The difference in betas is -0.157, indicating that the impact of contact centre service quality on customer satisfaction is relatively stronger for international students compared to domestic students.

**H6a (ii) Online servicescape → Customer satisfaction:** A statistically significant positive relationship exists for both domestic ( $\beta = 0.171$ ,  $p < 0.05$ ) and international ( $\beta = 0.062$ ,  $p < 0.05$ ) students. The difference in beta coefficients is 0.109, indicating a slightly stronger association for domestic students.

**H6a (iii) Customer support → Customer satisfaction:** A statistically significant positive relationship is observed for both domestic ( $\beta = 0.191$ ,  $p < 0.05$ ) and international ( $\beta = 0.143$ ,  $p < 0.05$ ) students. The difference in beta coefficients is 0.048, indicating a modest variation in the strength of the relationship between customer support and customer satisfaction for the two student groups.

**H6a (iv) GOSIP → Customer satisfaction:** The relationships between GOSIP and customer satisfaction are not statistically significant for either domestic ( $\beta = 0.011$ ,  $p > 0.05$ ) or international ( $\beta = 0.007$ ,  $p > 0.05$ ) students. The difference in beta coefficients is 0.004, suggesting a negligible distinction in the association between GOSIP and customer satisfaction for the two groups.

### Undergraduate and Postgraduate Cohort

Overall, the results showed that there were differences between the two group only in the following:

- The positive relationship between online servicescape and customer satisfaction is only significant for undergraduate students ( $\beta = 0.013$ ).
- The positive relationship between customer support and customer satisfaction is only significant for postgraduate students ( $\beta = -0.137$ ).

**Table 65: Differences Between Undergraduate and Postgraduate Student Cohorts**

Path name	Undergraduate Beta	Postgraduate Beta	Difference in Betas
Contact centre service quality → Customer Satisfaction	0.551***	0.424***	0.127
Online servicescape → Customer Satisfaction	0.151*	0.137	0.013
Customer support → Customer satisfaction	0.137	0.273*	-0.137
GOSIP → Customer satisfaction	0.016	0.001	0.016

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

The results presented in Table 65 represent the beta coefficients derived from a regression analysis to assess the relationship between the construct items for both undergraduate and postgraduate students.

**H6b (i) Contact centre service quality → Customer satisfaction:** The beta values for undergraduates and postgraduates are ( $\beta = 0.551, p < 0.001$ ) and ( $\beta = 0.424, p < 0.001$ ), respectively. This indicates a strong positive relationship between contact centre service quality and customer satisfaction for both groups. The difference in betas (0.127) suggests a stronger association between contact centre service quality and customer satisfaction among undergraduates compared to postgraduates.

**H6b (ii) Online servicescape → Customer satisfaction:** For both undergraduate and postgraduate students, the beta values are positive at ( $\beta = 0.151, p < 0.10$ ) and ( $\beta = 0.137, p > 0.05$ ), respectively. This indicates a positive relationship between online servicescape and customer satisfaction. The difference in betas (0.013) suggests a slightly stronger relationship between online servicescape and customer satisfaction among undergraduates.

**H6b (iii) Customer support → Customer satisfaction:** The beta values for undergraduates and postgraduates are ( $\beta = 0.137, p > 0.05$ ) and ( $\beta = 0.273, p < 0.05$ ) respectively. This indicates a positive relationship between customer support and customer satisfaction for postgraduates, while the relationship is not significant for undergraduates. The difference in betas (-0.137) indicates a significantly stronger association between customer support and customer satisfaction among postgraduates compared to undergraduates.

**H6b (iv) GOSIP → Customer satisfaction:** The beta values for undergraduates and postgraduates are ( $\beta = 0.016, p > 0.05$ ) and ( $\beta = 0.001, p > 0.05$ ), respectively. Both coefficients are positive but not statistically significant. The difference in betas (0.016) suggests that the link between GOSIP and customer satisfaction is not statistically significant for either group.

### **Gender Analysis**

Three types of gender were identified: female, male and other groups. However, as the data for other genders was less calculation was not feasible for all three groups (in other words data was too small so calculation was not feasible). Hence, only the two main

groups were considered for this analysis. Overall, the results showed differences between the two group only in the following:

- The positive relationship between customer satisfaction and online servicescape is only significant for females ( $\beta = -0.238$ ).

**Table 66: Differences in Gender Cohorts**

Path name	Male beta	Female beta	Difference in betas
Contact centre service quality → Customer satisfaction	0.648***	0.397***	0.251
Online servicescape → Customer satisfaction	0.005	0.243*	-0.238
Customer support → Customer satisfaction	0.170*	0.209*	-0.039
GOSIP → Customer satisfaction	0.04	-0.015	0.054

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

The results presented in Table 66 represent the beta coefficients derived from a regression analysis to assess the relationship between the construct items for both male and female students.

**H6c (i) Contact centre service quality → Customer satisfaction:** Contact centre service quality demonstrates a strong positive association with customer satisfaction for both males ( $\beta = 0.648$ ,  $p < 0.001$ \*\*\*) and females ( $\beta = 0.397$ ,  $p < 0.001$ \*\*\*). The considerable difference in beta coefficients (0.251) indicates a significantly higher positive relationship for males.

**H6c (ii) Online servicescape → Customer satisfaction:** Both male ( $\beta = 0.005$ ) and female ( $\beta = 0.243$ ,  $p < 0.05$ \*) students exhibit a positive association between online servicescape and customer satisfaction. However, the significantly higher beta coefficient for females ( -0.238) implies a more substantial positive relationship for female students.

**H6c (iii) Customer support → Customer satisfaction:** Both male ( $\beta = 0.170$ ,  $p < 0.1$ ) and female ( $\beta = 0.209$ ,  $p < 0.05$ \*) students show a positive association between customer support and customer satisfaction, with a slightly higher beta coefficient for

females. The difference in beta coefficients ( -0.039) suggests a modest gender-specific variation in the strength of the positive relationship.

**H6c (iv) GOSIP → Customer satisfaction:** GOSIP exhibits a weak positive association with customer satisfaction for males ( $\beta = 0.04$ ,  $p > 0.05$ ) and females ( $\beta = -0.015$ ,  $p > 0.05$ ). The relatively small difference in beta coefficients (0.054) indicates a subtle gender-specific divergence in the relationship strength.

### 5.11 Qualitative Analysis of Open-Ended Questions

At the end of the questionnaire, students were asked to provide suggested improvements in relation to university contact centres. This was a string text field, and it gave students a way to express themselves. The text was qualitative in nature and responses were categorised into nine recurring themes, as shown in Table 67 and the word cloud presented in Figure 23.

The top three themes relating to improvement were efficiency (N = 106, 24.1%), customer care (N = 88, 20%) and service knowledge (N = 57, 13%). The lowest rated theme was human connection (N = 11, 2.5%). Issues surrounding communication, equity services and operational hours were also raised. In addition, some students were unclear of the role of their contact centre (N = 19, 4.3%) as they indicated other elements that were noted related, including having better classes, a better syllabus, and lowering their tuition fees.



during critical times, they need to employ more people to handle the online support”. In general, students wanted their “*problem solved faster and quicker*”. In the event the students are referred to other areas of the university, they suggested “*faster redirection to the relevant department*”.

**Communication:** Students provided suggestions that the contact centre needed to improve their communication style in all facets, from the “*ways of talking*” to “*being accurate when emailing*” to “*the ability to streamline information and decision-making processes through a portal so that there is a single source of truth for student queries, and it is transparent*”. Students asked for “*personalised emails*” that are “*directed actually to them*” and a “*better two-way contact information process*”. They also wanted “*written receipt showing their discussion by email*” and required “*phone conversations to be acknowledged via email*”. In terms of self service, it was recommended to “*have a list of general information around which is easily accessible*” and to “*provide thorough details for student when navigating through the website*”.

**Customer care:** Students suggested that they required more “*personalised care*” from their contact centre through being “*attentive, more passionate, student focused, responsiveness, patient, easy-to-understand, listening more, be engaging and more useful*” as they would like “*tailored advice*” and did not want “*copy and paste*” guidance or to be turned away by “*referring them to online help*”. The students wanted instant assistance with “*kind helpful support*”. There were also suggestions on overall improvements relating to “*professionalism and learn[ing] to respect students*”, with the students requiring “*friendly customer service*” with “*friendlier staff*” who were “*kind, non-sexist, more polite and less aggressive with good manners and being honest*”. Students also suggested that “*staff takes them seriously*”, with them “*being more sympathetic*” with “*the need to understand their exact situation*” and giving tailored guidance.

**Equity issues:** Students suggested the need to cater for a wide range of cultural issues, such as having “*staff from different countries who can talk in their mother tongue during difficult situations*” to “*keep customer service within Australia not overseas*”. In addition, for international students there is need to “*have more services for international students*”, with suggestions to “*hire more staff*” to assist them, especially “*during busy*”

times” as it takes “months to get email responses” and it is “costly to call from overseas”. For disability issues, it was suggested “to have more things for disabled people to do” such as “easier to access information” to “easy access to information without too many steps” where it is “more accessible” with “larger print on websites for navigation ease”. For online services, it was suggested that it be made “easier to browse website” to having “easier access to live chats”. There were also suggestions to cater for mature or older students who wanted to “add more individual helpline numbers” and “easier navigation websites” that are “convenient and easier to use”.

**Operational hours:** Students suggested that the university contact centre “offer longer opening hours by providing 24/7 support” or at least “extending its operating hours”. Students requested “late night contact hours where students can contact beyond 9-5 if they work”. Some suggestions were that the university “spend more time on the phone” and some suggested “call backs”. When it comes to online service, it was also suggested to have “extended hours for online chat”.

**Human connection:** Students indicated that they prefer “face-to-face communication” with “more human interaction” and they like to “talk to real people” and to know that “there is always a human to talk to”. Suggestions also included that “if the chatbot is not able to answer the question to be redirected to an online chat with a human” as the “chatbot currently does not seem precise when someone asks for information”. To add a human touch through online platforms, one recommendation was, “if the live chatbots had pictures of the real people I am speaking to on the other end”.

**Technology:** Students provided a range of suggestions in relation to technology. They wanted better “live chats” or to have “live chats options” available to them and, where it is provided, then to “constantly update self-services bots” and to “list the times that live chat is available”. In terms of online services, suggestions included “the site needs a redesign” to make it “more inviting” by making it “visually appealing” with “themes”. In terms of layout, students wanted sites to be “easier to navigate and be user friendly” with “less jargon and extra information”. They would like to also see “improvement in speed of the network”, “less crashes of the website” and “a better system that tracks previous interactions/questions”. In terms of self-service platforms, students required “a feature that allows to answer questions so that can be directed to the section if they

*do not know exactly what they are looking for*". One recommendation was that *"it would be great if they do not need to ask a question to the customer service team in the first place which means the website is so informative and with precise information that everything that one needs to know is easily accessible and available"*.

**Service knowledge:** There was an overwhelming response to *"have more knowledgeable and qualified staff"* or *"trained staff"* and, in case the staff do not know the answers, they are to *"make research"* before guiding them. Or, universities should *"hire people who actually know what they're doing"* or *"contact the one who knows the solution immediately"*. There was a recommendation for *"giving staff training to make them easier to talk to"*. Students asked for *"more options to talk to the right person straight away, rather than calling and being told to email someone only to get an email back saying that they are not the right person"* and that students be *"directed to the correct contact they need with their request"*. The students also recommended that there should be *"direct physical contact from the school with students"* and to have *"more continuity between what service centre staff tell them and how each department actually runs"* by *"having each contact support officer allocated to a particular department so they are more across details in relation to their particular department"* and *"by keeping in touch with the staff they had to contact earlier"*.

**Clarity of roles of contact centres:** As indicated earlier, students raised suggestions on other aspects of service that are not actually provided by university contact centres, such as teaching outcomes. Comments included *"better syllabus, more teachers, more teaching and study groups to better classes"*, *"lowering tuition fees"*, and providing *"more scholarships for those who are financially disadvantaged"*.

## **5.12 Chapter Summary**

This chapter has presented the results of the study. Descriptive analyses were conducted to report on the students' demographic profiles, their overall usage of their university contact centres, and their overall perceptions as national average satisfaction scoring. A SEM process was applied to analyse the data, including verifying the measurement model prior to testing the structural model. EFA and CFA were used to verify the factor structure of the observed variables. The reliability and validity of the scales were

established. Lastly, the structural model was tested to confirm the study hypotheses, followed by descriptive analysis of the students' qualitative responses on ways to improve contact centres.

## CHAPTER 6: DISCUSSION AND CONCLUSION

### 6.0 Introduction

This study has investigated the extent to which service quality, the online environment, customer support, and customer engagement contributed to student satisfaction with university contact centres. This chapter provides a discussion of the findings in relation to the relevant hypotheses, followed by a concise overview of how these findings enhance the existing theoretical knowledge, the theoretical and practical implications of the findings, limitations and further research directions.

### 6.1 Conceptual Model

The research identified several critical areas that have been unexplored in academia. These include the student perceptions and usage of contact centre services, the multifaceted nature of the university service environment, and the emergence of digital monopolies on service delivery. The mode of student interaction and engagement in the digital era presents a complex landscape that required further scrutiny. Existing literature on student satisfaction with universities primarily focused on specific contexts related to teaching and learning, neglecting the broader aspects of shared services for contact centres and their impact on student satisfaction. The overall gap analysis highlighted the limited scope of research on university contact centres in Australia, particularly in relation to engagement levels and service environments. Existing studies were often confined to specific cases at the university or faculty level, lacking a holistic perspective on the entire organisation. Customer engagement, a crucial aspect in the evolving digital landscape, remained underexplored, particularly in the domain of contact centre customer support in Australian universities.

The research revealed that customer satisfaction was influenced by service quality (Kumar & Hundal, 2019; van Dun et al., 2011), the online environment, a user-friendly and accessible servicescape (Aggarwal & Manmohan, 2018; Harris and & Goode, 2010; Teoh et al., 2013), effective customer support (Negash et al., 2003), and customer engagement (Blazevic et al., 2014) but not specifically in relation to university contact centres. As students are unique, it was expected that the perceptions of students would differ, and as such multi-group analysis was undertaken, to shed light on the nuanced

influences of structural factors across different student cohorts (domestic/international students, female/male, and undergraduate/postgraduate).

## **6.2 Key Findings and Discussion**

The ensuing sections delve into the analytical and theoretical underpinnings of these constructs, contributing valuable insights to the understanding of customer satisfaction in the context of the examined variables related to university contact centres and student satisfaction.

### **6.2.1 Contact Centre Service Quality**

As highlighted previously, service quality is important because it directly influences customer satisfaction (Parasuraman et al., 1991) and overall business success. Businesses that prioritise and consistently deliver high-quality service are better positioned to thrive in competitive markets and build lasting relationships with their customers (Pramedyas et al., 2021). This section examines the contact centre service quality factors that initiate customers perception in terms of usage of contact centres. In line with van Dun et al. (2011), this study discovered that service quality (consisting of the dimensions of accessibility, waiting, reliability, customer focus, knowing the customer and empathy) had direct and significant impact on customer satisfaction with the contact centre. This study asserts that increases in service quality lead to customer satisfaction. This supports the research of Anderson et al. (1994), and Elliott and Shin, (2010) which validates that satisfaction is based on customer expectations and perceptions of service, and that the quality of service creates a stimulus for satisfaction (Petruzzellis et al., 2006).

The first hypothesis of this study suggested a positive link between contact centre service quality and customer satisfaction. The section that follows summarises the findings of the hypothesised relationships.

*H1. Contact centre service quality in a digital environment is positively related to customer satisfaction.*

The research findings revealed that, in general, there is a direct positive relationship between contact centre service quality and customer satisfaction in universities around

Australia ( $\beta = 0.075$ ,  $t = 9.2$ ,  $p < .001$ ). This indicates that the degree of the influence of contact centre service quality on customer satisfaction is high in this study. The research identified six factors that can be attributed to contact centre service quality, which are accessibility, empathy, knowing the customer, customer focus, waiting, and reliability. It has been revealed that all these factors play crucial roles in enhancing customer satisfaction.

These results suggest that contact centre service quality measurement can be used as a tool to improve overall customer satisfaction (van Dun et al., 2011). This can now be applied in university settings to improve student experience, as demonstrated in the result findings. The results also confirm that service quality is a crucial element in exploring the touchpoints of customers (Dias et al., 2017) through use of contact centres in a virtual setting.

In a comprehensive examination of factors influencing student satisfaction with the university contact centre, several key dimensions were identified as significant determinants of contact centre service quality, ultimately impacting overall customer satisfaction. Empathy has the strongest influence on contact centre service quality, followed by customer focus, accessibility, reliability, waiting time knowing the customer. The research revealed that accessibility, including easy access to services and consideration of special needs, strongly influenced service quality and customer satisfaction, as was found by other studies (Parasuraman et al., 1991; van Dun et al., 2011).

Reliability emerged as a crucial factor, with students placing trust in the university's ability to deliver services with care, and the study affirmed that reliability significantly contributes to customer satisfaction (Bungatang & Reynel, 2021; Kumar & Hundal, 2019; van Dun et al., 2011). Moreover, the research highlighted the importance of customer focus, emphasising the need for correct advice and information to address students' questions. This aligns with previous studies linking customer focus to positive satisfaction outcomes (Ivana et al., 2019; Mehra & Ranganathan, 2008; Ooi et al., 2011; van Dun et al., 2011). Knowing the customer was identified as another critical dimension, with students expressing a desire for personalised responses tailored to their specific needs, affirming the significance of understanding the customer for efficient

service delivery (Delana et al., 2021; Mahdavi-pour & Rezaei, 2018; Postma & Brokke, 2002).

Finally, the study emphasised the impact of empathy on contact centre service quality and overall customer satisfaction. Students emphasised the importance of being treated with friendliness and caring attitudes, highlighting the role of empathy in exceeding customer expectations and fostering positive satisfaction outcomes (Pakurár et al., 2019; Wieseke et al., 2012).

In summary, these results suggest that factors such as empathy, customer focus, accessibility, reliability, knowing the customer, and waiting all have significant positive influences, with empathy and customer focus being the most influential (refer to Appendix H). Collectively, these dimensions contribute to a comprehensive understanding of the factors influencing student satisfaction with university contact centre services in the digital environment.

### **6.2.2 Online Servicescapes**

This study examined the online servicescape factors relevant to hypothesis H2 in relation to customer perceptions of their use of contact centres. In line with Harris and Goode (2010), the study discovered that visual appeal, usability, relevance of information, personalisation, ease of payment and perceived security had strong positive direct impact on customer satisfaction. As defined in Chapter 2, the online servicescape constitutes three main constructs: aesthetic appeal, function and layout, and security. As such, second-order multifactor modelling was incorporated into SEM (see Chapter 5, Figure 11). This finding is in line with previous findings in the customer information systems literature. Jayachandran et al. (2005) found that technology plays an important and supportive role in the success of CRM and use of such applications increases not only customer knowledge but even customer satisfaction (van Dun et al., 2011).

The second hypothesis of this study suggested a positive link between online servicescapes and customer satisfaction.

*H2. The online servicescape in a digital environment is positively related to customer satisfaction.*

The research findings revealed that, in general, there is a direct positive relationship between online servicescapes and customer satisfaction in universities around Australia ( $\beta = 0.38$ ,  $t = 4.59$ ,  $p < .001$ ). The research identified six factors that can be attributed to online servicescapes: visual appeal, usability, perceived security, ease of payment, personalisation, and relevance of information. The statistics confirmed that all of these factors play crucial roles in enhancing customer satisfaction.

The results suggest that online servicescape measurement can be utilised as a tool to improve overall customer satisfaction (Harris & Goode, 2010). This can be applied in university settings to improve student experiences. The findings further confirm that online servicescapes are strong drivers in customer decisions to use online applications (Hanafi & Widowati, 2021). Furthermore, aesthetic appeal, layout and functionality, and the financial security of the online service platforms (e.g., website or online self-service tools) have strong links with customer satisfaction (Wang et al., 2010).

The TAM serves as a valuable framework for understanding the online servicescape, with the model emphasising PEOU and PU as critical factors for technology acceptance, with aesthetic appeal, visual appeal, website design, layout, and functionality all playing crucial roles in customer satisfaction during online interactions (Marangunic & Granić, 2014). Additionally, the relevance of information and personalisation in influencing user satisfaction corresponds to TAM's focus on meeting users' needs and PU.

Aesthetic appeal is highlighted as a crucial factor affecting customer pleasure during online service encounters, with a positive relationship between visual appeal and overall customer satisfaction (Rafaeli & Pratt, 2013). Visual appeal and website design are particularly important for self-service preferences, as indicated by students who desire a well-designed and visually appealing website (Djamasbi et al., 2010). This is in line with the theory of visual rhetoric (Djamasbi et al., 2010), which suggests that visual appeal plays a crucial role in facilitating better information processing and positively affects overall customer satisfaction.

Additionally, layout and functionality play a significant role in influencing online experience, with usability identified as a key factor in contact centre service quality and customer satisfaction (Eroglu et al., 2003; Nguyen et al., 2021). Furthermore, the

relevance of information emerges as a critical factor, with students expressing a high preference for easily accessible and relevant materials. The study confirms that information quality on online platforms influences customer satisfaction, emphasising the importance of informative and interactive user interfaces during the search process (Dedeke, 2016; Kuhn & Petzer, 2019). According to the TRA, positive attitudes towards visually appealing websites contribute to overall satisfaction (Yzer, 2017). Additionally, positive attitudes towards user-friendly design and functionality, as well as easily accessible and pertinent information, influence the intention to have a positive online experience and affect purchase behaviour (Smith & Biddle, 1999).

Personalisation is also highlighted as a strong influencer, with students desiring websites and online platforms that cater to their needs and preferences, emphasising the importance of customisation and personalisation in enhancing customer satisfaction (Aheleroff et al., 2019; Liljander et al., 2002).

This study underscores the significance of security, particularly financial security, in the university sector. Perceived security and ease of payment were identified as crucial factors influencing contact centre service quality and overall customer satisfaction. Students expressed a preference for secure online platforms and efficient payment processes, emphasising the importance of protecting customer data and instilling confidence in e-commerce service encounters (Aggarwal & Manmohan, 2018; Harris & Goode, 2010; Teoh et al., 2013). The emphasis on security and efficient payment processes aligns with the TPB focus on perceived behavioural control, with students' confidence in the security measures and ease of payment processes enhancing their perceived control and influencing satisfaction (Kavoura et al., 2017). Collectively, the findings highlight the multifaceted nature of factors contributing to student satisfaction with university contact centre services in the online environment.

### **6.2.3 Customer Support**

This study discovered that customer social interaction, support interaction, system support and service benefit had strong positive direct impact on customer satisfaction (Negash et al., 2003). Similar results have been reported by Tombs and McColl-Kennedy (2003), which showed that encounters with other customers and service staff have an influence on the customer's experience. This can lead to emotions and

emotional displays, which can influence their behaviour. Online customer support is crucial for business support searches, as time spent on a website significantly impacts customer satisfaction (Truel & Connelly, 2013).

The third hypothesis of this study suggested a positive link between customer support and customer satisfaction.

*H3. Customer support in a digital environment is positively related to customer satisfaction.*

The research findings revealed that, in general, there is a direct positive relationship between customer support in universities around Australia ( $\beta = 0.037$ ,  $t = 5.872$ ,  $p < .001$ ). This indicates that customer support has a significant impact on customer satisfaction. The research identified four factors that can be attributed to customer support: service benefit, system support, support interaction, and customer social interaction. All of these factors play crucial roles in enhancing customer satisfaction.

The results suggest that customer support measurement can be utilised as a tool to improve overall customer satisfaction (Negash et al., 2003). This can be applied in university settings to improve student experiences. As the internet has become a fundamental channel for service delivery (Meyer & Schwager, 2007), providing appropriate customer support has become critical (Truel et al., 2013) as it offers a meaningful connection between customers and businesses (Sheth et al., 2020).

Customer social interaction, support interaction, system support, and service benefits emerge as significant elements contributing to contact centre service quality and overall customer satisfaction. The findings underscore the importance of human interaction during self-service encounters, aligning with previous research by McLean and Wilson (2016) and Sheehan et al. (2020). Students have expressed a strong desire for human interaction, especially in online service delivery, and this preference is influenced by their attitudes and perceived need for interaction, as highlighted by Alalwan et al. (2018), and Dabholkar and Richard (2002). Additionally, system support is deemed to be crucial for effective problem resolution and customer satisfaction, consistent with studies by Ramasubbu and Krishnan (2008), and Sjahroeddin (2018). This study also emphasises the role of service benefits in shaping customer satisfaction, with students

indicating perceived value as a balance between benefits and sacrifices. This aligns with the findings of Sánchez and Iniesta (2006). Collectively, these factors contribute to enhancing the quality of contact centre services and fostering greater student satisfaction.

#### **6.2.4 The GOSIP**

This section examines the online interaction behaviour of customers that initiates their perceptions in terms of contact centre usage and focuses on fourth and fifth hypotheses H4, H5a, H5b, and H5c. In line with Blazevic et al. (2014), this research discovered that GOSIP acts as a crucial element in moderating the positive relationship between customer satisfaction and contact centre service quality, customer support and online servicescapes, such that the relationship is strongest when GOSIP is high. Thakur (2019) and Busalim et al. (2021) found that customer satisfaction is associated with different levels of customer engagement. Their research also revealed that the effect of customer satisfaction on continuance intentions is stronger among customers with higher levels of engagement experiences. The usage of GOSIP as a moderator in this research has aided in predicting and understanding consumer behavioural differences in online environments. This can now be used in the university sector to assist in designing efficient strategies for increasing consumer engagement and encouraging a higher volume of online interactions (Blazevic et al., 2014) as the findings assert that this influences the service delivery of shared service services (Collier & Donald, 2015).

In addition, the study found that GOSIP does not have a direct relationship with customer satisfaction, and therefore the fourth hypothesis of this study:

*“H4. GOSIP is positive related to customer satisfaction in an online environment”* was not supported by the data.

This means that the degree to which individuals engage in online social interactions may not necessarily lead to increased levels of customer satisfaction and several factors contribute to this perspective such as the level of service quality and customer support (Shankar et al., 2003). Also, the quality rather than the quantity of online interactions is crucial for fostering positive satisfaction with the customers. Effective online

engagement often involves personalized and tailored experiences that add value to the customer journey (Shipps & Phillips, 2013).

The hypothesis of this study suggested a positive link between GOSIP as a moderator for contact centre service quality and customer satisfaction.

*H5a. GOSIP moderates the positive relationship between contact centre service quality and customer satisfaction, such that the relationship is strongest when GOSIP is high.*

The research findings revealed that, in general, there is a strong positive relationship with GOSIP as moderator for contact centre service quality and customer satisfaction in universities around Australia, contact centre service quality\_x\_GOSIP to customer satisfaction ( $b = 0.060$ ). This indicates that GOSIP has a moderated effect on the link between contact centre service quality and customer satisfaction and this is highest when GOSIP is high, suggesting that the implementation of GOSIP amplifies the impact of contact centre service quality on customer satisfaction.

The research indicates that GOSIP can enhance customer satisfaction overall and that GOSIP measurement can be utilised as a tool to improve overall customer satisfaction (Blazevic et al., 2014). This can be applied in a university setting to improve the student experience. It has become evident that technology and human interaction during service encounters leads to higher perceptions of social presence, which leads to positive behaviour outcomes in online environments (Petelina-Walsh, 2021).

The hypothesis of this study suggested a positive link between GOSIP as a moderator for online servicescapes and customer satisfaction.

*H5b. GOSIP moderates the positive relationship between perceptions of quality online servicescapes and customer satisfaction, such that the relationship is strongest when GOSIP is high.*

The research findings revealed that, in general, there is a strong positive relationship with GOSIP as moderator for online servicescapes and customer satisfaction in universities around Australia, online servicescape\_x\_GOSIP to customer satisfaction ( $b = 0.050$ ). This indicates that GOSIP has a moderating effect on the link between online servicescapes and customer satisfaction, and this is strongest when GOSIP is high,

suggesting that the implementation of GOSIP amplifies the impact of online servicescapes on customer satisfaction.

The research indicates that GOSIP can enhance customer satisfaction overall and that GOSIP measurement can be used as a tool to improve overall customer satisfaction (Blazevic et al., 2014) rather than online servicescapes alone. This can be applied in a university setting to improve the student experience. In addition, results indicate that social presence in an online environment assists in improving relationships and building trust towards an online platform, with the role of human-customised content having a positive impact on customers' attitudes, thus increasing customer satisfaction (McLean et al., 2020).

The hypothesis of this study suggested a positive link between GOSIP as a moderator for customer support and customer satisfaction.

*H5c. GOSIP moderates the positive relationship between customer support and customer satisfaction, such that the relationship is strongest when GOSIP is high.*

The research findings revealed that, in general, there is a positive but not strong relationship with GOSIP as moderator for customer support and customer satisfaction in universities around Australia, customer support\_x\_GOSIP to customer satisfaction ( $b = 0.040$ ). This suggests that GOSIP moderates the relationship between online servicescape and customer satisfaction, and this is strongest when GOSIP is high, suggesting that the implementation of GOSIP amplifies the impact of customer support on customer satisfaction.

The research indicates that GOSIP can enhance customer satisfaction overall and that GOSIP measurement can be used as a tool to improve overall customer satisfaction (Blazevic et al., 2014). This can be applied in a university setting to improve the student experience. The findings also confirm that virtual assistance through system availability, as well as human guidance, helps businesses enhance their social presence, particularly the sense of 'being there'. This strengthens customer relationships through online customer support interactions (Toader et al., 2020).

### 6.2.5 Student Cohort Analysis

This section examines students' perceptions of university shared services according to different student cohorts, focused on sixth hypotheses H6a, H6b, and H6c. To test these hypotheses, four combinations of structural paths were examined for each of the three student cohorts (domestic/international, undergraduate/postgraduate, and male/female):

- i. Contact centre service quality → Customer satisfaction
- ii. Online servicescapes → Customer satisfaction
- iii. Customer support → Customer satisfaction
- iv. GOSIP → Customer satisfaction

#### 6.2.5.1 Residency Status (*Domestic and International Students*)

The hypothesis of this study suggested that domestic and international students have distinct views about university contact centres.

*H6a. There are significant differences in effect of contact centre (i) service quality, (ii) online servicescapes, (iii) customer support and (iv) GOSIP with customer satisfaction between student (domestic and international) cohorts.*

The results indicate that both domestic and international students show a statistically significant positive relationship ( $\beta = 0.350$ ,  $p < 0.001$ ;  $\beta = 0.619$ ,  $p < 0.001$ , respectively) between contact centre service quality and overall satisfaction, with GOSIP. Interestingly, the strength of this association was slightly stronger for international students, with a difference in beta coefficients of -0.27. However, when examining customer support, there was no statistically significant relationship with GOSIP for either domestic or international students. Conversely, the association between online servicescapes and customer satisfaction was significant for both student groups, with a slightly stronger association for domestic students. Contact centre service quality positively correlated with customer satisfaction for both domestic ( $\beta = 0.474$ ,  $p < 0.001$ ) and international ( $\beta = 0.631$ ,  $p < 0.001$ ) students, with a slightly weaker association for the latter group (with a difference in beta coefficients of -0.157). Customer support also showed a positive relationship with customer satisfaction for both groups, but GOSIP did not significantly influence customer satisfaction for either domestic or international students.

The findings reveal that contact centre service quality was positively associated with overall satisfaction for both domestic and international students. However, the strength of these associations varied between the two groups. The online servicescape had a positive relationship with overall satisfaction for domestic students but not for international students. Customer support was positively related to customer satisfaction for both groups, but GOSIP did not significantly impact customer satisfaction.

The research has identified the importance of shared services and the role these play in influencing student satisfaction. Understanding these variations is crucial for universities to tailor their contact centre services. This will allow them to meet the specific needs and preferences of different student populations, especially domestic and international students. This aligns with the findings of Ammigan and Jones (2018), Asare-Nuamah (2017), Korobova and Starobin (2015), and Suh et al. (2022) in the field of student satisfaction related to international and domestic students. Their research highlighted the importance of considering the distinct preferences and needs of domestic and international students in enhancing overall student satisfaction.

#### ***6.2.5.2 Academic Level (Undergraduate and Postgraduate Students)***

The hypothesis of this study suggested that undergraduate and postgraduate students have distinct views about university shared services.

*H6b. There are significant differences in effect of contact centre (i) service quality, (ii) online servicescapes, (iii) customer support and (iv) GOSIP with customer satisfaction between students (undergraduate and postgraduate) cohorts.*

The study indicates a positive correlation between contact centre service quality with customer satisfaction for both undergraduates ( $\beta = 0.551, p < 0.001$ ) and postgraduates ( $\beta = 0.424, p < 0.001$ ). However, the difference in beta values (0.127) highlights a notably stronger association between contact centre service quality and customer satisfaction among undergraduates compared to postgraduates. For online servicescape and customer satisfaction ( $\beta = 0.151, p < 0.10$ ) for undergraduates ( $\beta = 0.137, p > 0.05$ ) for postgraduates. Notably, undergraduates show a stronger connection with customer satisfaction within this cohort. While there is a positive link between customer support and customer satisfaction among postgraduates ( $\beta = 0.273, p < 0.05$ ) as compared to

undergraduates ( $\beta = 0.137, p > 0.05$ ), The findings concerning GOSIP reveal positive but statistically insignificant relationships with customer satisfaction for both undergraduates ( $\beta = 0.016, p > 0.05$ ) and postgraduates ( $\beta = 0.001, p > 0.05$ ). This indicates that GOSIP does not significantly impact customer satisfaction for either group.

These findings contribute to a deeper understanding of how different aspects of service provision impact overall satisfaction levels. The research findings reveal distinct patterns in the relationship between service factors and customer satisfaction among undergraduate and postgraduate students. Both groups show a positive correlation between online servicescape and satisfaction, with undergraduates exhibiting a slightly stronger connection. Contact centre service quality is strongly associated with satisfaction for both groups, particularly among undergraduates. It also suggests that the role of customer support in assisting postgraduate students is critical in terms of enhancing student satisfaction for this cohort. The variations observed between undergraduate and postgraduate students emphasise the need for tailored strategies to address the unique preferences and needs of these student groups. This aligns with the findings of Arambewela and Hall (2011), Douglas et al. (2008), Mannal (2018), Tsiligiris et al., (2022), and Wong and Chapman (2023) in the field of student satisfaction. Their research emphasised the importance of recognising and accommodating the diverse requirements of different student demographics.

#### **6.2.5.3 Gender (Male and Female)**

The hypothesis of this study suggested that male and female students have distinct views about university shared service.

*H6c. There are significant differences in effect of contact centre (i) service quality, (ii) online servicescapes, (iii) customer support and (iv) GOSIP with customer satisfaction between students (male and female) cohorts.*

The study indicates a positive correlation between contact centre service quality and customer satisfaction among both males ( $\beta = 0.648, p < 0.001$ ) and females ( $\beta = 0.397, p < 0.001$ ) and a notably higher positive relationship for males. For online servicescape, both male ( $\beta = 0.005$ ) and female ( $\beta = 0.243, p < 0.05$ ) students demonstrate a positive

correlation with customer satisfaction, but there is a stronger positive relationship for female students. In terms of customer support, both male ( $\beta = 0.170$ ,  $p < 0.1$ ) and female ( $\beta = 0.209$ ,  $p < 0.05$ ) students exhibit a positive correlation with customer satisfaction, with females showing a slightly higher positive relationship.

The findings concerning GOSIP reveal statistically insignificant relationships with customer satisfaction for both males ( $\beta = 0.04$ ,  $p > 0.05$ ) and females ( $\beta = -0.015$ ,  $p > 0.05$ ). This indicates that GOSIP does not significantly impact customer satisfaction for either group however the difference in betas ( $\beta = 0.054$ ) indicates subtle difference between the two group. This can be attributed to several factors rooted in social behaviour, communication patterns, and preferences unique to each gender (Sashittal et al., 2011). Historically, distinct socialisation patterns have shaped how males and females engage in online interactions, affecting their satisfaction levels differently (Dawel et al., 2023). Additionally, differences in communication styles, with males often exhibiting more competitive approaches and females focusing on building connections, further may contribute to this variation (Rose & Rudolph, 2006).

The results indicate that there is gender-specific variations in the relationships between contact centre service quality, customer support, online servicescapes, and GOSIP with customer satisfaction. For example, males seemed to have stronger positive associations with contact centre service quality compared to females. Similarly, there were slight gender-specific variations in the relationships between customer support and customer satisfaction, as well as online servicescape and customer satisfaction.

This research contributes valuable insights into the gender-specific dimensions of university contact centres and student satisfaction. By acknowledging and incorporating these findings into strategic planning, universities can better tailor their services to meet the diverse needs of their student population, ultimately enhancing student satisfaction. This is consistent with the findings of Malkawi (2021), Osmani (2021), Park and Kim (2020), Sashittal et al. (2011), and Yawson and Yamoah (2020) in the field of student satisfaction. This alignment suggests a growing body of evidence supporting the significance of considering gender-specific dimensions in seeking to understand and improve student satisfaction.

Table 68 presents a summary of the findings against each hypothesis and the previous research that supports these findings.

**Table 68: Hypothesis Test Results in Comparison to Prior Research**

Hypotheses	Result	Results from prior studies
H1. Contact centre service quality in a digital environment is positively related to customer satisfaction.	Supported	Supported: Brocato et al. (2012), Chen and Karen (2003), Haenel et al. (2019), Ivana et al., (2019), Kumar and Hundal (2019), Mahdavi-pour and Rezaei (2018), Ooi et al. (2011), Wieseke et al. (2012)
H2. The online servicescape in a digital environment is positively related to customer satisfaction.	Supported	Supported: Aggarwal and Manmohan (2018), Ahleroff et al. (2019), Harris and Goode (2010), Heijden (2003), Koo and Ju (2009), Y. M. Li and Yeh (2010), Sheth et al. (2020), Teoh et al. (2013), Wang et al. (2010)
H3. Customer support in a digital environment is positively related to customer satisfaction.	Supported	Supported: Jiang et al. (2019), Negas et al. (2003), Sheth et al. (2020), Sjahroeddin (2018), Truel and Connelly (2013), Truel et al. (2013), Ulkhaq et al. (2019)
H4. GOSIP is positive related with customer satisfaction in an online environment.	Not supported	Not supported: Shankar et al., (2003), Shipps & Phillips, (2013)
H5a. GOSIP moderates the positive relationship between customer satisfaction and contact centre service quality, such that the relationship is strongest when GOSIP is high	Supported	Supported: Blazevic et al. (2014), Bowden (2009), Brodie et al. (2011), Collier and Donald (2015), J. U. Islam et al. (2019), Petelina-Walsh (2021), Thakur (2016, 2019)
H5b. GOSIP moderates the positive relationship between customer satisfaction and perceptions of quality online servicescapes, such that the relationship is strongest when GOSIP is high.	Supported	Supported: Blazevic et al. (2014), Bowden (2009), Brodie et al. (2011), Collier and Donald (2015), J. U. Islam et al. (2019), McLean et al. (2020), Pagani and Giovanni (2017)
H5c. GOSIP moderates the positive relationship between customer satisfaction and customer support, such that the relationship is strongest when GOSIP is high.	Supported	Supported: Blazevic et al. (2014), Bowden (2009), Brodie et al. (2011), Busalim et al. (2021), Collier and Donald (2015), J. U. Islam et al. (2019), Toader et al. (2020)
H6a. There are significant differences in effect of contact centre (i) service quality, (ii) online servicescapes, (iii) customer support and (iv) GOSIP with customer satisfaction between student (domestic and international) cohorts.	Supported (i, ii, iii)	Supported: Ammigan and Jones (2018), Asare-Nuamah (2017), Korobova and Starobin (2015), Suh et al. (2022)
	Not Supported (iv)	Not supported: Shankar et al., (2003), Shipps & Phillips, (2013)

H6b. There are significant differences in effect of contact centre (i) service quality, (ii) online servicescapes, (iii) customer support and (iv) GOSIP with customer satisfaction between students (undergraduate and postgraduate) cohorts.	Supported (i, ii, iii)	Supported: Arambewela and Hall (2011), Douglas et al. (2008), Mannal (2018), Tsiligiris et al. (2022), Wong and Chapman (2023)
	Not Supported (iv)	Not supported: Shankar et al., (2003), Shipps & Phillips, (2013)
H6c. There are significant differences in effect of contact centre (i) service quality, (ii) online servicescapes, (iii) customer support and (iv) GOSIP with customer satisfaction between students (male and female) cohorts.	Supported (i, ii, iii)	Supported: Malkawi (2021), Osmani (2021), Park and Kim, (2020), Sashittal et al., (2011), Yawson and Yamoah (2020)
	Not Supported (iv)	Not supported: Dawel et al. (2023), Shankar et al., (2003), Shipps & Phillips, (2013)

### 6.3 Theoretical Contribution

Theoretical contributions are essential in academic research as they provide the foundation for further study and experimentation (Cloutier & Langley, 2020). This study has examined university contact centres and how they are shaping student satisfaction. It has made the following specific contributions.

**Enhancing student satisfaction:** The research contributes to the existing body of knowledge by providing a comprehensive understanding of the factors influencing student satisfaction with university contact centres. By addressing specific gaps related to contact centre dynamics (Billingsley, 1993; Dunn & Hansford, 1997; Kelly, 2015; Kornpitack & Sawmong, 2022; Palacios et al., 2021; Rotar, 2020; Sakthivel & Raju, 2006; Stamelos & Bartzakli, 2013), digital engagement, service environment, and demographic perspectives, the study advances theoretical frameworks. It has synthesised and expanded upon prior research to fill voids in the understanding of contact centre dynamics, digital engagement, online service environment, and demographic perspectives. These advancements serve as valuable insights that can inform strategies for optimising contact centre services and, consequently, student satisfaction.

The study adds to the body of education sector literature by offering comprehensive insights on key factors influencing students' satisfaction in a shared service provision

model. It has provided important knowledge to enable better understanding of the university sector, especially in regard to shared services that operate within digital settings. It also highlights the importance of understanding the operational effects of organisational structures such as shared services. The study has created a foundation for further investigation of perceptions among students from different universities around Australia and measuring student satisfaction.

**Integrated examination of multiple factors:** The study integrates various factors that influence student satisfaction within the specific context of university contact centres. By exploring the interconnectedness of service quality, online servicescapes, customer support, and the moderating role of GOSIP, the research bridges a significant gap in the literature. This integrated approach provides a nuanced understanding of how these factors collectively shape student satisfaction, contributing to the development of a holistic theoretical framework.

The researcher has integrated ideas from the marketing discipline to form new insights that have enhanced deeper understanding of student satisfaction through the lens of service marketing and marketing theories (Post et al., 2020). The research considered students to be “customers” and used marketing concepts to develop the conceptual framework and hypotheses. Then it successfully operationalised a comprehensive five-item model, which consisted of 18 constructs and 102 factor items (see Table 3 in Chapter 4). In doing so, it has expanded academic knowledge in the university administration area and has created some support for the generalisability of a deep understanding of current students’ perceptions of their contact centre experience across Australia. Using a SEM technique, this operationalisation confirmed that contact centre service quality, online servicescapes, customer support, and links with GOSIP impact customer satisfaction in an online service offering.

Furthermore, the current research studies in service quality have ignored customer interaction elements (Blazevic et al., 2014). Customers will respond and behave differently based on their level of online interactivity. Higher degrees of engagement among satisfied customers are likely to result in positive outcomes like their willingness to investigate the product, which then results in the purchase or the use of the product or service (Pagani & Giovanni, 2017). As online consumer behaviour is increasingly

taking centre stage in academic marketing studies, this study has contributed to academic knowledge. Its results suggest that GOSIP does predict levels of customer engagement in university settings, which predicts online interaction behaviours. This enables practitioners to understand differential patterns of customer behaviour across a multitude of online platforms in any online service offering (Amichai-Hamburger et al., 2002).

This study has addressed the need for more research on interaction differences in individuals and the consequences for online social behaviour (Blazevic et al., 2014). It has strongly demonstrated that there is an interaction between GOSIP and other factors that then influence customer satisfaction. Through moderation analysis, this research has provided insights into the fact that individuals with high GOSIP scores will respond differently to online interactivity behaviour compared to those with low GOSIP scores. For example, when GOSIP is high, the relationship between other factors such as contact centre service quality, customer support and online servicescapes is the strongest, which then influences overall customer satisfaction. This further proves that customer satisfaction is associated with different levels of customer engagement (Thakur, 2019), with the effect of customer satisfaction on continuance intentions being stronger among customers with higher levels of engagement experiences. Therefore, creating the space to allow students to engage can contribute to satisfaction. This finding offers a credible alternative to general personality measures to get a general sense of the market dynamics for strategic planning.

The findings also illustrate that customers are time conscious while seeking online services, especially from self-service platforms where customers are not willing to spend a long time. So, the more time they spend, the more dissatisfied they become. This creates the notion of time distortion in the online environment and customers might abandon their search online (Petelina-Walsh, 2021). Online customer support may provide the service recovery required in aiding customers and directing them to the relevant services and information. Thus, an online customer support function can help customers in overcoming negative emotions. This research provides an insight into the need for online customer support functions and how technology can be used to provide this support (Truel et al., 2013). It has also been established that during the online

service encounter, there is a need for online social interactions with service representatives, especially when customers are searching for online information and services. As such, this research has closed the gap between technology and human employee interactions in customer support to improve the perception of social presence, positive behavioural outcomes and stronger relationships. It has helped in developing an understanding of how to distribute digital and human interactions efficiently throughout online service encounters (Sheehan et al., 2020).

**Digital monopoly and evolving educational environments:** The investigation into the impact of digital monopolies on student satisfaction in the university sector expands theoretical perspectives on the implications of centralisation and efficiency. By delving into the unique challenges posed by digital monopolies (Bai, 2021) within contact centres, such as personalisation, the need for human interactions, customer focus, reliability, empathy, and others, the research contributes to theoretical frameworks addressing the evolving educational landscape and the role of technology in shaping student satisfaction.

**Demographic influences on student satisfaction:** The exploration of demographic factors, including gender, academic level, and nationality, contributes to theoretical models that emphasise the importance of cultural nuances in shaping student satisfaction (Arambewela & Hall, 2011). The research identifies the need for tailored strategies based on cultural diversity, providing theoretical insights into how universities can better meet the unique needs and preferences of diverse student populations in a shared service operating model.

**Challenging the status quo of existing national surveys:** The findings of this research carry significant implications for existing national survey as they challenge the prevailing norms in the realm of student experience surveys, notably exemplified by QILT. They have also neglected to examine the impact of shared services, which play a critical role in shaping student satisfaction. This study serves as a compelling argument for reevaluating these surveys, urging universities and government agencies to adopt a more comprehensive approach.

Through this research, there is now evidence to show that dimensions such as contact centre service quality, online servicescapes and customer support exert strong

influences on overall satisfaction, with GOSIP as a moderator. This means that the existing national surveys are outdated and require refinement. The provision of any online service should take into consideration not just the initiative of offering a technologically advanced service, but also move one step further to ensure that the service serves its actual purpose. It has been revealed that if the outcome of the service is not what the customer wants, then the customers will not remember it and this can influence further interaction with the organisation. Hence, it becomes crucial to find ways to diffuse that negative experience (Dabholkar & Richard, 2002). This provides a plausible reason to explain current QILT scores, with certain areas having low satisfaction ratings.

#### **6.4 Practical Contribution**

The practical contribution of research refers to the tangible and applicable outcomes that result from research efforts, making a positive difference in the real world (Gustavsen, 2007).

This research has made significant contributions to the understanding of student satisfaction in university contact centres, presenting findings that address critical gaps in the existing literature. The originality of the research lies in its comprehensive exploration of various dimensions, including overall usage of the contact centre, service quality, online servicescapes, customer support, the moderating role of GOSIP, and student cohort analysis.

The investigation into university contact centres addresses a research gap, shedding light on participants' preferences and highlighting the importance of prompt resolution and online communication channels. The study has identified the services utilised by students, such as admission, enrolment, and pre-application enquiries, while establishing a positive correlation between contact centre service quality and customer satisfaction. Six critical factors—accessibility, empathy, knowing the customer, customer focus, waiting, and reliability—were identified as key contributors to satisfaction (van Dun et al., 2011). Online servicescape factors, including visual appeal, usability, security, ease of payment, personalisation, and information relevance, are also crucial for enhancing satisfaction (Harris & Goode, 2010). Additionally, the research

identified four significant factors influencing customer satisfaction: customer social interaction, support interaction, system support, and service benefit (Negash et al., 2003). GOSIP is highlighted as a crucial moderating element with a strong positive relationship to customer satisfaction, offering insights for designing strategies to increase student engagement in online university environments (Blazevic et al., 2014). Recognising the unique nature of GOSIP compared to typical constructs in satisfaction studies, universities can tailor their approaches for more effective online interactions and elevate overall student satisfaction. Furthermore, the student cohort analysis revealed variations in perceptions based on residency status, academic level, and gender, emphasising the need for tailored strategies to enhance satisfaction and engagement in the digital university environment.

This study provides practical contributions to the education sector in Australia and the rest of the world in several ways, described as follows.

**Sustainable and green practice:** The study findings could be used to inform sustainability and green practice, as service centres reflect technological innovations, which are an integral source of sustainable green transformations. As previous studies have shown, digital transformation and sustainability go hand in hand (Alraja et al., 2022). Contact centres are in a great position to implement sustainable, green practices in an era where environmental concerns are at the forefront of university or any business plans (Guo et al., 2019). The research findings therefore may contribute to the changes in university service delivery toward a more sustainable and greener future. This is also relevant to other businesses as contact centres are also common in other sectors from banking, insurance to healthcare (Lockwood, 2022). This research has endeavoured to unravel the intricate relationship between technological innovations, sustainability, and green practices within contact service centres, positing them as pivotal agents in effecting sustainable green transformations. The study contends that contact centres serve as reflective embodiments of technological advancements, positioning them as integral sources for catalysing sustainability initiatives. Building upon prior research that has established the symbiotic connection between digital transformation and sustainability (Alraja et al., 2022; Hrustek, 2020), this study extends its focus to the specific context of contact service centres.

Notably, the findings emphasise the unique potential of contact service centres to spearhead sustainable and green initiatives, particularly in light of the prevailing environmental concerns shaping university agendas (Hoddy et al., 2023). The practical implications of this study extend to the potential transformation of university service delivery paradigms. As environmental consciousness takes centre stage in academic institutions and across many businesses (The Lancet Planetary Health, 2023), the research findings advocate for the integration of sustainable and green practices within contact service centres, thereby fostering a shift towards a more eco-conscious and sustainable future (Bican & Brem, 2020). As such, this research highlights the crucial role of contact service centres in aligning technological innovations with sustainability goals. It emphasises the need for universities and other businesses to adopt environmentally responsible service delivery approaches (Lambertini & Tampieri, 2023).

**Solving the practical problem of how to keep customers satisfied:** This study has operationalised the conceptualisation theory on capturing student experiences in Australian universities. As such, it offers a more comprehensive understanding of the university sector and the dimensions of critical success factors in delivering a good student experience. This is especially relevant as many universities have centralised operating models through the creation of contact centres. The research has dissected the complexity involved in service supply models in Australia's third biggest export industry, the tertiary sector. This is challenging even for the most experienced experts within the sector, let alone the students who become players within the system. This study provides university sector management with an understanding of the importance of measuring customer satisfaction in terms of service quality, customer support and online servicescapes from the customer's perspective. In turn, this will assist management in allocating relevant resources strategically to meet their objectives and the needs of students.

This research will be of interest to various people in the university sector, from all levels of university management to web designers, marketing strategists, information technologists, as well as professional staff, academics, and the research community in general. It gives university management clear insights into the dimensions that play

critical roles in creating high-quality service and result in customer satisfaction, and the right tools to implement effective strategies.

The empirical findings delineating the operational dynamics of university contact centres underscore the imperative of expeditious issue-resolution and the predominance of digital interfaces. Additionally, the empirical insights garnered from the nationwide amalgamated assessment, as delineated in Tables 31 to 34, enrich our understanding of contact centre operations within a shared service operating model, identifying areas of effectiveness as well as avenues for improvement. The granular examination of constituent constructs furnishes a holistic perspective tailored for policymakers, administrators, and operational stakeholders who are intent on augmenting overall student satisfaction. Universities can use the national aggregate scores derived from this study and set a collective target to achieve scores above 90% for contact centre service quality, online servicescapes, and customer support. The financial rationale for this is that a one percent increase in customer satisfaction equates to a \$275 million revenue boost in the business (Srivastava & Kaul, 2014). Individual universities are encouraged to leverage the metrics derived from this study to refine discrete facets of their operational frameworks. Table 69 shows how each domain needs to improve in order to achieve a 90% satisfaction level.

**Table 69: Target for Improving National Scores**

Factors	Current national satisfaction level (%) from this research finding	KPI national target	Improve national scoring (%)
<b>Contact centre service quality</b>			
Accessibility	71.14	90	18.86
Waiting	72.45		17.55
Reliability	71.13		18.87
Customer focus	70.72		19.28
Knowing the customer	69.74		20.26
Empathy	73.18		16.82
Overall average	71.39		18.61
<b>Online servicescapes</b>			
Visual appeal	70.62	90	19.38
Usability	72		18
Relevance of information	71.07		18.93
Personalisation	69.48		20.52
Ease of payment	70.3		19.7
Perceived security	69.51		20.49
Overall average	70.5		19.5
<b>Customer support</b>			
Customer social interaction	71.89	90	18.11
Support interaction	71.04		18.96
System support	71.42		18.58
Service benefit	70.48		19.52
Overall average	71.21		18.79

**Influencing changes in current measurement practices:** This research has brought insights at the national level to address students’ perceptions and how the university sector can gain a competitive advantage and boost its reputation. This study offers some instruments for assessing this quality continuously in a holistic sense. Managers should realise that the internal measurement tools they might be using, such as abandonment rates, average talk time, or their net promoter scoring tools, and so on, must be amended or at least supplemented by some form of perceived customer contact measurements. This would provide better insights into true customer satisfaction. The relevant framework and variables have already been identified for university management to indicate where the issues are and what elements they need to address for their university. Furthermore, the scales used in this research are from established industries that are far ahead of the university sector in terms of their provision of services and use of advanced technology, like the banking and insurance sectors (Brown, 2018; Dumbleker, 2002;

Schulz et al., 2018). These sectors also have well-established shared services, to the extent that often their back-office functions are outsourced to other countries (Van denSchrieck et al., 2014). The fact that this scale has been adopted in a university setting and has been empirically tested further validates that these are all good, reliable scales that can be implemented and used in a university setting. Thus, understanding their students' needs would give management insight, enabling universities to reshape their operating model for service provision to meet the needs and requirements of their customers.

The findings of this study also provide insights relevant to several Australian government agencies, particularly those that administer various surveys. Amending their measurement tools to include the critical elements identified in this research would capture student experiences more effectively, especially in relation to the one-stop shop contact centre model. The results from the QILT survey can now be challenged, as those surveys are vague in nature and designed to capture student experience from a service marketing angle. They also fail to acknowledge that universities do have shared service models and that scores can be influenced by various elements. As such, the findings of this study provide Australian government agencies a reason to re-think and re-shape their survey instruments.

**Improving existing processes:** This study has highlighted the importance of GOSIP in the university setting. This construct offers university managers an actionable instrument that can be used to gauge student interaction levels when the mode of communication is a multi-layered, complex structure. This can help the university design effective communication approaches for its students. As evidenced in this study, there are obvious differences in relation to online interactions. Using current technologies, universities can advance their online service offerings by personalising various university platforms.

Universities need to assess their students' perceptions of contact centre and whether the perception scoring is enough that is to say is it meeting the university key performance goals or up to national standards. Also, the university needs to determine to what level they need to improve so table 69 can be useful for them in measuring their own students satisfaction and work out which areas needs improvements. For instance, learning from

students' signals is possible only when the university contact centre uses its enquiry management tool to register the questions posed. This can later be used to conduct pertinent analyses to understand the characteristics of students. Such information can help the university prevent unnecessary customer contacts (where students contact for things already available on self-service) and thus minimise costs.

University management involved in marketing and information technology should take care when developing various online platforms such as chatbots and online self-service tools. They must consider what is relevant, reliable, personalised, precise, and up-to-date information that can be presented in a useful format for students. Additionally, the online service offerings should deliver quality information that is relevant to its users in general. For instance, if chatbot users cannot find relevant information through online assistance, this has a negative impact on user satisfaction, which, in turn, discourages continued use of the chatbot in the future. University should invest in higher quality chatbot technology to increase efficiency as low-quality technology increases information-processing costs, effort, and more importantly time to reading useless messages (Malhotra et al., 2003). This can impact the university as it reduces user satisfaction and increases costs, with more staff needed to respond to enquiries. Digital technologies, such as chatbots, can work well to simulate this experience with actual human interaction on spot during the search as it can work together in harmony to create a better student satisfaction and there by assists in help saving costs for the university as such chatbot should be combined with human interactions.

Research has revealed that students consider online instruction to be important, accurate, helpful, and easy to access, which serve as quality-service indicators. As such, staff are expected to be well trained so that they may clearly communicate with customers. This enhances the role of the contact centre and builds a sense of belonging, which influences behavioural intentions and the overall branding of the university (Andajani, 2015).

Research also suggests that customers who are required to spend more time searching to resolve their issues through self-service platforms also require online support through some form of two-way interaction process with the university contact centre. This need for assistance from university contact centres highlights that customers are dissatisfied

with their online experience, often leading to frustration, uncertainty, doubt, and disappointment. Despite such negative responses, services through live chat, online helpdesks, or social networking websites may provide customers with service recovery (Griffiths & Brophy, 2005). As such, university management must realise that although online services are sometimes defined as free from direct human interaction, the relationship between the contact centre and its user cannot be ignored since, especially as not all users in the virtual environment are self-reliant (Kuhlthau, 1994). The university contact centre can play a critical role in educating online users and offering them support to enhance their intellectual development. Good customer relationships may help reduce and diffuse student frustrations and help create a better experience for customers. As such, contact centre staff should still be expected to have strong interpersonal communication and customer-service skills (S. A. Lee & Jeong, 2012).

It is evident that students' expectations are higher partly due to competition from other commercial information providers (like banking and retail services). This has added complexity in terms of setting expectations and university contact centres must seek to match the expectations of its customers relative to other industry settings. This might involve higher expectations for prompt replies to enquiries and asking the contact centre to operate 24/7.

The findings also raise questions about the function of the contact centre as a one-stop shop, since students are perplexed by this idea, believing that the contact centre does everything. It was obvious in the survey responses that several students were unclear about the role of their contact centre, as they made proposals ranging from learning and teaching to fee-related services when asked for suggestions to improve the university contact centre.

**Accessibility:** This study conducted a student cohort analysis, revealing significant differences in perceptions of contact centre service quality, customer support, and online servicescapes among various student cohorts (domestic/international, undergraduate/postgraduate, and gender differences). Students have different needs, expectations and types of engagement. Some students in this study indicated the need for multilingual support as they come from different cultural backgrounds, while others asked for adjustments to online platforms to cater for the needs of students with

disability. Likewise, undergraduate students engaged differently compared to postgraduate students. Having an insight into the perception of students is crucial for ensuring student satisfaction. It is important to cater to differences and not assume that all customers are heterogenous, requiring the same generic approach.

Students have different needs, expectations and types of engagement. Some students in this study indicated the need for multilingual support as they come from different cultural backgrounds, while others asked for adjustments to online platforms to cater for the needs of students with disability. Likewise, undergraduate students engaged differently compared to postgraduate students. Having an insight into the perception of students is crucial for ensuring student satisfaction. It is important to cater to differences and not assume that all customers are heterogenous, requiring the same generic approach. Given these differences one of the easiest ways service managers can increase satisfaction levels is by placing a contact telephone number on every web page as it was evident from this research that phone numbers and details were not that accessible to students. Universities should prioritise enhancing digital accessibility to services for all students, particularly those with disabilities. Descriptive text and alt tags for images aid users with visual impairments. Mobile optimisation is crucial, ensuring easy access to contact details on smartphones and tablets. Social media profiles should regularly update relevant contact information. Email communication should feature staff contact numbers, using clear and concise language to guide users. Online learning platforms must integrate contact details for support (Ziyu & Haining, 2012) so that students know who to contact, while printed materials should include accessible contact numbers. For multilingual populations, universities should consider providing contact information in multiple languages and using translation services (Wymer, 2005). User feedback and regular accessibility testing are essential for identifying and addressing areas for improvement. Staff and faculty should receive training on digital accessibility, and awareness should be raised within the university community about contact number availability so that there is one source of truth (Bai, 2021). Finally, the university should develop and communicate a clear accessibility policy emphasising the importance of providing contact information across all communication channels (Maharani, 2022).

**Customer service technology and online platforms:** Universities are complex institutions with complicated organisational structure. Therefore, navigating university websites can be difficult in terms of finding everything relevant to student services. All universities around Australia should evaluate customer service platforms such as their websites and self-service options and find ways to improve them. Universities need to listen to their students and take heed of problems by regularly checking with the students themselves or sending them online surveys to identify any gaps or issues. While university marketing teams and designers are often proud of their online provision, it is crucial to remember that this is subjective. For example, the university security procedures and records may be robust, however, evidence from this research suggests that customers' interpretations of these aspects of websites can be very different. Strategies to reduce customers' negative perceptions must be implemented to assure students of protection measures against ID theft (Casalo et al., 2007) or other security problems (Ozguven, 2011).

When designing virtual services, attention should also be paid to aesthetic appeal (Wang et al., 2010), function and layout (Koo & Ju, 2009), as well as security (Harris & Goode, 2010). Online services should be easy to use, well organised, functional and accessible to customers (Harris and Goode, 2010). So, having simple online instructions, help with searches, and the ability to communicate with someone in the university can create a better user experience. The university must focus on the engagement of its online service users, recognising user differences by considering high and low GOSIP (Blazevic et al., 2014).

All universities around Australia should consider implementing new features, such as live chat technology or online customer helpdesks to better support its students. Online systems must offer prompt and high-quality responses. If the service is slow, does not pay attention to user queries, or there is a break in flow, satisfaction levels will decline (Alalwan et al., 2018). IT service managers and technologist should consider these factors when developing or enhancing its chatbot systems. Students in this study indicated that they do not want cut, copy paste solutions; they want human interaction in chats services that is personalised to student needs.

The results of this research indicate that undergraduate students (who make up 79% of the student population in Australia) prefer to use online self-service methods rather than approaching shared services for assistance. As such, it is vital for university practitioners to improve their self-service options. Universities should create rigorous online self-service tools with accurate advice to help students, especially in doing their own progression checks and for selecting units at their own convenience. They then only need to contact the university for complicated enquiries.

**Re-evaluate operating model:** The constant restructuring of university strategies and organisational redesigns raises the issue of whether universities have got it right in terms of meeting student needs. Centralised shared services or contact centre models have been implemented to address this matter. However, universities need to evaluate their shared services models and service delivery business unit to ensure that they meet the needs and requirements of their customers (the students). Universities must be attentive to customers' concerns, be efficient, use clear communication tactics, and handle disputes to provide better service on campus. This will prevent them from having to sacrifice institutional policies in order to enhance customer satisfaction. The quality of services can be enhanced by allocating an entire unit to customer support.

It is acknowledged that implementing new management techniques with the goal of increasing service delivery might possibly undo a lot of hard work in establishing business processes and procedures. As such, any operational changes must consider the particular connections that exist between administrative employees, academic staff, and students so that there is less disruption to the established customer relationship (Wahab, 2016).

According to student responses, shared services have value. Nevertheless, for specialised jobs, it is suggested that contact centres should work more closely with the department that provides that specialised service, to optimise customer satisfaction with the effective use of technology. While automated systems can handle routine queries, there are situations where specialised staff intervention is necessary. By integrating contact centre technology with existing IT systems (Alenezi et al., 2023), specialised staff members can be alerted when a call or inquiry requires their expertise. This ensures

that students receive accurate and expert guidance, leading to quicker issue resolution and creating a unique university support ecosystem.

**Real time data and predictive analysis:** By leveraging the IT infrastructure, universities can analyse data from contact centre interactions. They can identify common issues faced by students, patterns in inquiries, and areas where additional support might be required. Predictive analysis can help universities anticipate student needs and proactively address potential problems, enhancing overall student satisfaction. This study indicates that students are expressing diverse concerns directly through contact centres. This enriches contact centres with a wealth of information about individual students. Analysing this data would enable a better understanding of students and allow for the tailoring of services.

**Service knowledge:** The findings of this research indicated that there were differences in perceptions across different student cohorts. In addition, customers are becoming more demanding in the online environment (McMillan & Hwang, 2002). Universities need to take different approaches to training contact centre staff to help them in responding to students in a tactful and appropriate manner (Townsend, 2007). This includes how to listen to and reassure customers and on to diffuse the issues related to online services. When dealing with customers, contact centre staff must have all required information at their disposal, including product information, service information, customer histories (El-Bassiouni et al., 2012; Parasuraman et al., 1991). With this knowledge, the employees can answer customers' questions quickly and consistently (van Dun et al., 2011). The ability to learn from previous signals or be able to grasp some form of social cues can indicate whether the service contact was satisfactory. Training should also ensure that the customer service encounter makes the student feel that they matter. Staff at all levels should be provided with continuous coaching and training, including faculty, department and school staff, to help mitigate the risk of inaccurate information being provided to students. As Bai (2021) highlighted, diverse expertise, resistance to change, time constraints, technological proficiency, and individual learning preferences can create challenges, but these can be handled by continuous coaching and training opportunities for all university staff. An emphasis on such training is vital to the success of university branding (Joy et al., 2021).

**Service guarantee:** Given the high price of education, it is recommended that universities offer a service guarantee to create an added competitive advantage, especially universities that pride themselves on a reputation for service excellence (Wirtz et al., 2015). The costs of implementing such guarantees can be offset by the positive market and operational impacts. This research has highlighted that students want faster responses to their enquiries and universities that do not address this issue are at risk of losing students to their competitors.

## **6.5 Limitations and Suggestions for Future Studies**

Some limitations should be considered when interpreting the results of this study. These are listed as follows and include suggestions for future research:

1. This study used non-probability sampling and a generalisation of perceptions across all Australian universities. Future research should use probabilistic methods like random or stratified sampling to enhance robustness and generalisability. It should also consider non-higher education institutions like TAFEs, or group of eight and non-group of eight universities, as each institution is unique.
2. This study excluded students who did not use university contact centres. For future studies, it would be worthwhile to explore why such students did not contact these centres for assistance. It also did not separate out students who raised complaints, as the survey included everyone. For future studies, student complaints could be considered in order to broaden the research.
3. This study focused on the perception of service after students had used a university contact centre. It also used a quantitative analysis method to draw conclusions. The only qualitative component of the research involved asking for suggestions on ways to improve the contact centre. For future studies, it would be good to consider a focus group or individualised interviews as a follow-up. This would provide rich insights to help further establish any satisfaction gaps.
4. This study did not consider other industries for comparison with universities. Considering other industries for comparison, particularly more advanced and sophisticated sectors like banking and retail, would validate the conceptual framework.

5. With COVID-19, this project had to change to adapt to the new normal of lockdown restrictions; hence, this project was solely focused on online service offerings. Future research could consider the physical and social experiences (Bolton et al., 2018) of students.
6. This research focused on a specific service setting, and while it would seem reasonable that the findings identified would extend to similar practical service settings, further research could be conducted to explore this issue. This might include other shared services linked with the university contact centre, such as central admission or faculty-based services. Such research would develop a deeper theoretical understanding and address the rise in time-conscious customers who are demanding services to be prompt (McMillan & Hwang, 2002). All interconnected services need to be considered to further develop a deep understanding of student needs and satisfaction in a university setting.
7. Lastly, the model produced in this research is not conclusive, and the contributions of this study are also limited by the restricted range of service variables included in the research. Future research could extend the model by introducing other aspects that may influence student satisfaction with online services. Some of these items have already been identified through suggestions provided by students, such as efficiency, service knowledge, and equity in service provision.

## **6.6 Conclusion**

This research aimed to understand the experiences of 429 students with Australian university contact centres in a virtual online environment. It explored the impact of the quality of service, perceptions of the online servicescape, and level of customer support on customer satisfaction. It also sought to understand whether customers' online social interactions play a key role in enhancing customer satisfaction.

The findings indicated that the quality of service provided by the university contact centre, online servicescape, and level of customer support does have a strong influence on enhancing customer satisfaction in a university setting. Several factors play a critical role in improving customer satisfaction. These are accessibility, empathy, knowing the customer, customer focus, waiting, reliability, service benefit, system support, support

interaction, social interaction with customers, visual appeal, usability, perceived security, ease of payment, personalisation/customisation, and relevance of information all. More importantly, the findings also demonstrated how GOSIP moderates the relationships between customer support, online servicescapes, contact centre service quality, and overall customer satisfaction. This provides evidence that the university sector should consider the interaction levels of their students, as these vary between students.

A group comparison was also undertaken to see whether there were any changes in perception in any of the areas under consideration. Overall, customer satisfaction was higher for females, but it was higher for males when moderated by GOSIP. There was a substantial difference in overall customer satisfaction between international and domestic students, with the domestic student cohort having the highest level of satisfaction. This remained true even when GOSIP was introduced as a moderator. When the undergraduate and postgraduate cohorts were compared, the online servicescape was the most important factor for the undergraduate cohort, while customer support with customer satisfaction appeared to be stronger for postgraduate students compared to undergraduate students.

As a concluding note, the research findings have added significant knowledge by providing market research analysis insights on student perceptions of the university contact centre (a form of shared service delivery) in Australia. The research has also challenged the status quo of the existing QILT national survey, which seems outdated. To improve their services, universities need to consider the rich real time data that university contact centres hold to raise the level of student satisfaction.

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## Appendix A: Web-Content Analysis

Content analysis has been used by researchers to examine the characteristics of various types of websites (Cober et al.,2004). Web content analysis of university webpages revealed that all 41 universities in Australia use contact centres, generally with a shared services model (i.e., faculty webpages direct the reader to contact a central area). This is further established by perusing the phone numbers, which normally start with 1300 or 1800 (see the table below).

No.	University	Has Contact Centre	Generic Contact #	No.	University	Has Contact Centre	Generic Contact #
1	Australian Catholic University	yes	1300 275 228	22	The University of Adelaide	yes	1800 061 459
2	Bond University	yes	1800 074 074	23	The University of Melbourne	Yes	13 MELB (13 6352)
3	Central Queensland University	yes	13 27 86	24	The University of Notre Dame Australia	yes	different numbers
4	Charles Darwin University	yes	1800 061 963	25	The University of Queensland	yes	+61 (7) 3365 1704
5	Charles Sturt University	yes	1800 334 733	26	The University of Sydney	yes	1800 793 864
6	Curtin University	yes	1300 222 888	27	The University of Western Australia	yes	(+61 8) 6488 3235
7	Deakin University	Yes	1800 693 888	28	Torrens University Australia	yes	1300 575 803
8	Edith Cowan University	yes	134 328	29	University of Canberra	yes	+61 2 6201 5111
9	Federation University Australia	yes	1800 333 864	30	University of Divinity	yes	+61 (3) 9853 3177
10	Flinders University	yes	1300 354 633	31	University of New England	yes	1800 818 865
11	Griffith University	yes	1800 154 055	32	University of New South Wales	yes	(02) 9385 8500
12	James Cook University	yes	1800 246 446	33	University of Newcastle	yes	1300 or +61 2 4921 5000
13	La Trobe University	Yes	1300 528 762	34	University of South Australia	yes	1800 531 962
14	Macquarie University	yes	+61 2 9850 7111	35	University of Southern Queensland	yes	1800 007 252
15	Monash University	Yes	+61 3 9902 6000	36	University of Tasmania	yes	1300 361 928
16	Murdoch University	yes	+61 8 9360 6000	37	University of Technology Sydney	yes	1300 275 887
17	Queensland University of Technology	yes	+ 61 7 3138 2000	38	University of the Sunshine Coast	yes	+61 7 5430 2890
18	RMIT University	yes	(03) 9925 2051	39	University of Wollongong	yes	1300 275 869
19	Southern Cross University	yes	1800 626 481	40	Victoria University	yes	1300 842 864
20	Swinburne University of Technology	yes	1300 794 628	41	Western Sydney University	yes	1300 668 370
21	The Australian National University	yes	1800 620 032				

## Appendix B: Testing for Normality Results

### 1) Results of Kolmogorov-Smirnova and Shapiro-Wilk

#### Tests of Normality\_ Descriptive Variables

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
QA_1	.392	424	.000	.622	424	.000
QA_2	.311	424	.000	.708	424	.000
QA_4	.455	424	.000	.559	424	.000
QA_5	.218	424	.000	.851	424	.000
QG_1	.481	424	.000	.512	424	.000
QG_2	.350	424	.000	.685	424	.000
QG_3	.189	424	.000	.852	424	.000
QG_4	.224	424	.000	.816	424	.000
QG_5	.414	424	.000	.607	424	.000

#### Tests of Normality\_ GOSIP

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
QB_1	.227	429	.000	.894	429	.000
QB_2	.203	429	.000	.906	429	.000
QB_3	.192	429	.000	.908	429	.000
QB_4	.219	429	.000	.902	429	.000
QB_5	.201	429	.000	.902	429	.000
QB_6	.200	429	.000	.907	429	.000
QB_7	.230	429	.000	.884	429	.000
QB_8	.219	429	.000	.895	429	.000

**Tests of Normality\_ Contact Centre Quality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
QC_1	.224	429	.000	.884	429	.000
QC_2	.233	429	.000	.883	429	.000
QC_3	.215	429	.000	.884	429	.000
QC_4	.239	429	.000	.889	429	.000
QC_5	.224	429	.000	.886	429	.000
QC_6	.194	429	.000	.875	429	.000
QC_7	.218	429	.000	.886	429	.000
QC_8	.209	429	.000	.894	429	.000
QC_9	.230	429	.000	.882	429	.000
QC_10	.234	429	.000	.884	429	.000
QC_11	.230	429	.000	.885	429	.000
QC_12	.228	429	.000	.884	429	.000
QC_13	.206	429	.000	.898	429	.000
QC_14	.216	429	.000	.899	429	.000
QC_15	.234	429	.000	.889	429	.000
QC_16	.205	429	.000	.892	429	.000
QC_17	.214	429	.000	.888	429	.000
QC_18	.194	429	.000	.894	429	.000
QC_19	.220	429	.000	.890	429	.000
QC_20	.206	429	.000	.895	429	.000
QC_21	.196	429	.000	.895	429	.000
QC_22	.199	429	.000	.888	429	.000
QC_23	.209	429	.000	.883	429	.000

QC_24	.203	429	.000	.886	429	.000
QC_25	.220	429	.000	.885	429	.000
QC_26	.200	429	.000	.898	429	.000
QC_27	.229	429	.000	.884	429	.000
QC_28	.209	429	.000	.886	429	.000
QC_29	.220	429	.000	.888	429	.000
QC_30	.206	429	.000	.897	429	.000
QC_31	.208	429	.000	.890	429	.000
QC_32	.208	429	.000	.880	429	.000
QC_33	.234	429	.000	.873	429	.000
QC_34	.227	429	.000	.874	429	.000
QC_35	.228	429	.000	.885	429	.000
QC_36	.241	429	.000	.868	429	.000
QC_37	.234	429	.000	.873	429	.000
QC_38	.209	429	.000	.892	429	.000
QC_39	.222	429	.000	.883	429	.000
QC_40	.219	429	.000	.880	429	.000
QC_41	.237	429	.000	.880	429	.000
QC_42	.215	429	.000	.887	429	.000
QC_43	.234	429	.000	.873	429	.000
QC_44	.242	429	.000	.874	429	.000

**Tests of Normality\_Online Servicescape**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
QD_1	.209	429	.000	.886	429	.000
QD_2	.232	429	.000	.877	429	.000
QD_3	.212	429	.000	.889	429	.000
QD_4	.220	429	.000	.885	429	.000
QD_5	.215	429	.000	.893	429	.000
QD_6	.232	429	.000	.883	429	.000
QD_7	.224	429	.000	.883	429	.000
QD_8	.230	429	.000	.876	429	.000
QD_9	.222	429	.000	.878	429	.000
QD_10	.259	429	.000	.858	429	.000
QD_11	.225	429	.000	.883	429	.000
QD_12	.195	429	.000	.883	429	.000
QD_13	.196	429	.000	.896	429	.000
QD_14	.234	429	.000	.875	429	.000
QD_15	.201	429	.000	.891	429	.000
QD_16	.202	429	.000	.901	429	.000
QD_17	.197	429	.000	.897	429	.000
QD_18	.194	429	.000	.897	429	.000
QD_19	.204	429	.000	.891	429	.000
QD_20	.221	429	.000	.883	429	.000
QD_21	.213	429	.000	.888	429	.000
QD_22	.221	429	.000	.887	429	.000
QD_23	.207	429	.000	.893	429	.000

QD_24	.201	429	.000	.899	429	.000
QD_25	.223	429	.000	.874	429	.000
QD_26	.199	429	.000	.892	429	.000
QD_27	.207	429	.000	.895	429	.000
QD_28	.195	429	.000	.903	429	.000

**Tests of Normality\_Customer Support**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
QE_1	.243	429	.000	.874	429	.000
QE_2	.228	429	.000	.879	429	.000
QE_3	.234	429	.000	.881	429	.000
QE_4	.202	429	.000	.879	429	.000
QE_5	.210	429	.000	.880	429	.000
QE_6	.211	429	.000	.886	429	.000
QE_7	.203	429	.000	.890	429	.000
QE_8	.226	429	.000	.886	429	.000
QE_9	.212	429	.000	.883	429	.000
QE_10	.210	429	.000	.889	429	.000
QE_11	.196	429	.000	.894	429	.000
QE_12	.194	429	.000	.899	429	.000
QE_13	.224	429	.000	.882	429	.000
QE_14	.212	429	.000	.888	429	.000
QE_15	.195	429	.000	.892	429	.000
QE_16	.208	429	.000	.896	429	.000
QE_17	.204	429	.000	.891	429	.000

QE_18	.195	429	.000	.896	429	.000
QE_19	.202	429	.000	.890	429	.000
QE_20	.220	429	.000	.891	429	.000
QE_21	.201	429	.000	.887	429	.000
QE_22	.229	429	.000	.884	429	.000

## 2) Results of Skewness and Kurtosis

### Descriptive Statistics

	N	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Std. Error
QA_4	467	.911	.113	-1.176	.225
QA_5	467	.887	.113	-.047	.225
QB_1	429	-.506	.118	-.383	.235
QB_2	429	-.346	.118	-.503	.235
QB_3	429	-.309	.118	-.471	.235
QB_4	429	-.400	.118	-.497	.235
QB_5	429	-.340	.118	-.387	.235
QB_6	429	-.265	.118	-.552	.235
QB_7	429	-.536	.118	.036	.235
QB_8	429	-.417	.118	-.212	.235
QC_1	429	-.608	.118	-.244	.235
QC_2	429	-.497	.118	.095	.235
QC_3	429	-.415	.118	.151	.235
QC_4	429	-.523	.118	-.160	.235
QC_5	429	-.443	.118	-.043	.235
QC_6	429	-.428	.118	.030	.235

QC_7	429	-.347	.118	-.070	.235
QC_8	429	-.407	.118	-.214	.235
QC_9	429	-.514	.118	.132	.235
QC_10	429	-.483	.118	.022	.235
QC_11	429	-.462	.118	.063	.235
QC_12	429	-.485	.118	.087	.235
QC_13	429	-.330	.118	-.248	.235
QC_14	429	-.336	.118	-.344	.235
QC_15	429	-.484	.118	-.013	.235
QC_16	429	-.355	.118	-.069	.235
QC_17	429	-.396	.118	.055	.235
QC_18	429	-.308	.118	-.257	.235
QC_19	429	-.403	.118	-.070	.235
QC_20	429	-.388	.118	-.167	.235
QC_21	429	-.312	.118	-.106	.235
QC_22	429	-.311	.118	-.113	.235
QC_23	429	-.419	.118	.014	.235
QC_24	429	-.471	.118	.097	.235
QC_25	429	-.425	.118	.097	.235
QC_26	429	-.370	.118	-.228	.235
QC_27	429	-.512	.118	.152	.235
QC_28	429	-.400	.118	.031	.235
QC_29	429	-.430	.118	-.047	.235
QC_30	429	-.355	.118	-.144	.235
QC_31	429	-.305	.118	-.052	.235
QC_32	429	-.586	.118	.039	.235

QC_33	429	-.630	.118	.179	.235
QC_34	429	-.566	.118	.107	.235
QC_35	429	-.532	.118	-.073	.235
QC_36	429	-.712	.118	.278	.235
QC_37	429	-.668	.118	.138	.235
QC_38	429	-.414	.118	-.149	.235
QC_39	429	-.491	.118	.098	.235
QC_40	429	-.583	.118	.109	.235
QC_41	429	-.586	.118	.173	.235
QC_42	429	-.503	.118	-.055	.235
QC_43	429	-.643	.118	.279	.235
QC_44	429	-.627	.118	.345	.235
QD_1	429	-.489	.118	.109	.235
QD_2	429	-.498	.118	.311	.235
QD_3	429	-.430	.118	.044	.235
QD_4	429	-.487	.118	.115	.235
QD_5	429	-.449	.118	-.202	.235
QD_6	429	-.571	.118	.113	.235
QD_7	429	-.550	.118	.174	.235
QD_8	429	-.597	.118	.311	.235
QD_9	429	-.582	.118	.229	.235
QD_10	429	-.723	.118	.772	.235
QD_11	429	-.392	.118	.133	.235
QD_12	429	-.388	.118	.009	.235
QD_13	429	-.401	.118	-.200	.235
QD_14	429	-.561	.118	.370	.235

QD_15	429	-.291	.118	-.081	.235
QD_16	429	-.414	.118	-.324	.235
QD_17	429	-.377	.118	-.171	.235
QD_18	429	-.317	.118	-.159	.235
QD_19	429	-.381	.118	-.059	.235
QD_20	429	-.580	.118	.094	.235
QD_21	429	-.412	.118	.033	.235
QD_22	429	-.420	.118	-.017	.235
QD_23	429	-.402	.118	-.133	.235
QD_24	429	-.248	.118	-.286	.235
QD_25	429	-.623	.118	.306	.235
QD_26	429	-.361	.118	-.039	.235
QD_27	429	-.270	.118	-.130	.235
QD_28	429	-.230	.118	-.325	.235
QE_1	429	-.681	.118	.273	.235
QE_2	429	-.569	.118	.197	.235
QE_3	429	-.516	.118	.222	.235
QE_4	429	-.390	.118	.094	.235
QE_5	429	-.513	.118	.182	.235
QE_6	429	-.453	.118	.032	.235
QE_7	429	-.407	.118	-.166	.235
QE_8	429	-.381	.118	-.137	.235
QE_9	429	-.544	.118	.073	.235
QE_10	429	-.395	.118	-.110	.235
QE_11	429	-.292	.118	-.244	.235
QE_12	429	-.392	.118	-.419	.235

QE_13	429	-.511	.118	.180	.235
QE_14	429	-.412	.118	-.095	.235
QE_15	429	-.342	.118	-.259	.235
QE_16	429	-.428	.118	-.278	.235
QE_17	429	-.391	.118	-.007	.235
QE_18	429	-.344	.118	-.130	.235
QE_19	429	-.428	.118	-.057	.235
QE_20	429	-.458	.118	-.287	.235
QE_21	429	-.386	.118	.028	.235
QE_22	429	-.508	.118	.142	.235
QG_1	424	-1.345	.119	-.193	.237
QG_2	424	.425	.119	-1.061	.237
QG_3	424	.033	.119	-1.387	.237
QG_4	424	-.366	.119	-1.421	.237
QG_5	424	.592	.119	-1.657	.237
QA_1	686	-.336	.093	-1.794	.186
QA_2	467	-.087	.113	-1.912	.225

### Appendix C: Questionnaire Survey Codebook

<b>Variable Name</b>	<b>Section in Qualtrics</b>	<b>As per Qualtrics naming to SPSS</b>	<b>Variable Coding Instructions</b>
Case Number	N/A	Case	Number assigned to each questionnaire
Participant Use of Contact Centre	Section A	Used the online or telephone facilities provided university contact centre	1 = Yes 5 = No 6 = I am not currently enrolled in a university
Participant Use of Contact Centre	Section A	Method of contact	1 = Online platform such as chat, web enquiry 5 = Telephone 6 = Both
Participant Use of Contact Centre	Section A	Service utilisation	1 = Pre-application 2 = Admission 3 = Enrolment matters 4 = Result issues 5 = Completion 6 = Graduation 7 = Course timetable 8 = Course advise 9 = Orientation 10 = Credit for prior learning 11 = Services and support 12 = Course transfer 13 = Other matters (string text)
Participant Use of Contact Centre	Section A	Enquiry resolved on first contact	1 = Yes 2 = No
Participant Use of Contact Centre	Section A	Duration of enquiry to resolve	1 = Within 1 day 2 = 2 days 3 = 3 days 4 = 4 to 6 days 5 = 7 to 10 days 6 = +11 days
General Online Social Interaction Propensity Scale	Section B	Items C1_1 to C1_8	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Contact Centre Service Quality: Accessibility	Section C	Items C2_1 to C2_3	1 = Strongly disagree 2 = Disagree

			3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Contact Centre Service Quality: Waiting	Section C	Items C2_4 to C2_6	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Contact Centre Service Quality: Reliability	Section C	Items C2_7 to C2_17	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Contact Centre Service Quality: Customer focus	Section C	Items C2_18 to C2_25	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Contact Centre Service Quality: Knowing the customer	Section C	Items C3_1 to C3_6	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Contact Centre Service Quality: Empathy	Section C	Items C4_1 to C4_13	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Customer Satisfaction	Section C and E	Items C7_20, C2_20 & C2_21	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Online Servicescape: Aesthetic appeal/Visual appeal	Section D	Items C5_1 to C5_4	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Online Servicescape: Layout and functionality - Usability	Section D	Items C5_5 to C5_10	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree

Online Servicescape: Layout and functionality - Relevance of information	Section D	Items C5_11 to C5_14	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Online Servicescape: Layout and functionality - Customisation/personalisation	Section D	Items C5_15 to C5_21	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Online Servicescape: Financial security - Ease of payment	Section D	Items C5_22 to C5_24	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Online Servicescape: Financial security - Perceived security	Section D	Items C5_25 to C5_28	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Customer Support: Customer social interaction	Section E	Items C7_1 to C7_8	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Customer Support: Support interaction	Section E	Items C7_9 to C7_12	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Customer Support: System support	Section E	Items C7_13 to C7_16	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Customer Support: Service benefit	Section E	Items C7_17 to C7_22	1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree
Demographic Profile	Section F	Suggestion	String text
Demographic Profile	Section G	Residency Status	1 = International student 2 = Domestic student

Demographic Profile	Section G	Gender	1 = Female 2 = Male 3 = Other
Demographic Profile	Section G	Student Cohort	1 = Undergraduate student 2 = Postgraduate student
Demographic Profile	Section G	Age Bracket	1 = 18-21 2 = 22-25 3 = 26-29 4 = Above 30
Demographic Profile	Section G	State Location	1 = New South Wales 6 = Northern Territory 7 = Queensland 8 = South Australia 9 = Tasmania 10 = The Australian Capital Territory 11 = Victoria 12 = Western Australia

## Appendix D: Codebook Itemisation for EFA and CFA

Item Coding	Questions
<b>GOSIP</b>	
GOSIP1	In general, I am someone who, given the chance, seeks contact with others online
GOSIP2	In general, I am someone who answers questions of others in online discussion forums
GOSIP3	In general, I am someone who enjoys initiating a dialog online
GOSIP4	In general, I like to get involved in online discussions
GOSIP5	I find the idea of belonging to an online discussion group pleasant
GOSIP6	I am someone who likes actively participating in online discussions
GOSIP7	I am someone who likes interaction with like-minded others online
GOSIP8	In general, I thoroughly enjoy exchanging ideas with other people online
<b>Main Construct _Online Servicescape</b>	
<b>Ease of Payment</b>	
EPY1	The website has efficient payment procedures to pay my fees
EPY2	The fee payment facilities of this website are easy to use
EPY3	Paying for fees involves entering a lot of details
<b>Personalisation/Customisation</b>	
PERS1	The online service is tailored toward me
PERS2	If I wanted to, I could customise this website to what I like (e.g., changing colours, layout, fonts etc.)
PERS3	I feel that the online service is designed for me
PERS4	The services of this online website are often personalised to me
PERS5	This online service website treats me as an individual
PERS6	When communicating with this online service website I am always addressed using my correct name
PERS7	The online service makes select recommendations that match my needs
<b>Perceived Security</b>	
PS1	The fee payment methods seem very secure

PS2	I have no concerns about paying for things from the contact centre self-service website
PS3	The security systems of this website seem rigorous
PS4	When using this website I am not reassured by the security procedures
<b>Relevance of Information</b>	
RINF1	Each page clearly indicates what one can expect to find or do
RINF2	Visual information about its service is easily accessed
RINF3	There is a great deal of irrelevant information
RINF4	Technical details about services can be easily accessed
<b>Usability</b>	
USAB1	The online services are useful navigational aids
USAB2	The links for the online website are obvious in their intent and destination
USAB3	There are convenient ways to manoeuvre among related pages and between different sections
USAB4	Navigation through this website is intuitively logical
USAB5	A first-time self-service user can get help from this website without much help
USAB6	The website is user-friendly
<b>Visual Appeal</b>	
VIAS1	The online service provided by the contact centre is visually attractive
VIAS2	The online service, such as the website, is visually appealing
VIAS3	The online service information display is attractive
VIAS4	The online service information is aesthetically appealing
<b>Main Construct _Contact Centre Service Quality</b>	
<b>Accessibility</b>	
ASS1	The phone number is easy to find
ASS2	The opening hours of my university contact centre are sufficient
ASS3	The access to the contact centre is available whenever I need it
<b>Customer Focus</b>	
CF1	The contact centre staff ask me whether the answer is clear
CF2	The contact centre staff ask me whether my question has been answered

CF3	My university contact centre learns from the signals it receives from its students
CF4	I receive proactive advice on what services would suit my situation
CF5	My university contact centre always keeps its promises
CF6	The information I receive is consistent, even when I have to contact other contact centre staff
<b>Empathy</b>	
EMP1	says his/her name ant
EMP2	is friendly
EMP3	is patient
EMP4	understands me correctly
EMP5	listens well
EMP6	takes me seriously
EMP7	puts himself/herself in my situation
EMP8	knows my needs
EMP9	gives me personal attention
EMP10	makes me feel my question is important
EMP11	takes my level of knowledge into account
EMP12	is solution oriented
EMP13	thinks along with me
<b>Knowing the Customer</b>	
KNC1	knows me as their student
KNC2	immediately has my data at his/her disposal
KNC3	has insight into my personal data
KNC4	has insight into my course/unit enrolment
KNC5	knows when and why I contacted the contact centre previously
KNC6	knows what other contacts I have had with my university
<b>Reliability</b>	
REL1	The contact centre staff can quickly find the info
REL2	The contact centre staff tell me what I can expect

REL3	The contact centre staff knows my university well
REL4	I can trust the knowledge of the contact centre
REL5	The contact centre staff can answer all my questions
REL6	The contact centre staff provide me with information on the steps that will be followed to resolve my enquiry
REL7	I do not have to contact more than once to receive an answer to my question
REL8	When I speak to contact centre staff, my question is answered at once
REL9	When the contact centre staff are not able to answer my question, I am redirected to other contact centre staff who can
REL10	I receive written confirmation of important advice or guidance
REL11	The contact centre staff ask the right questions to get to the heart of my question/problem
<b>Waiting</b>	
WAI1	When I make contact, the waiting time is made clear to me
WAI3	The costs of contacting the contact centre are acceptable
WAI2	The waiting time of the contact centre is acceptable
<b>Customer Support</b>	
<b>Customer Social Interaction</b>	
CSI1	It was useful to be able to ask for direction in locating the information related to my course
CSI2	It was useful to be able to talk to people who know about the topic I am enquiring about
CSI3	It was useful to ask for advice while searching for the information
CSI4	It would have been useful to have assistance in identifying the correct material related to my enquiry
CSI5	It would have been useful if the self-service website facilitated two-way communication
CSI6	It would have been useful if the self-service website gives me the opportunity to talk back
CSI7	It would have been useful if the self-service website facilitates instant (live) communication
CSI8	It would have been useful if the website enabled conversation
<b>Service Benefits</b>	

SB1	With my university contact centre, I can easily get what I am looking for most of the time
SB2	With help provided by my university contact centre virtually through a chatbot or online enquiry, I can get the information I am looking for in minimal time and effort
SB3	Using my university contact centre service, I can get the exact information I'm looking for
SB4	My university contact centre services have innovative features that are interesting to use
SB5	Using services provided by my university contact centre makes me feel that the university is dedicated to fulfilling my needs
<b>Support Interaction</b>	
SINT1	Human contact in providing services makes the process enjoyable for me
SINT2	Personal attention by contact centre staff is very important to me
SINT3	I like interacting with the people who provide the service at my university contact centre
SINT4	It bothers me to use a chatbot or other online service like email when I could talk to a person instead
<b>System Support</b>	
SYS1	The chatbot and self-service such as ASK FAQ is always available for me to use
SYS2	The functions on chatbot or self-service launch and run right away
SYS3	The online service site does not crash
SYS4	Online services do not freeze
<b>Customer Satisfaction</b>	
CSAT1	The contact centre staff ask me whether I am satisfied at the end of the conversation
CSAT2	When I have had contact with my university contact centre, sometime after this contact I am asked whether this contact was to my satisfaction
CSAT3	I feel very happy when I get what I want from the service provided by my university contact centre

## Appendix E: Eigenvalues and Variance Explained for Service Quality

		Total Variance Explained					
Construct	Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Accessibility	1	2.044	68.142	68.142	1.578	52.616	52.616
	2	0.534	17.806	85.948			
	3	0.422	14.052	100.000			
Waiting	1	1.927	64.237	64.237	1.414	47.145	47.145
	2	0.607	20.230	84.467			
	3	0.466	15.533	100.000			
Reliability	1	6.053	55.031	55.031	5.572	50.654	50.654
	2	0.806	7.328	62.358			
	3	0.659	5.992	68.350			
	4	0.591	5.370	73.721			
	5	0.524	4.767	78.488			
	6	0.502	4.564	83.052			
	7	0.454	4.123	87.176			
	8	0.412	3.747	90.923			
	9	0.374	3.399	94.322			
	10	0.364	3.308	97.630			
	11	0.261	2.370	100.000			
Customer Focus	1	3.599	59.976	59.976	3.119	51.988	51.988
	2	0.593	9.885	69.861			
	3	0.548	9.132	78.993			
	4	0.453	7.553	86.546			
	5	0.441	7.347	93.893			
	6	0.366	6.107	100.000			
Knowing the Customer	1	3.664	61.068	61.068	3.205	53.418	53.418
	2	0.650	10.828	71.895			
	3	0.580	9.667	81.562			
	4	0.444	7.404	88.966			
	5	0.375	6.257	95.223			
	6	0.287	4.777	100.000			
Empathy	1	7.750	59.614	59.614	7.321	56.313	56.313
	2	0.810	6.227	65.841			
	3	0.773	5.947	71.788			
	4	0.631	4.852	76.640			
	5	0.487	3.749	80.389			
	6	0.441	3.391	83.780			
	7	0.395	3.036	86.815			
	8	0.360	2.770	89.586			
	9	0.327	2.518	92.103			
	10	0.312	2.397	94.501			
	11	0.267	2.052	96.553			
	12	0.237	1.824	98.377			
	13	0.211	1.623	100.000			
Extraction method: PAF							

**Appendix F: One-Factor Congeneric Model for All Constructs**

<b>GOSIP</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Iteration_1</b>	<b>Iteration_2</b>
CMIN	90.334	90.334	24.904
DF	20	20	9
CMIN/DF	4.517	4.517	2.767
CFI	0.956	0.956	0.984
SRMR	0.043	0.0378	0.03
RMSEA	0.091	0.091	0.064
PClose	0	0	0.19
GFI	0.95	0.95	0.982
AGFI	0.91	0.91	0.958
TLI	0.938	0.938	0.974
Mardia's	n/a	27.88	14.984
Bollen-Stine	n/a	0.002	0.099

<b>Accessibility</b>		
<b>Model Fit</b>	<b>Estimate</b>	
	<b>Initial Phase</b>	<b>Iteration_1</b>
CMIN	0	0
DF	0	0
CMIN/DF	$\infty$	$\infty$
CFI	1	1
SRMR	0	0
RMSEA	0.506	0.506
PClose	0	0
GFI	1	1
AGFI	no value	no value
TLI	no value	no value
Mardia's	n/a	4.447
Bollen-Stine	n/a	Not performed for this model because degrees

		of freedom is not positive
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<b>Waiting</b>		
<b>Model Fit</b>	<b>Estimate</b>	
	<b>Initial Phase</b>	<b>Iteration_1</b>
CMIN	0	0
DF	0	0
CMIN/DF	$\infty$	$\infty$
CFI	1	1
SRMR	0	0
RMSEA	0.447	0.447
PClose	0	0
GFI	1	1
AGFI	no value	no value
TLI	no value	no value
Mardia's	n/a	4.182
Bollen-Stine	n/a	Not performed for this model because degrees of freedom is not positive

<b>Customer focus</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Iteration_1</b>	<b>Iteration_2</b>
CMIN	28.11	28.11	7.408
DF	9	9	5
CMIN/DF	3.123	3.123	1.482
CFI	0.982	0.982	0.997
SRMR	0.0267	0.0267	0.02
RMSEA	0.07	0.07	0.034
PClose	0.111	0.111	0.657
GFI	0.978	0.978	0.993

AGFI	0.949	0.949	0.979
TLI	0.969	0.969	0.994
Mardia's	n/a	24.817	14.936
Bollen-Stine	n/a	0.105	0.524

<b>Reliability</b>			
<b>Model Fit</b>	<b>Estimates</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	149.108	149.108	6.662
DF	44	44	9
CMIN/DF	3.389	3.389	0.74
CFI	0.956	0.956	1
SRMR	0.0357	0.0357	0.016
RMSEA	0.075	0.075	0
PClose	0.001	0.001	0.975
GFI	0.943	0.943	0.995
AGFI	0.915	0.915	0.988
TLI	0.945	0.945	1.004
Mardia's	n/a	75.709	20.832
Bollen-Stine	n/a	0.002	0.897

<b>Knowing the customer</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	70.475	70.475	6.386
DF	9	9	2
CMIN/DF	7.831	7.831	3.193
CFI	0.946	0.946	0.992
SRMR	0.0411	0.0411	0.028
RMSEA	0.126	0.126	0.072
PClose	0	0	0.213
GFI	0.949	0.949	0.992

AGFI	0.881	0.881	0.962
TLI	0.911	0.911	0.975
Mardia's	n/a	21.921	7.472
Bollen-Stine	n/a	0.002	0.189

<b>Empathy</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	414.547	414.547	33.188
DF	65	65	14
CMIN/DF	6.378	6.378	2.371
CFI	0.907	0.907	0.988
SRMR	0.051	0.051	0.026
RMSEA	0.112	0.112	0.057
PClose	0	0	0.3
GFI	0.863	0.863	0.978
AGFI	0.808	0.808	0.957
TLI	0.888	0.888	0.982
Mardia's	n/a	130.491	31.639
Bollen-Stine	n/a	0.002	0.147

<b>Customer Social Interaction</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	109.413	109.413	8.986
DF	20	20	3
CMIN/DF	5.471	5.471	2.995
CFI	0.935	0.935	0.99
SRMR	0.054	0.054	0.026
RMSEA	0.102	0.102	0.068
PClose	0	0	0.222

GFI	0.933	0.933	0.992
AGFI	0.88	0.88	0.96
TLI	0.909	0.909	0.967
Mardia's	n/a	41.438	15.456
Bollen-Stine	n/a	0.002	0.141

<b>Service Benefits</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	34.972	34.972	3.989
DF	5	5	2
CMIN/DF	6.994	6.994	1.994
CFI	0.963	0.963	0.996
SRMR	0.041	0.041	0.019
RMSEA	0.118	0.118	0.048
PClose	0.001	0.001	0.412
GFI	0.971	0.971	0.995
AGFI	0.914	0.914	0.977
TLI	0.926	0.926	0.988
Mardia's	n/a	16.862	10.26
Bollen-Stine	n/a	0.005	0.386

<b>Support Interaction</b>		
<b>Model Fit</b>	<b>Estimate</b>	
	<b>Initial Phase</b>	<b>Interation_1</b>
CMIN	0.136	0.136
DF	2	2
CMIN/DF	0.068	0.068
CFI	1	1
SRMR	0.004	0.004
RMSEA	0	0
PClose	0.977	0.977

GFI	1	1
AGFI	0.999	0.999
TLI	1.013	1.013
Mardia's	n/a	8.437
Bollen-Stine	n/a	0.957

<b>System Support</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	32.099	32.099	0.764
DF	2	2	1
CMIN/DF	16.049	16.049	0.764
CFI	0.949	0.949	1
SRMR	0.064	0.064	0.007
RMSEA	0.188	0.188	0
PClose	0	0	0.592
GFI	0.963	0.963	0.999
AGFI	0.814	0.814	0.991
TLI	0.846	0.846	1.002
Mardia's	n/a	9.75	9.75
Bollen-Stine	n/a	0.002	0.52

<b>Visual appeal</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	31.359	31.359	1.688
DF	2	2	1
CMIN/DF	15.68	15.68	1.688
CFI	0.96	0.96	0.999
SRMR	0.048	0.048	0.01
RMSEA	0.185	0.185	0.04

PClose	0	0	0.405
GFI	0.963	0.963	0.998
AGFI	0.815	0.815	0.98
TLI	0.879	0.879	0.994
Mardia's	n/a	9.645	9.645
Bollen-Stine	n/a	0.002	0.322

<b>Usability</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	73.092	73.092	2.109
DF	9	9	2
CMIN/DF	8.121	8.121	1.054
CFI	0.95	0.95	1
SRMR	0.049	0.049	0.012
RMSEA	0.129	0.129	0.011
PClose	0	0	0.653
GFI	0.94	0.94	0.998
AGFI	0.86	0.86	0.988
TLI	0.917	0.917	1
Mardia's	n/a	29.583	11.714
Bollen-Stine	n/a	0.001	0.502

<b>Relevance of information</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	11.711	11.711	0.86
DF	2	2	1
CMIN/DF	5.856	5.856	0.86
CFI	0.981	0.981	1

SRMR	0.037	0.037	0.009
RMSEA	0.107	0.107	0
PClose	0.041	0.041	0.567
GFI	0.986	0.986	0.999
AGFI	0.93	0.93	0.99
TLI	0.942	0.942	1.002
Mardia's	n/a	9.138	9.138
Bollen-Stine	n/a	0.02	0.438

<b>Personalisation</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	89.449	89.449	9.84
DF	14	14	5
CMIN/DF	6.389	6.389	1.968
CFI	0.946	0.946	0.995
SRMR	0.052	0.052	0.02
RMSEA	0.112	0.112	0.048
PClose	0	0	0.471
GFI	0.941	0.941	0.991
AGFI	0.882	0.882	0.974
TLI	0.919	0.919	0.989
Mardia's	n/a	27.438	12.602
Bollen-Stine	n/a	0.001	0.33

<b>Ease of payment</b>		
<b>Model Fit</b>	<b>Estimate</b>	
	<b>Initial Phase</b>	<b>Interation_1</b>
CMIN	0	0
DF	0	0
CMIN/DF	$\infty$	$\infty$
CFI	1	1

SRMR	0	0
RMSEA	0.468	0.468
PClose	0	0
GFI	1	1
AGFI	no value	no value
TLI	no value	no value
Mardia's	n/a	2.918
Bollen-Stine	n/a	Not performed for this model because degrees of freedom is not positive

<b>Perceived Security</b>			
<b>Model Fit</b>	<b>Estimate</b>		
	<b>Initial Phase</b>	<b>Interation_1</b>	<b>Interation_2</b>
CMIN	16.809	16.809	0.159
DF	2	2	1
CMIN/DF	8.405	8.405	0.159
CFI	0.968	0.968	1
SRMR	0.048	0.048	0.004
RMSEA	0.132	0.132	0
PClose	0.007	0.007	0.813
GFI	0.98	0.98	1
AGFI	0.9	0.9	0.998
TLI	0.904	0.904	1.011
Mardia's	n/a	9.595	9.595
Bollen-Stine	n/a	0.016	0.804

<b>Customer Satisfaction</b>		
<b>Model Fit</b>	<b>Estimate</b>	
	<b>Initial Phase</b>	<b>Iteration_1</b>
CMIN	0	0
DF	0	0
CMIN/DF	no value	no value
CFI	1	1
SRMR	0	0
RMSEA	0.402	0.402
PClose	0	0
GFI	1	1
AGFI	no value	no value
TLI	no value	no value
Mardia's	n/a	3.677
Bollen-Stine	n/a	Not performed for this model because degrees of freedom is not positive

## Appendix G: Ways to Improve University Contact Centres

These are suggestions from students in their own words, related to the nine itemised categories:

### Efficiency

- appropriate timing for call line when on hold
- Waiting time improvement
- faster response time.
- Less of a wait for my question
- Less wait time
- Increase staff
- reduced wait time
- less waiting time.
- They could have faster response times
- Need to improve the efficiency
- Quicker wait times
- Reduce waiting time
- Understanding of wait times on phone/email responses
- waiting times
- work effectively and efficiently
- Faster reply online
- More staff
- Faster connection time to customers
- Answer promptly
- Calling is often faster, but some people do not have the time. Therefore, during critical times, they need to employ more people to handle the online support
- faster problem solving
- Faster feedback
- Faster redirection to the relevant department
- hire more staff as humans are better than machines
- faster response times
- Faster service
- get our issue resolved faster
- try to reduce waiting times through phone calls
- Less wait time
- Less wait times for issues to be resolved.
- Give a time frame of when I can expect a response/solution
- Google status
- Quicker phone waiting times
- Instant replies
- Have more assistance to take calls
- more staff members to answering phone calls
- Information with Minimal time and effort
- Quicker response time
- Less time to get into call

- more available staff members
- More Staff
- have more staff
- Quicker replies
- Better response times
- Pick up the phone faster
- Shorter wait times when calling.
- Quicker
- quicker response times
- Quicker call times
- Quicker reply times
- quicker response time
- Sometime there is long waiting time
- Resolve time Speed
- Quicker response times
- Shorter wait times for online chat
- Take too much time for some problems
- waiting time
- Time
- Faster
- fast
- More efficient
- Wait time
- Quick reply
- wait time
- have more staff to help students
- Need to allow students to check the ticket status
- Less waiting time
- Quicker
- shorter wait times
- fast response to students' inquiries
- More staff
- make it bigger and hire more staffs to assist
- more speedier
- Quicker call time
- Quicker response to questions
- less wait time
- They should reply quicker
- shorter waiting times
- More people
- More staff
- enquiry pick up speed
- faster response time
- Improve response times.
- It would be better if it would be quicker
- less waiting time



- Inform me more about the COVID situation in relationship with my graduation
- personalise emails not generic emails for all the cohorts
- phone acknowledged email
- put more content on the website.
- Way of talking
- more communication
- Better two-way contact information
- Clearer Instructions online
- explain things clearer
- Explained stuff better on zoom
- FAQ/troubleshooting
- good communication
- information
- Information about the university
- more accurate
- Provide thorough details for student when navigating through the website
- social media contact
- Updated information on rules and regulations related to COVID
- To communicate better
- better communication
- More online communication methods
- clear information
- The website can be more clear
- The staff help/communication
- More information
- More content
- Better communication
- Better communication
- Better communication , I would say by an email, phone number or a text messages.
- better communication with students
- Facebook
- FAQ's section with links
- Improve communication style
- More direct email
- More information
- When sending an email saying it will take up to 5 business days for your question to be answered, it would be helpful to add dates that the centre is closed eg over Christmas.
- Send a written receipt showing our discussion by email
- The ability to streamline information and decision-making processes through a portal so that there is a single source of truth for student queries and it is transparent.



- nicer support
- Not sexist
- offline to online service support
- resolution
- More friendly customer service
- tailor your advice and do not copy and paste
- To show understanding
- Call backs, so if the waiting period is an hour then the option for customer service to call me back
- Appreciate
- Be friendly
- be more flexible
- be more helpful
- be nicer
- Be responsiveness
- Don't intimidate anyone (you a slightly scary)
- Follow up practices
- Friendlier staff
- Friendly services
- Be patient
- improve professionalism and learn to respect students
- Kind helpful support
- Less aggressive
- more convenient
- that the person i am speaking to take me seriously
- More patient
- more personalised service
- When a student has come in for help, not to refer them to online help
- more selflessness and care
- Offer extra support services
- more student support
- more support more information provided
- More walrus (smart and friendly staffs)
- Better Contact centre service
- provide information on how long wait times will be
- quality
- Quality service
- To listen more attentively
- Train contacts more thoroughly
- Try and resolve issues with one call.
- Understanding
- Friendly
- Call back
- improve customer service
- Better service
- be nicer and friendlier









- Better navigation
- More visually appealing sites
- Need to have online chatbots available
- Newer equipment for online support
- Online chat option
- Online chatbots
- promote and Create an app
- improve the speed of the network we use
- Making the website a little more easy to navigate and be user friendly including less jargon and extra information.
- the website is sometimes slow
- zoom call support
- More online sections
- More FAQs available online
- Improved I.T. facilities
- List the times that live chat is available
- technology equipment
- keep innovating and adding more features and options
- A better system that tracks your previous interactions/questions.
- A feature that allows you to answer questions so that you can be directed to the section you want if you don't exactly know what you're looking for
- Faster website
- Always having a person not a chatbot
- Larger print on website for navigation ease
- Live chat
- Main focus should be put on online chat server
- to upgrade everything
- The chatbot could be improved.
- it would be great if i dont need to ask a question to the customer service team in the first place which means the website is so informative and with precise information that everything that you need to know is easily accessible and available
- phone, laptop, ipad
- Real live chat services.
- live chat function
- have live chat
- having a chat box for non call related enquiring



- Give me exact details about my graduation right now
- more advice
- More options to get talking to the right person straight away, rather than calling and being told to email someone only to get an email back saying they aren't the right person.
- More services
- more training for staff
- Optimism in finding a solution
- Someone who's speaks and understands what im asking
- sometimes they give out different information
- stop emailing me pointless information throughout the year
- that the person i am speaking to at least some base level of knowledge of what i'm talking about
- Give us time to give a full answer
- More knowledge of staff
- Know what information you are providing
- Answer question directly
- improve knowledge in order to answer student query
- More general information time to speak not be rushed
- better clarity while speaking
- Improvised staffing
- Problem solving
- more fluent
- More questions on education
- Needs to be more continuity between what service centre staff tell me and how each department actually runs
- Have each contact support officer allocated to a particular department so they are more across details in relation to their particular department.
- Materials knowledge people
- Team leaders to be available when requested. I find it offensive that I can't speak to a team leader to have my matter escalated.
- Unique services
- More effective problems solving
- Keeping in touch with the people I had to contact earlier
- better staff
- They could wait until I ask them before guessing and making sure they get it right
- Hire people who actually know what they're doing.

**Figure 31: Word Cloud on Service Knowledge**



**Clarity of roles of contact centre:**

- Better syllabus
- improved tutoring allocated times
- more funds
- more teachers
- teacher help
- decrease tuition fees
- improved tuition
- lower fee
- more teaching
- study group
- they would grant refugees scholarships. and the disadvantages they've overcome.
- More help
- better classes
- Better fridges
- Better mental health services
- Easy enrollment process
- Good support for the students
- Healthcare
- better music when on hold
- Call centre to be in Australia
- don't really have a option
- I would like them to shut down, this would be the absolute best method.
- more facilities
- They don't contact parents if students have not attended
- nothing is acceptable
- Provide with timetables as soon as possible
- Get rid of it
- Better toilets

Figure 32: Word Cloud on Contact Centre Clarity



### Appendix H: Structural Paths for Contact Centre Service Quality

Constructs	Estimate	S.E.	C.R.	P
Knowing the customer	0.633	0.034	18.794	***
Accessibility	0.655	0.034	19.163	***
Waiting	0.603	0.033	18.533	***
Empathy	0.692	0.031	22.607	***
Customer focus	0.679	0.029	23.245	***
Reliability	0.657	0.028	23.558	***

### Appendix I: Structural Paths for Contact Centre Online Servicescapes

Constructs	Estimate	S.E.	C.R.	P
Usability	0.692	0.032	21.364	***
Ease of payment	0.692	0.031	22.607	***
Personalisation	0.67	0.033	20.52	***
Perceived security	0.699	0.031	22.729	***
Relevance of information	0.688	0.03	22.854	***
Visual appeal	0.692	0.031	22.262	***

### Appendix J: Structural Paths for Contact Centre Customer Support

Constructs	Estimate	S.E.	C.R.	P
Support interaction	0.652	0.033	19.457	***
Customer Social interaction	0.655	0.03	21.931	***
System support	0.624	0.033	18.877	***
Service benefit	0.68	0.03	22.846	***

## Appendix K: Ethics Approval

quest.noreply@vu.edu.au

Wednesday, 22 December 2021 11:12 AM

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Dear DR ROMANA GARMA,

Your ethics application has been formally reviewed and finalised.

- » Application ID: HRE21-171
- » Chief Investigator: DR ROMANA GARMA
- » Other Investigators: DR THU-HUONG NGUYEN, MR Sohail Hashmi Khan
- » Application Title: The experiences of students with University Contact Centres in Australia
- » Form Version: 13-07

The application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the approval date; 22/12/2021.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at: <http://research.vu.edu.au/hrec.php>.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment. It should also be noted that it is the Chief Investigators' responsibility to ensure the research project is conducted in line with the recommendations outlined in the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007).'

On behalf of the Committee, I wish you all the best for the conduct of the project.

Secretary, Human Research Ethics Committee

Phone: 9919 4781 or 9919 4461

Email: [researchethics@vu.edu.au](mailto:researchethics@vu.edu.au)



# **CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH**

## **INFORMATION TO PARTICIPANTS:**

We would like to invite you to be a part of a study title “The experiences of students with University Contact Centres.”

This study will examine the experiences of students with the university contact. The intense competition has changed the phenomenon in higher education sector where students are treated like customers. It has become very crucial to develop a very superb customer value to have advantage in this competitive educational market. With this customer centric approach, the importance of understanding and creating customer satisfaction has become vital. As such student services are an integral aspect of customer satisfaction and the university contact centre plays an important role in the university has it helps students connect with various services and assists with their enquiry.

For this study, an online survey has been developed to help unveil students experience with the university contact centre.

All information provided will be strictly confidential. The data with no identifying features will be summarised and reported in the thesis and any subsequent publications. Thus, your anonymity is guaranteed. Results from this study will provide useful insights for Australia's higher education sector as well as private sectors, government bodies for further actions to improve Australia's higher education system. As such your inputs provided via this online survey will be of great value and assistance as it will assist in better service delivery to all students in Australia.

It is important to note that this research has minimal risk. Information will be obtained from you and your insights will help in understanding about your experience with the university contact centre.

## **CERTIFICATION BY PARTICIPANT**

I, "[Click here & type participant's name]"

of "[Click here & type participant's suburb]"

certify that I am at least 18 years old\* and that I am voluntarily giving my consent to participate in the study:

"[Click here & type name of study]" being conducted at Victoria University by:

Chief investigator: Associate Professor Romana Garma

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by:

Mr. Sohail Hashmi Khan – the student researcher

and that I freely consent to participation involving the below mentioned procedures:

- Completing the online form

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Signed:

Date:

Any queries about your participation in this project may be directed to the student researcher:

Sohail (sohail.khan1@live.vu.edu.au).

If you have any queries or complaints about the way, you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email Researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.



## **INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH**

### **Have you used services provided by your university contact centre?**

If yes, then you are invited to participate in a research study about the service quality provided by your university contact centre particularly considering that services are now provided more and more online.

The questionnaire will take less than 10 minutes to complete and is completely confidential and anonymous.

Your contribution to this research is valuable as the results will offer a better understanding of student experiences with university contact and any improvements that could be made. All information obtained from this survey will be used only for research purposes, such as academic publications and conference presentations.

If you have any questions about this study, please contact:

Associate Professor Romana Garma, Principal Supervisor

Email: [romana.garma@vu.edu.au](mailto:romana.garma@vu.edu.au)

Or

Sohail Khan (Mr.) - DBA Student

Email: [sohail.khan1@live.vu.edu.au](mailto:sohail.khan1@live.vu.edu.au)

To participate in the survey, please click the link below and complete the survey by <enter deadline when to complete survey by>, you may withdraw from the survey at any time.

<Provide Link for survey>

## Appendix N: Online Survey



### Online Survey Consent

Thank you for agreeing to participate in this online survey. This survey is for the project entitled 'Student experiences with University Contact Centres in Australia' conducted by Mr. Sohail Hashmi Khan as part of his Doctor of Business Administration thesis under the supervision of Associate Professor Romana Garma and Dr Thu Huong Nguyen from Victoria University, Melbourne, Australia.

In this survey you will be asked to respond to a series of questions about your experiences with the contact Centre quality of service in a virtual online environment. You will also be asked to answer a few questions about yourself to help us profile the survey respondents as a group. The questionnaire will take less than 10 minutes to complete and is completely confidential and anonymous.

Your contribution to this research is valuable as the results will offer a better understanding of student experiences with university contact and any improvements that could be made. All information obtained from this survey will be used only for research purposes, such as academic publications and conference presentations. This project has received ethics approval by the Victoria University Human Research Ethics Committee (VUHREC).

If you have any questions about this study, please contact:

Associate Professor Romana Garma, Principal Supervisor

Email: [romana.garma@vu.edu.au](mailto:romana.garma@vu.edu.au) Or

Sohail Khan (Mr,) - DBA Student

Email: [sohail.khan1@live.vu.edu.au](mailto:sohail.khan1@live.vu.edu.au)

Do you wish to proceed with the survey?

Yes, I consent - Continue and go to Q1

No, I do not consent – Thank you for your response. Go to close of survey.

**Section A:**

1. Have you used the online or telephone facilities provided by your university contact centre?

- Yes (please proceed to Question 2)
- No (If no, thank you for completing this survey)

2. In the last 24 months how did you contact your university contact centre?

- Online platform such as chat, web enquiry
- Telephone
- Both

3. Which of the following services were the reasons for visiting or contacting your university contact centre? (you can choose more than one response)

- Pre-application
- Admission
- Enrolment matters
- Result issues
- Completion and Graduation
- Course Timetable
- Course advise
- Orientation
- Credit for Prior Learning
- Services & Support
- Course transfer
- Other matters (please specify)

4. Generally when you visited the contact centre, was your query resolved on your first contact with them?

- Yes
- No

5. Generally how long did it take for your enquiry to be resolved by your university contact centre?

- Within 1 day
- 2 days
- 3 days
- 4 to 6 days
- 7 to 10 days
- +11 days

## Section B: Online Social Interaction

To what extent do you agree with the following statements relating in general to your online social interaction.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
In general, I am someone who, given the chance, seeks contact with others online	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, I am someone who answers questions of others in online discussion forums	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, I am someone who enjoys initiating a dialog online	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, I like to get involved in online discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find the idea of belonging to an online discussion group pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am someone who likes actively participating in online discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am someone who likes interaction with like-minded others online	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, I thoroughly enjoy exchanging ideas with other people online	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Section C: Contact Centre Service Quality

Please indicate your level of agreement with the following statements regarding your experience, via telephone or chat, with the university contact centre

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
The phone number is easy to find	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The opening hours of my university contact centre are sufficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The access to the contact centre is available whenever I need it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I make contact, the waiting time is made clear to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The waiting time of the contact centre is acceptable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The costs of contacting the contact centre are acceptable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The contact centre staff can quickly find the information to answer my question	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The contact centre staff tell me what I can expect	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The contact centre staff knows my university well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can trust the knowledge of the contact centre staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The contact centre staff can answer all my questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The contact centre staff provide me with information on the steps that will be followed to resolve my enquiry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have to contact more than once to receive an answer to my question	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I speak to contact centre staff, my question is answered at once	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When the contact centre staff is not able to answer my question, I am being redirected to another contact centre staff who can	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive written confirmation of important advice or guidance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The contact centre staff ask the right questions to get to the heart of my question/problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The contact centre staff ask me whether the answer is clear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The contact centre staff ask me whether my question has been answered	<input type="radio"/>				
The contact centre staff ask me whether I am satisfied at the end of the conversation	<input type="radio"/>				
When I have had contact with my university contact centre, sometime after this contact I am being asked whether this contact was to my satisfaction	<input type="radio"/>				
My university contact centre learns from the signals it receives from its students	<input type="radio"/>				
I receive proactive advice on what services would suit my situation	<input type="radio"/>				
My university contact centre always keeps its promises	<input type="radio"/>				
The information I receive is consistent, even when I have to contact another contact centre staff	<input type="radio"/>				

As soon as I am in touch to a university contact centre staff, I notice that the contact centre staff

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
knows me as their student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
immediately has my data at his/her disposal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has insight into my personal data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has insight into my course/unit enrolment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
knows when and why I contacted the contact centre previously	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
knows what other contacts I have had with my university	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The contact centre staff I have been contacted with virtually via phone, online email or chatbot

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
says his/her name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
understands me correctly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
listens well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
takes me seriously	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
puts himself/herself in my situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
knows my needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
gives me personal attention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
makes me feel my question is important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
takes my level of knowledge into account	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is solution oriented	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
thinks along with me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### Section D: Online Servicescape

Please indicate your agreement with the following statements regarding your overall experience with your university contact centre online service (such ASK self-service FAQ, chatbot online web enquiry).

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
The Online service provided by the contact centre is visually attractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Online service, such as the websites, is visually appealing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Online service information display is attractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Online service information is aesthetically appealing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The online services are useful navigational aids	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The links for the online website are obvious in their intent and destination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

There are convenient ways to manoeuvre among related pages and between different sections	<input type="radio"/>				
Navigation through this web site is intuitively logical	<input type="radio"/>				
A first-time self-service user can get help from this web site without much help	<input type="radio"/>				
The web site is user-friendly	<input type="radio"/>				
Each page clearly indicates what one can expect to find or do	<input type="radio"/>				
Visual information about its service is easily accessed	<input type="radio"/>				
There is a great deal of irrelevant information	<input type="radio"/>				
Technical details about services can be easily accessed	<input type="radio"/>				
The online service is tailored toward me	<input type="radio"/>				
If I wanted to, I could customize this web site to what I like (e.g., changing colours, layout, fonts etc)	<input type="radio"/>				
I feel that the online service is designed for me	<input type="radio"/>				
The services of this online web site are often personalized to me	<input type="radio"/>				
This online service web site treats me as an individual	<input type="radio"/>				
When communicating with this online service web site I am always addressed using my correct name	<input type="radio"/>				
The online service makes select recommendations that match my needs	<input type="radio"/>				
The website has efficient payment procedures to pay my fees	<input type="radio"/>				
The fee payment facilities of this web site are easy to use	<input type="radio"/>				
Paying for fee involves entering a lot of details	<input type="radio"/>				
The fee payment methods seem very secure	<input type="radio"/>				
I have no concerns about paying for things from the contact centre self-service web site	<input type="radio"/>				
The security systems of this web site seem rigorous	<input type="radio"/>				
When using this web site I am not reassured by the security procedures	<input type="radio"/>				

### Section E: Customer Support

Please indicate your agreement with the following statements regarding your satisfaction with your overall experience with the level of customer support provided by your university contact Centre.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
It was useful to be able to ask for direction in locating the information related to my course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was useful to be able to talk to people who know about the topic I am enquiring about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was useful to ask for advice while searching for the information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would have been useful to have assistance in identifying the correct material related to my enquiry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would have been useful if the self-service website facilitated two-way communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would have been useful if the self-website gives me the opportunity to talk back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would have been useful if the self-service website facilitates instant (live) communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would have been useful if the web site enabled conversation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Human contact in providing services makes the process enjoyable for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal attention by contact centre staff is very important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like interacting with the people who provide the service at my university contact centre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It bothers me to use a chatbot or other online service like email when I could talk to a person instead	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The chatbot and self-service such as ASK FAQ is always available for me to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The functions on chat bot or self-service launches and runs right away	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The online service site does not crash	<input type="radio"/>				
Online services do not freeze	<input type="radio"/>				
With my university contact centre, I can easily get what I am looking for most of the time	<input type="radio"/>				
With help provided by my university contact centre virtually through chatbot or online enquiry, I can get the information I am looking for in minimal time and effort	<input type="radio"/>				
Using my university contact centre service, I can get the exact information I'm looking for	<input type="radio"/>				
I feel very happy when I get what I want from the service provided by my university contact centre	<input type="radio"/>				
My university contact centre services have innovative features that are interesting to use	<input type="radio"/>				
Using services provided by my university contact centre makes me feel that the university is dedicated to fulfilling my needs	<input type="radio"/>				

**Section F: Suggestion**

1. Based on your experience, please list up to three improvements you would suggest to your university contact centre.

**Section G: General Personal Demographics**

In this section, we would like to know more information about you to help us profile the survey respondents as a group.

1. Are you..

- International student
- Domestic student

2. Gender

- Female
- Male
- Other

### 3. Are you...

- Undergraduate Student
- Post Graduate Student

### 4. Age bracket

- 18-21
- 22-25
- 26-29
- Above 30

### 5. Which state are you from?

- New South Wales
- Northern Territory
- Queensland
- South Australia
- Tasmania
- The Australian Capital Territory
- Victoria
- Western Australia

### **End of Survey**

**Thank you very much for your time and effort.**