

AN INVESTIGATION INTO THE KEY SERVICE QUALITY FACTORS IN
HIGHER EDUCATION THAT SHAPES STUDENTS' DECISIONS WHEN
SELECTING ONLINE DEGREE COURSES IN SCOTLAND

by

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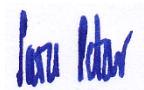
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Dedication

THIS DISSERTATION IS DEDICATED TO ALL HIGHER EDUCATIONAL
ORGANIZATIONS IN SCOTLAND.

I would like to dedicate this thesis to my mother who has been a support system and constant source of strength and encouragement on my way to the thesis. Your sacrifices, belief in my powers and unconditional support have helped me maintain a strong will and persevere when I seemed to have the toughest times.

I would also like to mention a very close friend, who has accompanied me on so many ways, including this tough ride to the role of doctors.

To my partner, I would like to say that you have been very patient, encouraging, loving, and practical in writing this thesis. You were with us and this journey was not so heavy and meaningless.

Lastly, this is one of the accomplishments of my whole family. Thanks to you I have my cornerstones, you help me every time we have a success and when we face the most difficult moments. This thesis portrays the love, power and dedication that characterizes our family as a team.

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Abstract

AN INVESTIGATION INTO THE KEY SERVICE QUALITY FACTORS IN HIGHER EDUCATION THAT SHAPES STUDENTS' DECISIONS WHEN SELECTING ONLINE DEGREE COURSES IN SCOTLAND

The tremendous development of online education in Scotland has altered the delivery of higher education and the service quality has become the significant factor of student satisfaction. With increased adoption of digital platforms in universities, it has been critical to comprehend the impact of service quality dimensions in online learning of students. The importance of the SERVQUAL dimensions reliability, responsiveness, empathy, assurance, and tangibles in the construction of satisfaction is also noted by previous studies, but few research studies have specifically investigated online degree programmes completely in the Scottish environment. To fill this gap, this study will focus on the perceptions of online service quality and general satisfaction that students have with the quality of online higher education and the evidence-based information will be used to aid the improvement of the quality of online higher education.

Service quality is continually pointed to in the literature regarding the topic of online education as a factor that determines the level of satisfaction and loyalty in the student. Research employing SERVQUAL framework determines reliability, responsiveness, empathy, assurance and tangibles as serious antecedents of satisfaction in web-based learning. Empathy and assurance are also especially effective in determining the level of trust and confidence in students, and physical elements like ease of use of the platform improve the learning process. Nevertheless, the existing

literature is mostly done outside of the UK and aimed at the satisfaction or loyalty levels, which leaves a contextual and empirical gap in the Scottish online higher education sector.

This study is a positivist philosophy that is deductive in nature with a view of refuting or proving service quality hypotheses as far as online higher education in Scotland is concerned. The quantitative measure of the perceptions of online service quality of the students was conducted through a descriptive research design and survey strategy. A structured questionnaire with references to the SERVQUAL model was created to gather primary data which were distributed among the online degree programmes students. The sampling method was convenience sampling because of the limitations of accessing the respondents and the target population was 382 respondents which was calculated considering the 95 percent confidence interval and a margin of error of 5. The statistical methods were used to analyse the data to assess the relationships between dimensions of service quality and student satisfaction.

Results

The quantitative research looked at the correlation between the dimensions of the service quality and student satisfaction in online degree programs in Scotland. Descriptive statistics revealed consistently positive perceptions in all of the dimensions of service quality, and assurance and responsiveness had the highest means of the scores. A test of reliability and validity established acceptable internal consistency and adequacy of construct of the measurement instrument. The correlation analysis has shown that all service quality dimensions to student satisfaction were statistically significant with correlation coefficients of about 0.49 to 0.59 ($p < .001$).

The multiple regression analysis showed that there is a good fit of the model which explains 70.8 per cent of the variance of student satisfaction ($R^2 = 0.708$). Assurance, responsiveness and

tangibles were the most important predictors and reliability and empathy had great impact but were of positive influence. In general, the results validate the fact that service quality plays a critical role in student satisfaction, and decision-making in online higher education, which contributes to the relevance of SERVQUAL framework to the Scottish online education setting.

Discussion and Conclusion

The results indicate that assurance, which is an indicator of the reputation of the institution and trust in the academic ability, responsiveness and tangibles are most important variables that determine student satisfaction and enrolment choices. Far less influential but beneficial are reliability and empathy that facilitate consistent, individualised, and inclusive learning processes. The findings support the fact that online higher education service quality is multidimensional and have identified institutional credibility and digital infrastructure, as critical factors. It is on these grounds that practitioners are advised as proactive in controlling institutional reputation, timely academic and technical assistance, strategic planning of user-friendly learning platforms, constancy of course delivery and provision of personalised learning pathways to facilitate engagement and satisfaction. These measures can enhance student confidence, satisfaction, and enrolment as well as competitive positioning in the online higher education industry.

Keywords

Service Quality, Online Degree Courses, Scotland

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List of Abbreviations

SQ : Service Quality

CHAPTER 1: INTRODUCTION

1.1 Introduction

The online education growth has also changed the higher education framework in most countries across the globe, and the COVID-19 outbreak has served as a significant contributor to the digital revolution acceleration (Dhawan, 2020; Aristovnik, 2020). The percentage of people using online higher education rose to 17% in 2022 compared to 12% in 2017 in Scotland, and one of the key reasons was flexibility, according to more than 60% of learners (Statista, 2022). This trend is a wider European one, as the online education market in 2026 is expected to reach USD 236 billion (Soffer, 2019). Nevertheless, the strategic challenge to universities is not access anymore, but the provision of high-quality educational services that can have a significant impact on the decision-making process of the students as online provision is becoming more mainstream.

The current body of research emphasizes the importance of service quality as the determinant of student satisfaction, enrolment intentions, and institutional competitiveness in online higher learning (Gopal, 2021). The main dimensions that are usually distinguished are the institutional reputation, the responsiveness of the support services, the usability of the technology, the quality of teaching and the perceived career outcomes. All these are influences that tend to affect the perceptions of value and trust of students; which are essential in a world where physical campus cues mostly do not exist. However, a large part of the empirical research is still based on relating an international or national scale, often not analyzing the unique aspects of the Scottish context of higher education, such as its funding models, policy-making, and the variety of student populations (Moisely, 2024).

The higher education situation in Scotland is unusual in that it is highly involved in the public sector, has a long history of academic tradition and is progressively becoming more

internationalised. Although Scottish universities have developed online opportunities as a strategy to increase student involvement and diversify their sources of revenue, the competition has increased within the country and the rest of the world (OECD, 2023). According to Stankovska (2024), by not fully aligning quality of services with the changing expectations of students, institutions will experience the threat of decreased enrolment and poor market presence. This issue is supported by the data implying the continuity of the service quality gaps, especially, the usability of the digital platforms and the provision of the career support as factors that negatively influence the student satisfaction and retention (Jisc, 2023).

On the side of students, online degrees are becoming more and more pragmatically oriented in their choice due to factors like flexibility, employability performance, and trustworthiness of online learning (Sandars, 2020; Goh, 2020). Nevertheless, there is no purely rational decision-making in this case. Institutional credibility, emotional involvement, and belief in post-graduation performance are important factors that determine enrolment behaviour (Abbas, 2023; Zygiaris, 2022). Although this is complicated, in many cases, Scottish universities base the model of their services quality on the internationally based benchmarks, which may not take into account locally relevant factors, which drive the choice of a student.

The gap in the literature is the lack of Scotland-specific empirical research. Although other studies like Gopal (2021) and Lee (2022) postulate that a strong relationship exists between the dimensions of service quality and student satisfaction, their results are mostly generalised in terms of geographic regions. This restricts their generalizability to Scotland, where the culture, policy priorities, and labour market forces are not comparable to the bigger education markets like the United States or Asia. Scottish online learners have an elaborate perception of the factors that are more important to the quality of the services provided without a subtle conception of the same and

as such, universities may end up wasting resources on strategic investments and not even fulfilling the expectation of the students.

This research is of value both in academic and practical and policy contexts. Online learning has become an essential part of the institutional growth strategies especially in attracting the nontraditional, working, and international students (OECD, 2023). With the European online education market projected to expand at an average of over 14 percent per year (Statista, 2024), the consideration of perceived quality of service is also becoming a differentiator and not an auxiliary quality. The online programmes are becoming more and more determined by technological usability, responsiveness of academic and administrative support, alignment with career outcomes, and institutional reputation as a factor in students willingness to enrol and continue in online programmes (Gopal, 2021).

Theoretically, this work is added to the development of knowledge as it critically involves the acclaimed frameworks like SERVQUAL and the Technology Acceptance Model (TAM). Although these models offer useful backgrounds to the domains of service quality and technology acceptance, researchers have noted that they are less contextually sensitive and explanatory with regards to the digital education setting (Toscano-Hernandez, 2024; Garcia, 2024). Utilizing and modifying these frameworks in the context of Scottish online higher learning, the current research aims to optimise the relevance of the frameworks and enlarge the knowledge regarding the interaction between the dimensions of service quality and the process of the student choice.

1.2 Research Problem

Problem identification

Online higher education is growing at a fast rate in the last decade, and the COVID-19 pandemic can speed up its implementation throughout Europe and the United Kingdom (Dhawan, 2020; Aristovnik, 2020). In Scotland, online degree programmes have grown in 2022, 17% according to the participation, which is an impressive change in the preferences of students to study (Statista, 2022). The flexibility aspect has become one of the strongest driving forces, with about 60 percent of students appreciating online education because it blends well with work and other life-related conditions (Statista, 2022). At the same time, the European online learning market is estimated at USD 236 billion by 2026, which increases the competition among the institutions (Soffer, 2019).

Although this is growing, there is an indication that online higher education has not seen the same change in service quality. According to a survey conducted throughout the UK, 41% of online learners said they were not satisfied with the quality of digital platforms, and 37% were not satisfied with the career support services (Jisc, 2023). In Scotland, the satisfaction rates with digital learning were only 68 percent among the students, and 35 percent said that they received insufficient academic or administrative support, which continues to show service quality discrepancies (Champa, 2024). Moreover, the data of the Scottish Funding Council showed that a third of online learners were unsatisfied with career preparation, and that 29 percent of learners said they were unsatisfied with the extent of interaction with teaching staff, which are vital dimensions of service quality in online education (Scottish Funding Council, 2025).

Such statistics signify that there is a structural issue in that online education enrolment is on the rise, but the Scottish universities might be failing to fulfill their expected roles on how to deliver services to students. Since the dimensions of the service quality (responsiveness, institutional reputation, technological usability, teaching quality, and career outcomes) have been reported to play a significant role in the student satisfaction and enrolment decision (Gopal, 2021), the lack of specific research on how these factors work in the Scottish context is a significant issue to be explored.

Problem justification

The rationale behind this study lies in the fact that online higher education is expanding very fast and the strategic value of service quality is increasing significantly in affecting student decision-making. Online enrolment has been growing rapidly in Scotland in recent years, but based on empirical findings, there remains a level of dissatisfaction with the main service quality dimensions, such as usability of the digital platform, academic support, and career guidance (Statista, 2022; Jisc, 2023). Due to the growing competition in the European online education market that is estimated to have an annual growth to USD 236 billion by 2026, universities in Scotland no longer have the privilege of solely using access and flexibility in order to attract and retain students (Soffer, 2019).

The available literature shows that student satisfaction and enrolment intentions are highly dependent on service quality; nevertheless, the majority of empirical studies use global or UK-wide approaches, which do not provide comprehensive data on the one-to-one examination of the higher education context in Scotland (Gopal, 2021; Moisely, 2024). Lack of this research could pose a risk of being strategically out of whack, in that universities build online programs that do

not align with the local student expectations and thus, the satisfaction and retention rates are lower (SFC, 2025).

The main research question discussed in this paper is the gap in empirical knowledge on the most important service quality variables that determine the choices of students who decide to pursue online degree programmes in Scotland. Although online education nowadays has become a strategic priority in the life of Scottish universities, insufficient evidence is provided to clarify what dimensions of service quality are most likely to affect the program choice and satisfaction of students in this particular national setting.

The available evidence-based research findings have all indicated the decisive role of service quality in determining student satisfaction, trust and enrolment intentions in online higher education (Gopal, 2021; Lee, 2022). The reputation of the institution, the responsiveness of the support services, perceived career outcomes, and the quality of the digital platform have been found to have a significant impact on the student behaviour. Nevertheless, most of such researches are carried out in a global, Asian, or larger UK setting, thus restricting the contextual applicability to the unique Scottish higher education system (Moisely, 2024; Stankovska, 2024).

The Scottish higher education context is distinct in other regions as it has distinct funding systems, policy frameworks, widening participation agenda, and heterogeneous student populations. Notwithstanding such variations, universities all too often take the approach of one-size-fits-all, implementing the models of generalised service quality based on international studies instead of localised evidence based on student experiences (UNESCO, 2023). Such a mismatch threatens to come up with the online programmes that will not meet the expectations and priorities of the Scottish learners.

Moreover, although models like SERVQUAL and Technology Acceptance Model (TAM) are popular in assessing the performance of service quality and technology uptake, researchers have denounced their low context sensitivity when used in digital educational settings (Toscano-Hernandez, 2024; Garcia, 2024). Empirical research that uses them tend to deal with individual dimensions e.g technological usability or responsiveness without considering the interactions among various service quality dimensions to determine the effects on student decision making in selecting online programmes. There are limits with the disjointed methodology both theoretical and practical enlightenment, specifically at a setting like Scotland.

The other major gap is in the decision making itself. Although the previous studies have been conducted on the issues of service quality with regard to student satisfaction and loyalty (Lee, 2022; Twum, 2020), there has been little focus on the impacts of service quality on pre-enrolment decision-making, especially in the context of online learning. This stage is crucial to understand because students are becoming more and more comparing various online products available in different institutions and countries when they are choosing the institution/country. The lack of Scotland-specific evidence at this point challenges the capacity of the universities to create competitive and student-driven online courses.

1.3 Purpose of Research

This study is aimed at critically examining the main service quality variables in college education that determine the choice that students make when they opt to undertake online degree programs in Scotland. The growth of online education, which has increased particularly due to the COVID-19 pandemic, has fundamentally transformed the mode of higher education delivery and consumption, making the quality of services a key factor in the competitiveness of the institutions and their satisfaction of students (Dhawan, 2020; Aristovnik, 2020). Although online enrolment in

Scotland has been steadily growing over time, with a rise in 2017 to 17% in 2022, it has also raised the competition among the universities as more and more students look to attend and continue to attend the universities in an increasingly globalised online education market (Statista, 2022).

One of the aims of the research is the lack of empirical knowledge on the role of the service quality in the decision-making process of students regarding online higher education in Scotland. The existing research continuously indicates that the aspect of technological inclusiveness, the degree of responsiveness of academic and administrative service, organizational reputation, the quality of teaching, and perceived career success are among the dimensions that dictate student satisfaction and enrolment aspirations (Gopal, 2021; Lee, 2022). Nevertheless, a large part of these data is based on the international, Asian, or more general UK research, which might not be sufficiently representative of the distinct system of higher education in Scotland, financing mechanisms, and student populations (Moisely, 2024). Consequently, the universities in Scotland tend to use generalised service quality models that are likely to miss context-based student expectations.

The other valuable role of this study is that it can turn the analytical focus to the pre-enrolment decision-making stage in online education. The studies that have been done have mainly focused on post-enrolment satisfaction and loyalty (Twum, 2020; Stankovska, 2020), but there is little data on how students assess the quality of services during the pre-choice phase of attending an online programme. This decision-making process is crucial to be known in a digital setting where students can compare different institutions on the national level. The study thus seeks to explain the nature of the interaction between various service quality variables to determine the effect of these variables on the perceptions, preferences and ultimate enrolment decisions of the students in Scotland.

The research also aims to give a contribution to the further development of the theory by critically addressing the available models like SERVQUAL and the Technology Acceptance Model (TAM). Although these models are popular in determining the quality of services and technology adoption, researchers have noted their lack of local sensitivity and the model could not be used to explain the intricate decision-making process in digital learning settings in detail (Toscano-Hernandez, 2024; Garcia, 2024). Using and modifying these models within the context of online higher education in Scotland, the proposed research will optimize explanatory ability and maximize their usefulness with regard to the current online education.

Practically, this study aims at yielding actionable knowledge on the support of strategic decision-making in Scottish universities. It has been indicated that large percentages of online students in the UK are not satisfied with online platforms and career support services and this has a direct impact on enrolment and retention (Jisc, 2023). In the absence of solid, context-based evidence, universities will find themselves wasting resources and creating online programmes that fail to address the demand of students. The study will be used to inform the quality improvement strategies in the service, which will raise the student experience, satisfaction, and long-term sustainability of the institution.

Lastly, the study aims to add to the policy and sector-wide debates about the future of the online higher education in Scotland. With online education taking on a significant role as a key tool to enlarge participation and expand access to international students, the determinants of student choice are crucial to providing quality and equity in online education (OECD, 2023). This research will help provide the development of online higher education in Scotland that is student-centred, competitive, and sustainable through addressing a definite empirical gap and combining both theoretical and practical points of view.

Specific aims

This study will focus on examining the most important aspects of service quality related to higher education determining the choices that students make when choosing online degree courses in Scotland. The general objective is supported by the fact that the online education can be expanded fast and the service quality is becoming a student choice, satisfaction, and competitiveness determinant factor on the part of the institutional level in the field of the Scottish higher learning.

The initial specific goal will be to determine the dimensions of service quality that play a critical role in student choices when they use online degree programmes in Scotland. This objective is required since existing empirical literature has largely investigated service quality based on generalised frameworks like SERVQUAL either on an international or UK-wide basis (Gopal, 2021). Since Scotland is based on a unique educative and policy system, it is imperative to know the locally relevant factors of service quality that will determine whether the institutional strategies should be consistent with the real student expectations as opposed to perceived global standards.

The second objective will be to explore how institutional reputation influences the perceptions of online services by the students on the service quality. It has been established that institutional reputation is a highly important demonstration of credibility and trust especially in online education where there is limited physical contact (Abbas, 2023). Nevertheless, few empirical studies have been done on the interaction of reputation and perceived service quality in the Scottish context and thus, this objective is required to determine its relative significance in decision making of students.

The third objective will be to assess the impact of various factors of service quality as it affects the student decision-making process during pre-enrolment stage. Although the attention of the

previous research has been more on the post-enrolment satisfaction and loyalty (Lee, 2022), it is important to know how students decide to enrol in online features in the first place, as they are becoming less and less committed without first comparing multiple online features. This purpose fills one of the existing gaps in the literature in that the author focuses on the decision stage instead of just results.

The fourth objective will be to determine how the service quality affects the student satisfaction in online higher education in Scotland. This objective is based on the previous theoretical models that have developed the interests of service quality and satisfaction and tries to prove these relationships in the context of a digital learning environment in Scotland.

Lastly, the fifth objective is to suggest evidence-based practices that the Scottish universities can implement to improve the quality of provided services, as well as to attract online students. This purpose has guaranteed the realistic application of research by ensuring that the results of the research can be translated into practical recommendations which will aid in the design of the student-centred programmes, enhanced satisfaction and sustainable institutional competitiveness.

1.4 Research questions

1. What are the key factors of service quality which influence decisions when selecting online programs in Scotland?
2. What role does the institution's reputation play in shape in the students' perception of service quality for online programs?
3. How do the different service quality factors influence upon decision making process of the students enrolling to online programs?
4. How does service quality impact upon student satisfaction in online education in Scotland?

5. What are the strategies online education providers could adopt to increase service quality and attract more students?

The research questions are designed based on the necessity to fill the empirical and theoretical gaps in the knowledge related to the service quality in online higher education in the Scottish context. Due to the blistering development of online education and the increasing competition in universities, the structured set of research questions is needed to investigate the impact of service quality on student decision-making and satisfaction systematically (Gopal, 2021; Moisely, 2024).

The initial research question will help to create a background knowledge of the most effective dimensions of service quality. Although some of the factors found in previous research include responsiveness, technological usability, and teaching quality, most of the results are generalized to the international or UK-wide levels (Lee, 2022). The reason as to why this question is required is to capture Scotland-specific determinants, which will be relevant to context and help in filling the gap of empirical evidence that is localised.

The second research question is incorporated due to the fact that institutional reputation is an important indicator of trust and credibility in online education when there is no physical contact (Abbas, 2023). Even though reputation has been a well-researched concept, its relationship with perceived service quality in online higher education in Scotland has received little attention to date, which explains the necessity of specific study.

The third research question goes further than identifying the factors and analyses the dynamics of decisions. The available literature has mostly focused on post-enrolment satisfaction and loyalty (Twum, 2020) and did not pay much attention to the pre-enrolment decision-making phase. The

given question fills this gap by establishing the connection between service quality and the assessment of choices and ultimate enrolment decisions by students.

The fourth research question is based on the well-known service quality theory according to which satisfaction is one of the outcomes of the perceived service performance (Toscano-Hernandez, 2024). It is critical to confirm this association in the Scottish context, as there are signs of continuous dissatisfaction with the digital learning experiences (Jisc, 2023).

Lastly, the fifth research question will make the study practical. This question allows translating the empirical evidence in action, which can help the institution to improve and align the academic research with the industry requirements and lead to sustainable and student-centred online education in Scotland (OECD, 2023).

1.5 Significance of the study

The importance of the study goes beyond the issue of service quality gaps and institutional competitiveness to the general educational, social, and methodological issues of online higher education in Scotland. The relevance in one of them is that it can contribute to equity and broaden participation. There is a growing trend towards online education as a solution to better access to higher education among non-traditional learners; such as working adults, carers, and students in geographically remote locations (OECD, 2023). Nevertheless, the inequalities in the quality of the services delivered, specifically the aspects of digital accessibility and academic support and communication, may actually serve to increase the prevailing inequalities instead of alleviating them. This study can be used to design more inclusive and equitable online learning environments by determining the factors of service quality that have the most significant impact on student decisions and student satisfaction.

The other significant implication of the current research is that it is applicable to student wellbeing and involvement in digital learning environments. Previously, researchers have shown that a lack of responsiveness, communication, and substandard digital platforms are some of the reasons why online learners experience more stress, lack of engagement, and dropout (Stankovska, 2020; Sandars, 2020). By furthering the current understanding of the role of the dimensions of service quality in affecting enrolment decisions as well as the overall learning experience of students, this research can guide practice to enhance psychological wellbeing and prolonged education on online programmes.

The evidence-based quality assurance and policy development is also important in the context of the study. The Scotland-related knowledge produced by this study can be used to justify more sophisticated quality assurance models that assume the reality of online delivery and are subject to different guidelines compared to the ones developed in relation to traditional, campus-based learning.

Methodologically, the study helps by incorporating the theory of service quality and decision-making models in an online learning environment. A large number of current studies investigate these constructs separately, which restricts the profundity of explanations (Toscano-Hernandez, 2024). This study improves the rigour of the study by looking into their interplay in one empirical model, which gives a more holistic view of how students behave in digital learning environments.

Lastly, the study is of international significance as it presents portentable insights to other small or devolved higher education systems going through comparable circumstances. Although based on the Scottish setting, the results can be used in comparative studies and best practices in other regions with similar policy frameworks and with similar aims and objectives to develop sustainable and student-focused online higher education as part of the global conversation on the topic.

1.6 Research Purpose

This study is aimed at investigating the role of service quality in the higher education in choices of students to online degree programmes in Scotland. The online education growth has changed the way higher education is delivered, especially after the COVID-19 pandemic that naturalised digital learning and increased competition between the universities that provide online education (Dhawan, 2020; Aristovnik, 2020). Due to the emergence of online education as a permanent part of the strategy of higher education, knowledge about student choice determinants has become a key factor in the sustainability of institutions and the improvement of quality.

One of the primary objectives of the study is to raise context-specific data on the quality of services in Scottish online higher education. In spite of the fact that the available literature has already proven that the service quality dimensions, including technological usability, responsiveness, institutional reputation, and career outcomes, have a significant impact on the student satisfaction and intentions to enroll, these results are obtained mostly in the international or UK-wide setting (Gopal, 2021; Lee, 2022). The system of higher education in Scotland is unique in terms of policy, financing, and population, which requires specific research to guarantee the appropriateness of service quality models and their applicability (Moisely, 2024).

The other significant reason is to explain how service quality is important in pre-enrolment decision making process. Most previous studies have concentrated on post-enrolment results, including satisfaction and loyalty, which does not give much understanding of how students create a judgment on the quality of services even before enrolling to online programme (Twum, 2020). Following the growing supply of online degrees and transnational educational services, this phase of decision-making is an essential concept to be familiar with by universities wishing to draw in students in the saturated digital economy.

Another purpose of the research will be the contribution to the theoretical development, which will be provided by application and the critical evaluation of the theories such as the SERVQUAL model or the Technology Acceptance Model (TAM) to an online education setting. Although these frameworks have been popular, researchers have noted the inability to describe the complexity of digital learning spaces and contextual factors (Toscano-Hernandez, 2024; Garcia, 2024). This paper aims at perfecting these models by analyzing the relationship between service quality and technology-related variables in their combined impact on student choices and satisfaction.

Lastly, the aim of the study is to make the Scottish universities informed in strategic and operational decision-making. It is shown that there is still dissatisfaction with the elements of online learning, especially digital platforms and career support (Jisc, 2023). This study will contribute to evidence-based changes to improve quality of student experience, satisfaction, and institutional competitiveness in the developing online higher education sector in Scotland by establishing the most influential service quality factors.

CHAPTER 11: LITERATURE REVIEW

2.1 Introduction

The literature chapter discusses about the service quality, customer decision making, online education and the relevant theories and models. Then conceptualization is discussion. The ends with indicating the literature gap.

2.2 A brief outline of Service Quality

The concept of service quality is one of the focal points of the services research and is often understood as the degree to which a service can meet or surpass the expectations of the customers (Toscano-Hernandez, 2024). This is an expectation-performance paradigm behind a large portion of the literature on service quality, and this approach has been extensively used in higher education where students are more and more being conceptualised as active users of services as opposed to passive receivers. The significance of service quality in the context is that it is closely correlated with student satisfaction, trust and enrolment intentions as well as retention especially in online education where credibility of the institution and support services have taken the place of physical campus experiences (Gopal, 2021). With the rising competition in digital higher education markets, the quality of the services has become a very important strategic differentiator of the universities that want to attract and keep students (OECD, 2023).

Initial theories of conceptualising service quality focused on standardised dimensions of service quality including reliability, responsiveness, assurance, empathy and tangibility, most notably, via the SERVQUAL model. Although this framework has been celebrated as simple and flexible framework that can be applied to service industries, scholars have come out strongly to criticise it as a framework that simplifies complex service contexts like higher education (Toscano-Hernandez, 2024). One of the main drawbacks of SERVQUAL is that its underlying assumption

is of homogeneous expectations that do not reflect the heterogeneous nature and changes in needs of students in online and cross-border learning experiences. Furthermore, it has little sensitivity to cultural and institutional variations and hence it has less explanatory power in national systems like Scotland.

Recent empirical research has tried to overcome these shortcomings by embracing situation-specific understanding of service quality. As an illustration, Nguyen (2024) created a specific model in the context of Vietnamese higher education and recognized academic services, interaction with the industry, non-academic support, the structure of the programmes, and facilities as the main determinants of student satisfaction and loyalty. The advantage of this strategy is that it is practically applicable and in line with the expectations of local students. Nevertheless, the major drawback of context-specific models is that the results and conclusions are usually confined to the geographical, cultural and policy context, which lack cross-national comparison and theory development.

This literature therefore indicates the presence of a conflict between globally similar service quality models and locally based ones that mirror the realities of a given context. Although international standards promote quality assurance and institutional comparability, they tend to overlook the national policy contexts, funding framework, and student characteristics to formulate service perceptions (Moisely, 2024). Also, a strong managerial emphasis on service quality indicators can potentially commodify education and give priority to quantifiable service qualities instead of academic depth and intellectual growth (Kelly, 2024).

In spite of the extensive number of researches carried out internationally, little is known about how the issue of service quality functions in the context of online higher education in Scotland. The literature does not offer many research studies on the topic of the transformation of the traditional

dimensions of service quality into the digitally mediated learning context influenced by the specifics of the educational traditions in Scotland and the regulation systems. As a result, the research gap is evident in terms of identifying and prioritising the dimensions of the service quality that are most applicable to the Scottish online learners, which explains why the context-specific and empirically based study is needed.

2.2.1 Relationship between service quality and customization making

The association between service quality and student decision-making is a topic that has obtained increased scholarly attention especially in online higher education in which service interactions can greatly influence the perception of institutional value. The works of Abbas (2023) and Zygiaris (2022) represent complementary but different ideas on how the dimensions of service quality are used to affect the decision of students, their satisfaction, and trust. According to Abbas (2023), the significant factor was the institutional credibility of student trust with a strong positive correlation ($r = 0.78, p < 0.01$). This observation shows that reputation, transparency and perceived reliability play a crucial role in the confidence of students in the decision-making process, particularly in online learning because there is no direct physical interaction.

In their turn, Zygyaris (2022) pointed out psychological engagement as the important contributor to student satisfaction and showed that its impact was significant ($b = 0.65, p < 0.001$). The current study changes the perspective of analysis by focusing more on the student experience, and indicates that the mechanisms of engagement, including interactive learning environments, timely feedback, personalised communication etc, significantly affect how students rate the quality of service. These studies combined support the argument that service quality is a determinant of student decision-making based not only on cognitive assessment (e.g., trust and credibility) but also on the experience (e.g., engagement and interaction).

In spite of their contributions, the two studies have significant limitations. Although Abbas (2023) offers solid statistical support of the connection between credibility and trust, the research paper conceptualises the idea of decision-making as the process of making rational decisions based on the institutional features. This school of thought undermines the contribution of emotional and motivational forces that have been more influencing the behaviour of online learners. Equally, Zygyaris (2022) though acknowledging engagement as a key driver of satisfaction, fails to explore sufficiently how engagement and other more encompassing service quality dimensions like assurance, responsiveness, and reliability interact in the dimension of pre-enrolment decision stage.

The two studies are also unanimous in the observation that the conventional dimensions of service quality, especially responsiveness, reliability, and assurance, have a positive impact on the enrolment intentions. Nevertheless, they do not focus on the analysis; as such, they acquire disjointed knowledge. Credibility and trust is of importance to Abbas, whereas, Zygyaris (2022) foregrounds engagement and satisfaction. This gap underscores a wider shortcoming in the literature: the propensity to explore independent aspects of service quality instead of using a comprehensive model to reflect the complexity of online education student decision-making.

Also, the two studies do not emphasize the impact of emotional and motivational variables, including the state of anxiety, perceived self-efficacy, and career interest, which also grow more and more important in digitally mediated learning conditions. Since making a choice in online education implies both rational assessment and emotional judgement, the lack of these aspects narrows down the explanatory scope.

Following these gaps, the current study intends to combine the aspects of service quality with the concepts of cognitive and emotional aspects to create a more detailed explanation of the online

student decision-making behaviour, especially in the less studied Scottish higher education environment.

2.2.2 Relationship between service quality and online education

There has been a lot of research on the correlation of service quality and online education especially on the effects of satisfaction and loyalty on the students as well as their persistence to use e-learning sites. The empirical data presented by Sumi (2021) and Atmaja (2023) prove the significance of perceived service quality in relation to the experience of the students and behavioural intentions in the virtual learning process. The two articles support the position that service quality is a key factor to successful online education delivery, especially in digitally mediated settings where institutional support and platform reliability take the place of the traditional face-to-face interaction.

Responsiveness was found to be a vital contributor to student satisfaction by Sumi (2021), where the degree of correlation was high and positive ($r = 0.72$, $p < 0.01$). The above finding highlights the significance of communicating in time, giving feedback, and solving problems efficiently in the maintenance of student satisfaction in online learning. The merits of the study by Sumi are in the clearly operationalised definition of responsiveness and its empirical confirmation of one of the dimensions of SERVQUAL in an e-learning environment. Nevertheless, the study uses a cross-sectional design which restricts its scope to capture any changes in the learning perceptions of the students as they advance in their course of study.

Atmaja (2023) in its turn studied administrative support as a predictor of student loyalty and proved the strong impact ($b = 0.68$, $p < 0.001$). The paper expands the scope of service quality not only to the delivery of instruction but also to non-academic services like enrolment, technical support, as well as academic administration. Focus on loyalty offers good insight into the long term

institutional consequences which are not limited to the short term satisfaction. However, Atmaja, because of adhering to the various measurement scales and constructs, cannot be directly compared to other studies of service quality, as there is a concern regarding the consistency of the construct.

Two studies are relating to each other, however, their focus on responsiveness and reliability as the prevailing dimensions of service quality is applied using different metrics and methods of analysis. This methodological discontinuity can be seen as a larger deficiency in the literature, whereby incongruent measurement schemes make it impossible to build up cumulative knowledge. Secondly, both articles also mainly evaluate the quality of service at one time without considering the longitudinal relationships of online learning interactions.

Another weakness is the scanty research on the impact of service quality on continuing the digital learning engagement after the initial satisfaction or intent to remain. Online learning involves continuous interaction and guidance, and the attitude of students might change as the academic process becomes more challenging. Lack of longitudinal evidence limits the knowledge of the effects of service quality on the persistence, motivation and long-term engagement.

Therefore, more studies are needed to investigate the effects of quality of service in the long run on the engagement in online learning through similar and context-based frameworks. This gap is especially relevant when the research in a particular region is under-researched, like in the context of Scotland where online education is still growing and the institutions need a strong evidence base to improve the quality of services and student results.

2.2.3 Service quality and student satisfaction

Service quality and student satisfaction has been the most studied service delivery concept in the literature of higher education especially with institutions beginning to acknowledge satisfaction as

the major measure of educational performance and retention. Stankovska (2020) and Twum (2020) offer valuable empirical data on the impact of certain dimensions of service quality on student satisfaction and indicate some constraints that restrict the applicability of their results to the overall population.

Stankovska (2020) believes that psychological well-being is one of the key indicators of student satisfaction and reasons that the quality of service delivery is not limited to its functional performance but to emotional support and the mental well-being of the students. The research proves that the academic and support staff empathy and responsiveness are a major factor contributing to the improvement in the student perception of the quality of the services in the stressful learning settings. One of the most important strengths of this study is its appreciation of the affective aspects of service quality that is usually sidelined by classical theories like SERVQUAL. Combining the psychological well-being, Stankovska (2020) enhances the conceptual knowledge on satisfaction, with the significance of human-based service delivery.

Twum (2020), in turn, assumes a more functional approach, focusing on how academic support services determine the satisfaction of students. The research establishes assurance, reliability, and responsiveness as the prevailing service quality dimensions that make a difference when students are assessing their education experience. The results of Twum support the usefulness of developed constructs of quality services, especially in providing clarity, competency, and consistency in academic delivery. The virtue of this strategy is that it is practically applicable, whereby it provides the institutions with practical spaces to improve the services.

Both articles are limited in the same way despite their contributions. More importantly, both of the studies do not take a cross-cultural/comparative approach thus constraining the generalization of results in different educational systems. The cultural expectations of empathy, assurance, and

responsiveness are institutionalized and culturally determined, and it is possible to expect that the findings of single-context studies are not universal. Also, the two studies are based on cross-sectional survey designs, which summarizes the perceptions of students are recorded at one point in time and does not bear any changes in satisfaction across the student lifecycle.

More so, even though similar results are found with empathy, assurance, and responsiveness being found to be important predictors of satisfaction, the studies fail to examine the interaction of these dimensions and other contextual elements like technology mediated learning, institutional reputation or career expectations. This exclusion is especially applicable to the area of online education, when the quality of the service is provided both in human and digital form.

According to the literature, a clear research gap thus exists, of which there is little information regarding how the quality of services affects the student satisfaction of various groups of students and in different educational settings more so within online learning contexts. The only solution to this gap is a context and integrative research, which would study emotions and functional aspects of the service quality particularly in the under-researched context of the online higher education sector in Scotland.

2.2.4 Total quality management practices

Total Quality Management (TQM) has been championed as a strategy tool of ensuring the attainment of continual improvement, organisational performance and client satisfaction in the service sectors. TQM principles have been applied in the education sector to reinforce the quality of service, stakeholder participation as well as the performance of the institution. Wassan (2022) and Kelly (2024) offer opposite but complementary views on the relevance of TQM practice, specifically in the context of leadership dedication and employee involvement.

Kelly (2024) analyzes the application of TQM in a general corporate environment and describes commitment to leadership, employee empowerment, and the ability to provide feedback constantly as the key success factors. The paper has shown that quality and strong managerial support and culture are important in improving customer satisfaction and efficiency in organisations. One of the strongest aspects of the work by Kelly is its highly organized description of TQM as an overall approach to managing a company with empirical results that prove the involvement of staff in achieving high performance. Nevertheless, its main shortcoming is that it is not applicable to higher education settings because the corporate service setting is fundamentally different to academic settings in governing structure, professional freedom and stakeholder complexity.

Contrarily, Wassan (2022) questions the practical use of TQM in academic institutions and says that fixed and standardised TQM models can weaken the flexibility and intellectual freedom that university education requires. Wassan argues that reducing students to the status of customers is dangerous in relying on the simplistic approach to the educational mission and neglecting pedagogical values. This criticism offers a valuable balance to instrumental approaches to quality management, because it helps to realise the contextual adaptation is required. However, despite some sound conceptual points raised by Wassan, the study provides a little empirical data to prove the assertions on the adverse effects of TQM application in higher education institutions.

Although the two studies have a difference in position, one of the major limitations they have in common is the lack of longitudinal empirical data determining the long-term effects of TQM practices. Both articles do not sufficiently investigate the implications of leadership commitment and staff engagement on the long-term improvement of the quality, especially in digitally mediated settings. This restriction is becoming more of an issue as the education field is getting rapidly

digitalized and quality management has to adjust to online learning systems, virtual student services and technology-based methods of assessing students.

Moreover, the research of both studies pays little attention to the combination of TQM and digital transformation strategies. With online and hybrid delivery models being increasingly used in higher education facilities, quality management practices can no longer afford to focus on the traditional processes but include digital infrastructure, data analytics, and quality of virtual services. This fact of the absence of empirical studies that relate TQM principles to the context of digital education indicates a severe gap in the literature.

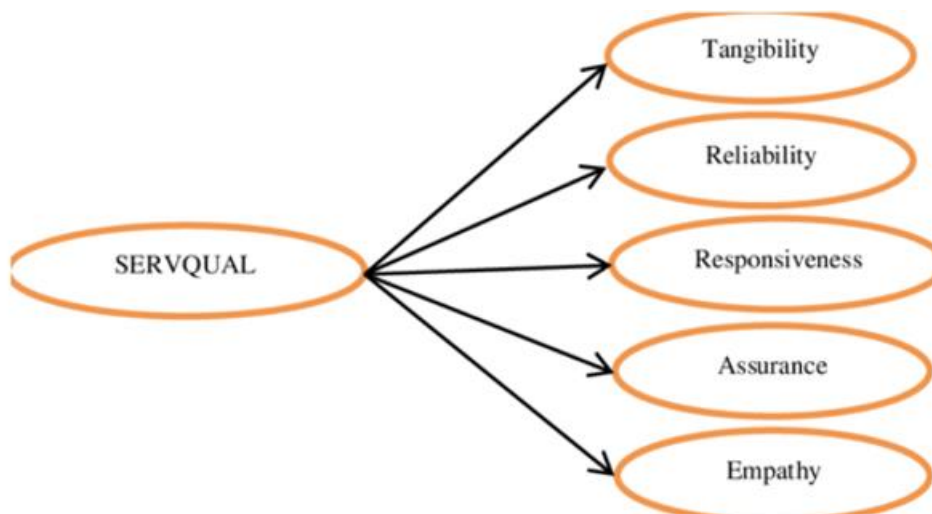
Therefore, it is necessary to conduct the research that will examine how TQM practices can be successfully implemented in order to promote the digital transformation in higher education. The long-term, context-dependent research is required to determine the long-term effect of leadership commitment and staff involvement on the quality of services, student satisfaction, and institutional performance during online and blended learning.

2.2.5 SERVQUAL Model

Parasuraman, Zeithaml and Berry came up with the SERVQUAL model in the late 1980s as a systematic tool to measure the quality of service that is based on the varying expectations between customers and their views of actual service performance. Wider (2024) indicates that SERVQUAL is still one of the most effective frameworks in the sphere of research of service quality and it is designed according to five main dimensions: the tangibility, reliability, responsiveness, assurance, and empathy. Even though it was initially created to fit the environments of commercial services, the model has been extensively applied to the work of the public services, including the higher education.

Tangibility is that of the physical and technological facilities, learning resources and professional appearance of the staff (Wider, 2024). This aspect in online education is converted to the quality of digital platforms, online learning environments, and accessibility of online materials. Reliability is the provision of the institution to provide the promised services in an accurate and stable manner including the reliability in course delivery, assessment schedules, and uptime of the system (Wider, 2024). Responsiveness is the readiness and speed of the institutions to offer support, feedback and solve the problems to students (Wider, 2024). Assurance is associated with the competence of staff, credibility, and the possibility to inspire trust and confidence, which is especially crucial in online environments where it is not possible to interact with each other face to face (Wider, 2024). Empathy is a measure of personalised service and comprehension exhibited towards the individual requirements of students such as academic counseling and emotional support (Wider, 2024).

Figure 2.1 SERVQUAL Model



Source: (Wider, 2024)

Among the advantages of the SERVQUAL model, a structured and standardised method is one that allows conducting an evaluation of service quality in a systematic way and benchmarking across organisations (Wider, 2024). It has also been flexible to enable researchers use it in various service industries such as higher education. The model has however been extensively criticised on its assumption of universality. Toscano-Hernandez (2024) identifies the inconsistency in defining and measuring dimensions of SERVQUAL between various cultural and institutional contexts, which leads to inconsistency in results and their comparability.

Contrary to this, Nguyen (2024) recommends context-dependent modification of service quality frameworks, offering the following dimensions to be more applicable in the context of Vietnamese higher education: academic services, programme structure, non-academic support, facilities, and interaction with the industry. Although this strategy improves the contextual validity, it restricts the cross-national comparison and formation of the global best practice.

A lack of an agreed set of service quality frameworks is also a major limitation of the literature. The proposed research fills this gap as it combines both universal dimensions of SERVQUAL and context-specific variables, when it comes to online education. In this way, it can be expected that the research will offer a sound and balanced model of studying the impact of service quality on student satisfaction on online higher education, and that this study will focus on under-researched settings, like Scotland.

2.2.6 Factors of service quality

Reliability

The nature of reliability is a primary quality dimension of service and as a rule, reliability is described as the capacity of an organization to deliver the service in a consistent manner as

promised in a manner that is dependable and accurate (Parasuraman, Zeithaml and Berry, as cited in Dudovskiy, 2023; Zeithaml et al., 1990). Reliability is a concept in the original SERVQUAL model that shows the degree to which an institution performs its services in the correct way and once, it adheres to schedules and promises, ensures error-free records, and solves problems efficiently (Khoshsepehr, 2025).

Reliability in practice implies that a service provider does not simply promise what it is going to deliver but does it consistently during a period of time without breach (Song, 2025). This also involves conducting lectures on time online, accurately assessing grades, making timetables and platform operation reliable and addressing academic inquiries in a manner that is reliable. Due to reliability and predictability in service students will find the institution more reliable and credible of which in education where expectations play a critical role in education, academic rigour and institutional uniformity come to play (Song, 2025).

Regarding quality management, reliability is not a mere descriptive term, but a performance criterion that connects the provision of services to customer satisfaction and customer loyalty (Khoshsepehr, 2025). Reliability has been reported to be a factor influencing quality and performance outcomes of numerous service providers, including banks, insurers, and providers of telecommunication services, and in these industries, reliable services promote confidence and subsequent interactions (Song, 2025).

Under the unique conditions of online higher education, reliability is useful because the issue of uncertainty and cognitive load is minimized in the decision-making process of students (Khoshsepehr, 2025). The reliability of digital platforms, reliable communication, and correct

academic administration help to decrease the level of anxiety and make the students more sure about choosing and staying in a programme. Reliability also promotes a learning continuity which in its turn affects the satisfaction, engagement, and eventually student retention which are major outcomes of universities that have competitive digital presence (Khoshsepehr, 2025).

Nevertheless, the service quality factor of reliability has a number of limitations and disadvantages. To begin with, reliability is usually operational and task-centered and pays much attention to the technical and functional aspects instead of emotional or perceptual elements of student experience (Song, 2025). This small-scale approach can prove to be too small and not pay enough attention to all the softer aspects of service quality, like empathy or inspirational support, which are not less significant in education. Second, reliability is typically measured as a snapshot survey or perceptions at one time, which does not capture the possibility of change in perceptions as students go through their programmes. Third, the focus on service delivery consistency can make the institutions value procedural conformity over innovation or adaptable and individualised support (Khoshsepehr, 2025).

Since reliability is not the sole issue to explain student choices or long-term satisfaction in online education, in this study, we will marry reliability with other issues of service quality and find out its interplay with emotional and cognitive procedures in the model of the decision-making process.

Responsiveness

The concept of responsiveness has been commonly known in service quality literature to define the capacity and desire of an organisation to respond to customer needs, inquiries and problems in a timely and efficient manner. Responsiveness in the SERVQUAL paradigm implies the speed at which a service organisation responds to customer demands, corrects, and stays in constant

communication, as a measure of the commitment of the organisation to the customer and customer focus (Yusefi et al., 2022). Responsiveness is a key aspect in how students view the institutional support in the online higher education context particularly since students depend on digital platforms and remote communication to get guidance on their academic work, requests to the administration and technical support.

Responsiveness has been determined to play a great role in general perceptions of quality of service. Yusefi et al. (2022) discovered that in healthcare studies, the responsiveness or the timeliness of staff in addressing the needs of patients had a significant relationship with the perceived quality of service and the outcome of satisfaction. This finding underlines a wider point, even though the context is healthcare, in which the timely service engagement boosts the ratings of service performance among the users, decreasing uncertainty and building trust, both of which are essential in the context of decisions where users rely on institutional support (Yusefi et al., 2022).

The article by Khalil (2021) addresses the idea of responsiveness in the frames of the systems of quality assurance at higher educational institutions. The research focuses on responsiveness as part of organisational flexibility and involvement of stakeholders as a factor that connects with leadership devotion to ongoing improvement practices. Responsiveness in quality assurance systems is operationalised by using the timely feedback mechanism, effective management of complaints and the active communication between the students and the institutional units. As Khalil points out, the responsiveness is not just a frontline customer service characteristic but also an organisational competence that promotes institutional credibility and quality management practices (Khalil, 2021).

Responsiveness helps to enhance students satisfaction, assurance of institutional support systems, and favorable judgments of the general learning experience. Responsiveness in online higher learning serves to remove obstacles associated with distance learning such as technical failures or delays in academic response thus increasing the continuity of learning and minimizing frustration (Yusefi et al., 2022).

Although significant, responsiveness has a number of limitations. First, responsiveness is often evaluated by subjective ratings of students and not evaluated by objective response time measurements, this could bias the assessments of service quality (Yusefi et al., 2022). Second, responsiveness on its own cannot ensure the holistic quality of service, it should be incorporated with other dimensions like reliability, assurance, and empathy to significantly contribute to increasing student satisfaction (Yusefi et al., 2022). Also, high responsiveness can become a burden on the institutional resources not supported with sufficient staffing or digital infrastructure, and as a result, inconsistent service experiences can occur.

Responsiveness is an important prerequisite in the case of this study since the nature of the decisions and levels of satisfaction of online learners largely depend on the speed and efficiency with which institutions would react to their academic and administrative requests (Yusefi et al., 2022). By incorporating responsiveness into the research on service quality in online higher education in Scotland, one will be able to shed light on how promptly provided support will influence the way students make decisions, engage, and view the value of online learning settings.

Empathy

Service quality Empathy in service quality is the extent to which an organisation is personally attentive, caring and personalised in the way it treats its service users. In service quality models

(SERVQUAL), empathy describes the degree to which service providers are sensitive to the specialized needs, issues and emotional situations of customers and how effectively they react to them (Dudar, 2024). Empathy, in the context of higher education, and especially in an online learning setting, where physical contact between students and the institution is restricted, is a fundamental human-centred aspect of service quality since it shows the intent of the institution to treat students as individuals, as opposed to a transactional customer.

The significance of empathy is highlighted by Dudar (2024) and is explained by the fact that empathetic interaction is a central force behind perceived service quality since it directly affects emotional reactions and psychological well-being. The use of empathy in education may be reflected in the setting of personal feedback, initiating outreach to students who are struggling with academic work, and helping students communicate with them in difficult times. Dudar (2022) insists that if the educational service providers show understanding and empathy, the students will be sure that they are understood, respected, and given emotional support, which in turn will lead to increasing students' satisfaction and commitment to the learning process. This is particularly applicable in online learning where less physical presence will otherwise make the learners feel lonely or disconnected.

The importance of empathy as a determinant of service perceptions is also supported by the findings of Shoji (2024). Shoji conducted a psychological study on the topic of care and relational dynamics and discovered that empathetic interactions were a significant moderator of stress and an enhancement of user engagement in settings that involve a high level of cognitive and emotional labour (e.g., learning or therapeutic settings) (Shoji, 2024). Despite the fact that the work of Shoji is not education-specific, the results prove that empathy influences cognitive appraisal and

emotional regulation processes, and they are directly involved in the decision-making process of students regarding the development of online programmes or online education.

Empathy helps to improve student satisfaction, emotionality and faith in the institution. It is able to alleviate the adverse impacts of academic stress, technological setbacks and distant seclusion. Through identifying the needs of their respective students and addressing them through individualised communication, institutions can achieve further engagement, lower withdrawal rates, and a learning community that is supportive (Dudar, 2024). Institutional reputation is also enhanced by empathy since students who are truly supported will recommend programmes and will become loyal alumni.

Although empathy is a definite benefit compared to other factors of service quality, it does not have an unlimited range of benefits (Dudar, 2024). To begin with, empathy is hard to operationalise and measure in a more objective way because it entails subjective emotional perceptions which differ with individual and cultural expectations. Second, excessive personalisation of support can be a resource-intensive endeavour that may necessitate either staff time and emotional labour that institutions may not find sustainable in large enrolments. Third, unless well trained, staff efforts to empathise can be seen as fake or even inconsistent, which affects the intended positive effects negatively.

Regarding this study, empathy is especially applicable since online students are exposed to emotional and motivational issues that are not limited to functional service provision. The discourse around the role of empathetic service quality in promoting student satisfaction and decision-making in online higher education in Scotland will allow adding subtle details to the understanding of the manner in which institutions can establish within online learning more human-centred and emotionally accommodating digital learning experiences.

Assurance

The assurance is one of the dimensions of service quality which means knowledge and competence of the service provider, courtesy and credibility to perform the service and ability to evoke confidence and trust in the service users (Adams, 2023). In SERVQUAL model, assurance is needed since it indicates that the organisation is capable of providing the services professionally without putting the users in danger and insecurity, which is especially important in higher education when decisions are made on a long-term basis, financial investments, and the future career consequences are considered.

Online education assurance takes the form of faculty competence, open academic policies, sound evaluation practice and clear messages concerning the quality and outcomes of programmes. The students consider assurance not through formal accreditation and rankings only but also assess the professionalism and responsiveness of instructors, the articulateness of learning expectations, and the perceived justness of assessments (Adams, 2023). To online learners, who in many respects do not have the normal physical signs of legitimate status like campuses, assurance is a key sign of institutional reliability and academic integrity.

Rohman (2023) notes that assurance improves the quality of service by boosting the confidence by the users in the capability of the organisation to deliver the promised results on top of minimising the perceived risk of using the service. Assurance will strengthen the confidence of students towards the academic qualification of the institution, rigour of assessment, and supporting systems (Rohman, 2023). In the case where students have a high perception of assurance, they will tend to make a decision in favour of enrolment and tend to persist with programme requirements due to the lowered anxiety of performance and results due to the level of confidence in academic and administrative systems.

Adams (2023) points out that assurance is not an unchanging quality, but a dynamic one that is established through repetition of professional competence and ethical behavior and open communication in the systems of quality assurance. Assurance in quality assurance research is equated with institutional accountability, which increases the level of trust among stakeholders and promotes long-term engagements (Adams, 2023). This view is consistent with the two-fold purpose of higher education that provides academic services and protects the interests of students in a competitive market.

Confidence helps in increased trust, academic credibility as well as uncertainty among students who make complex decisions on education (Adams, 2023). It raises the levels of confidence of students concerning institutional guarantees like career planning and qualification status, which are important in online environments with minimal physical contacts (Adams, 2023). There is also a correlation between high assurance and high satisfaction and loyalty as the students feel secure against failures in services and feel assisted in their academic process (Rohman, 2023).

Assurance despite being essential has restrictions. To begin with, assurance is perceptual and subjective, and based on the perception of the students about competence and credibility that can be diverse upon comparing the different cultures and individual expectations. Second, institutional quality pronouncements e.g. accreditation or rankings can give the illusion of a guarantee that is not converted into student experiences, and therefore disillusionment ensues (Adams, 2023). Thirdly, placing too much emphasis on the indicators of formal assurance may make institutions focus on compliance rather than on real learning quality and student learning (Rohman, 2023).

The aspect of assurance is specifically applicable in this study as the issue of academic credibility and institutional competence affect the decisions of Scottish students to choose, continue, and assess online degree programmes. The interaction between assurance and other service quality

dimensions will be useful to explain why some students have and will be satisfied with online education, and others do not the interaction and insights will help to act to improve online service delivery.

Tangibles

Tangibles are one of the five fundamental attributes of service quality in the SERVQUAL model, and they are the imperceptible and material parts of the service that the customer can see, touch, or feel. The list of such elements is long and includes very varied and different items, such as machines, facilities, and technology used by the staff, communication materials, and the way that the staff are dressed or the overall look of the service areas (Utkarsh, 2022). In the traditional service situations, tangibles act as a basis for visual cues that lead to the clients' judgments regarding the providers' professionalism and reliability, and at the same time, they are the visible signs of a company's commitment to quality and service (Sayed, 2017). The presence, quality, and presentation of tangible elements in services signal professionalism and affect the user's expectations and evaluations of service quality.

It is true that when one thinks of tangibles one often thinks of face-to-face interaction, but that is only a small part of the picture; in fact, in online higher education they are still nearly as important especially concerning technology infrastructure, digital platforms, interface design, multimedia learning resources, and communication materials (Utkarsh, 2022). The look and ease of use of an online learning platform, the clarity of course documents, and the user-friendliness of navigation are the "tangible" aspects of a digital environment that students must frequently interact with. Since there are no traditional physical amenities in online education, digital tangibles take on the role of physical ones, thus influencing the customers' first impressions, their perceived professionalism, and their overall satisfaction (Sayed, 2017).

Research studies continually emphasize the importance of tangible cues in risk reduction and trust boosting. For example, Utkarsh (2022) shows that tangible quality cues, like the platform interface, technological tools, and visible service artifacts, help users manage their perceived risk and uncertainty in the intangibility of service experiences. Sensory evidence of quality provided by tangibles results in the reduction of ambiguities.

2.3 A brief outline of customer decision making

Customer decision making is defined as the cognitive and behavioural process that shape an awareness of a need, search information, evaluate alternatives, and finally reach a decision to purchase or select (Chen, 2022). This has been conventionally studied in the context of consumers and organisations but of late the application has been extended to education where students are considered to be knowledgeable decision-makers choosing learning routes. Regardless of this growth, integration of psychological and emotional aspects in decision-making framework is not well developed in the field of education research.

Chen (2022) investigated the contribution of the emotional regulation to decision making in a randomised controlled trial on emerging adults. The paper has shown that the training in structured emotional regulation brought a significant impact on the stress reduction and enhancing the psychological well-being which is indirectly connected to more rational and goal-oriented decision making. The key strength of the study by Chen is that the research design is based on experiments, allowing to draw a causal conclusion and enhancing internal validity. Nevertheless, the study was not carried out within an educational decision-making environment, which would restrict its immediate relevance to the student enrolment decisions in online learning environments.

Likewise, Santos (2021) discussed emotional regulation interventions by applying a cross-sectional survey design by correlating effective emotional regulation with the increase in employee

engagement at workplaces. According to the findings, it is argued that people who have the ability to control emotional reactions are better placed to review information and make long-term judgments. Although the study by Santos provides some important information on the behavioural implication of emotional regulation it will be impossible to establish a causal relationship due to the use of self-reported measures and a cross-sectional data. Moreover, the work environment is quite different compared to the educational one, as the driving forces, perceived hazards, and anticipated results are also significantly different.

The two works arrive at a similar conclusion on the significance of emotional regulation in determining well being and decision making, but they differ in application, method and context. Both articles do not directly investigate the interaction of emotional regulation with service quality perceptions when making judgments in online education. This is a major omission because online students usually have increased uncertainty, overload of information and lack of social cues that can further enhance emotional reactions in enrolment choices.

Additionally, the currently used customer decision-making models majorly focus on the rational consideration of the functional features with little attention to the emotional and psychological processes that mediate the choice. Lack of cross-setting comparison also makes it hard to know which emotional regulation techniques are the most effective and in what circumstances. This gap creates necessity of context-specific research incorporating cognitive and emotional aspects.

2.3.1 Customer decision making model

Customer Decision-Making Model is one of the most known models in the research of consumer behaviour that defines how people transition between perceiving a need and perceiving outcomes after making a purchase decision. Dudovskiy (2023) states that the model involves five steps: need recognition, information search, alternatives evaluation, purchase decision, and post-purchase

evaluation that follow each other in a sequence. The theoretical basis of the model is found in the early consumer behaviour theories of the 1960s and 1970s that perceived decision making as a rational step-by-step process that was affected by the internal and external stimulus (Dudovskiy, 2023).

The initial phase is the need recognition, which takes place when the consumers realize that there exists a gap between what they are and what they want to be (Dudovskiy, 2023). In online learning, it can be the identification of the necessity of career progression, talent improvement, or the provision of flexibility in learning. Information search is the second stage that covers the collection of the corresponding information on both internal (prior experience) and external (university websites, rankings, reviews, and social media) sources. Accessibility and quality of information is very paramount at this stage especially in the digital sphere.

Figure 2.2 Customer decision making model



Source: (Dudovskiy, 2023)

Evaluation of alternatives is the third step, which involves the consumers evaluating the available alternatives according to their perceived value, quality, cost, reputation, and risk (Dudovskiy,

2023). This, to potential online students, entails the evaluation of the quality of the programmes, the credibility of the institution, service provision, and flexibility of learning. The fourth phase is purchase decision which is the real enrolment decision and may be affected by emotional conditions, perceived risk, and external compulsions. Lastly, post-purchase evaluation is the measurement of satisfaction once enrolment is done which is an effector of retention, loyalty, and word-of-mouth behaviour.

The clarity and systematic nature of the Customer Decision-Making Model is one of its principal strengths because it allows an organisation to learn the behaviour of the customer and formulate specifications about each decision stage (Dudovskiy, 2023). The model provides institutions in the higher education sector to adjust marketing communication, quality of services and student support to the current needs of the learners. Nevertheless, one of the major weaknesses of the model is that it assumes rational and linear decision making (Santos, 2021). The truth is that decisions, particularly those of high involvement like education are more often than not non-linear and highly dependent on emotion, uncertainty and psychological well being.

The significance of emotional regulation in the process of well-being and engagement is emphasized by Chen (2022) and Santos (2021), but both researchers fail to explicitly relate emotional aspects to the phases of the customer decision-making model. It is a huge gap because emotional states might affect the values of students, their comparison of alternatives, and the outcomes perceived after enrolment.

2.4 Industry 4.0 technologies

Industry 4.0 technologies are the incorporation of sophisticated digital processes into practice in the form of artificial intelligence (AI), the Internet of Things (IoT), cloud computing, big data analytics, automation, and cyber-physical systems to develop smart, connected, and data-driven

environments. Initially created to be used in a manufacturing industry, Industry 4.0 facilitates real-time data transfer, automation, and adaptive decision-making across systems (Javaid, 2022). These technologies have been widely used in the education sector to facilitate online learning via learning management systems, AI-based assessment tools, online classrooms, predictive analytics and cloud-based content delivery tools (Moraes, 2022).

Javaid (2022) discusses the way online education is changing with Industry 4.0 technologies which allow personalised learning, and scalable digital infrastructure, as well as constant performance monitoring. The paper brings out the fact that AI-based platforms would be able to customize learning material to the needs of specific students, and cloud computing and IoT would enable smooth access to educational resources across devices. These advancements make it more efficient and accessible, especially when it comes to the massive online education setting. But Javaid is very critical in that it is possible to have less direct teacher-student interaction with more automation and this can adversely affect engagement, emotional support and learning motivation. This finding is important to the quality of service, as interaction and responsiveness are two of the factors that determine customer satisfaction in the student.

Developing on this technological platform, Moraes (2022) studies the connection between systems with Industry 4.0 opportunities and student satisfaction through the structural equation modelling (SEM). The research concludes that the quality of the system, information, and service quality have a great impact on the satisfaction of the students using an e-learning platform. The factors that are considered to play a significant role in positive learning experiences are technological reliability, timely feedback, and ease of navigation. One of the strengths of the work by Moraes is that it empirically proves the impact of digital systems performance on the perceived service quality in online education.

Although the studies have their contributions, both of them have significant drawbacks. The approach taken by Javaid (2022) is quite theoretical and lacks the measurement of the long-term learning results and satisfaction rates. Moraes (2022), on the other hand, puts a high value on efficiency of the technology and system, however, does not pay much attention to human related issues, including the presence of instructors, emotional involvement, or student motivation. Consequently, the literature exhibits excessive use of such technological determinism, whereby the only way of guaranteeing the quality of education is through the use of advanced systems.

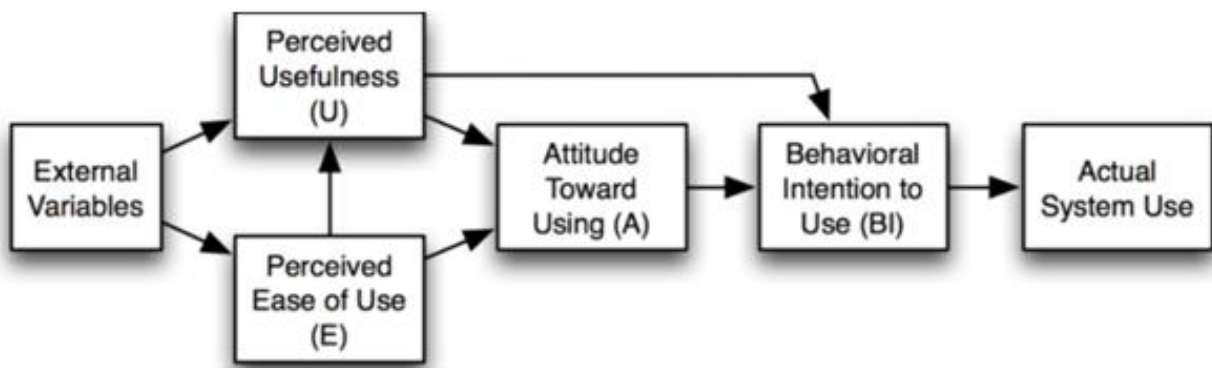
A gap in the research thus becomes apparent. Current literature lacks a comprehension of the interaction of Industry 4.0 technologies with the human service facets to influence the perceptions of quality and satisfaction among students. Such problems as the lack of interpersonal communication, a lack of academic support, and the loss of motivation are underresearched. Trying to fill this gap, the present research will explore the impact of service quality due to the presence of advanced technologies and human interaction on student satisfaction with online education as a more balanced and comprehensive way of understanding digital learning conditions.

2.4.1 Technology acceptance model

Technology Acceptance Model (TAM) was first conceived by Davis (1989) to determine the formation of acceptance and adoption of new technologies by users (Charness, 2020). The model was developed out of the Theory of Reasoned Action and was meant to predict the adoption of technology by looking at the beliefs and attitudes as well as the behavioural intentions of the users. Since then, TAM has been one of the most actively used frameworks in information system and education research spheres since it is simple and strongly predictive (Charness, 2020). It has become very relevant in the wake of digital learning and online education platforms.

TAM has two dimensions at the very heart of it, which are Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Perceived usefulness is a concept that is used to refer to the extent to which a person assumes that the utilization of a certain technology will make them better at their work, whether it is helping them learn more effectively or achieve better academic performance (Charness, 2020). Perceived ease of use is an indicator of how much the user believes that technology does not require effort, such as easy design, navigability and less technical challenges. The two variables have a direct impact on the attitude of users towards the system usage that subsequently impacts behavioural intention and real usage (Charness, 2020). Notably, the indirect influence of perceived ease of use also affects perceived usefulness since easier to use system is commonly considered to be more advantageous.

Figure 2.3 Technology acceptance model



Source: (Charnes, 2020)

TAM has been shown to be highly applicable in the education field based on empirical research. The article by Charness (2020) reveals that TAM is a very powerful model of explanation in any type of learning technology, especially in online and blended learning. Expanding on this viewpoint, Garcia (2024) uses TAM to the digital learning and validates that perceived usefulness and ease of use play an important role in determining the level of engagement and acceptance of

e-learning platforms by the learners. Critically though, Garcia (2024) says that the simplicity of the model fails to acknowledge the wider social, cultural and institutional factors, like peer interaction, instructor presence, and organisational support which are gaining prominence in online education.

The key advantages of TAM are its clarity, parsimony and empirical reliability, it is easy to operationalise and cross study. It is a good base of comprehending technology-related decision making and enhances strategic advancement in system design and usability. However, TAM has significant weaknesses. oneof the limitations is inadequate representation of evolving leaner expectations, and emotional reactions. Furthermore, service quality dimnesions are not fully cover for the long-term use of technology after the first adoption (Garcia, 2024).

TAM offers an effective theoretical prism in analyzing online higher education in Scotland in regard to the current study. Through TAM application, the research evaluates how technology usability, especially perceived ease of use as well as usefulness, is a very important factor to service quality, which affects student satisfaction and their intention to pursue online programmes. The combination of TAM with service quality perspectives allows having a better insight into the effects of technological and experiential aspects combined to influence student decision-making during the digital education environment.

2.5 A brief outline of online education

Online education is the type of learning that is carried out mostly via the use of the internet where a student and an instructor communicate through digital means, instead of being in a physical classroom setting (Minnesota, 2024). It usually encompasses live virtual lectures and discussion, recorded lectures, discussion forums, digital assessment and self-paced learning modules as well. Online education can be said to have emerged out of the rudimentary correspondence courses and

computer-based training in the late twentieth century to the current learning management systems (LMS), video conferencing tools, and mobile learning technologies. The development of online education has been enhanced tremendously in terms of scope and scalability due to advances in broadband access, cloud computing, and interactive media (Swerdloff, 2016).

The convenience and ease of access is one of the most often mentioned advantages of online education. As Swerdloff (2016) points out, online education helps the institution access non-traditional students, such as working professionals and geographically remote students, which promotes lifelong learning and, consequently, workforce development. On the same note, Minnesota (2024) points out that online education increases career readiness because it enables the student to manage their education and work with personal responsibilities. Cognitive engagement, which is supported by multimedia means, collaborative tools and self-directed learning opportunities that online platforms offer, can increase learner autonomy and motivation.

Although these are its benefits, the literature presents a number of limitations. There is lack of equal access to good internet access, hardware and the digital literacy is limiting the fair participation (Minnesota, 2024). This is especially a problem in the case of poor students who are more likely to widen the existing gap in education. Moreover, Swerdloff (2016) also mentions that online education can undermine institutional community and social presence when the mechanisms of interaction and support are poorly designed. In both studies, there is recognition of the risk of learner isolation and decreased engagement and unreliable quality of instruction in case of excessive reliance on digital delivery without sufficient pedagogical assistance.

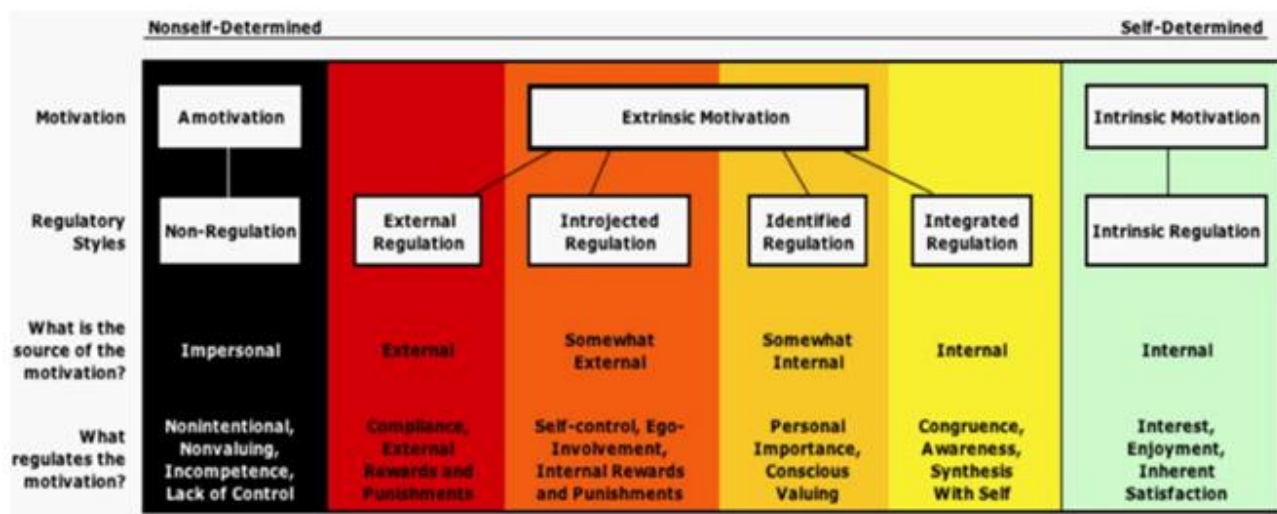
Critically, though both Swerdloff (2016) and Minnesota (2024) have valuable information regarding the social and economic worth of online education, they have significant gaps. Their studies are mostly based on cross-sectional viewpoints and do not have longitudinal studies to evaluate their lifetime learning outcomes and satisfaction. Additionally, neither of the studies specifically focuses on the decision-making processes of the students, especially the effectiveness of the dimensions of service quality (responsiveness, reliability, and technological support) on the programme selection. Notably since there is no contextual examination in the higher education system of Scotland then the transferability of their results is constrained.

2.5.1 Self-determination Theory

Self-Determination Theory (SDT) is a well-known motivation model initially derived by Deci and Ryan in the 1980s but then improved over the decades, with recent elaborations by Deci (2022). According to the theory, three inborn psychological needs, which are autonomy, competence and relatedness, lead to human motivation and psychological well-being (Lopez-Garrido, 2023). SDT is especially applicable in an educational setting when compared to behaviourist approaches that lay emphasis on the importance of external rewards, as it is also based on intrinsic motivation and the environment in which individuals internalise goals and values. Traditionally, SDT was created to address the issue of mechanistic theories on motivation that did not provide answers on long-term participation and individual development. According to Deci (2022), there is solid empirical data that SDT is applicable in education as studies have found out that learning programs that promote autonomy, competence, and relatedness contribute to a stronger involvement in learning, motivation, and academic success. SDT has over time been utilized in various areas such as higher education, workplace learning, and in a digital learning environment. The three fundamental dimensions of SDT are variables that are interconnected. Autonomy is the feeling of volition and

control of the learning activities on the part of the learner e.g. flexibility in learning pace and the choice of learning methods. Competence is a sense of mastery and effectiveness in handling academic tasks and this is determined by the quality of instruction, feedback and usability of technology. Relatedness signifies the necessity to feel connected with other people, peers, instructors, and the institution. In distance learning, communication instruments, collaborative exercises and institutional support systems determine this aspect (Lopez-Garrido, 2023).

Figure 2.4 Self-determination Theory



Source: (Lopez-Garrido, 2023)

The advantages of SDT are that it has a high explanatory power in explaining the motivation, satisfaction, and persistence of students. As shown by Deci (2022), autonomy-supportive education contributes to increased levels of intrinsic drive and learning. Nevertheless, the theory has its shortcomings. Lopez-Garrido (2023) criticizes SDT due to its western-centric assumptions stating that the concept of autonomy can have different forms in collectivist cultures. Also, most of the empirical studies are still focused in the traditional or Western learning environments, which

restricts their generalisability to other cultures and digital contexts. Concerning this study, SDT offers a good theoretical perspective that can be used to explain the decisions made by students in enrolling in online degree programmes. Online learning is flexible and self-paced, which is why it coincides with autonomy, competence can be viewed in terms of perceived quality of the service delivery, including teaching effectiveness and academic support, and relatedness can be seen through the quality of interaction with peers and institutions (Lopez-Garrido, 2023). This study has fulfilled one research gap by studying the interaction between motivational needs and service quality to determine the influence of motivation needs on student satisfaction and decision-making in online higher learning education.

2.5.2 Institutional reputation and students' perception of service quality for online programs

Institutional reputation is the overall evaluation of the credibility, quality, and trustworthiness of an institution, which are created over time through stakeholders due to the past performance, the values announced, and delivery of services (Bakrie, 2019). The reputation in higher education is perceived academic quality, service reliability, outcomes of graduates, and institutional integrity, which serve as quality indicators in the context where direct quality is challenging, like online education (Hassan, 2020). Perception is closely connected to the concept, which implies the subjective process by which people interpret and give meaning to the information and experiences (Schiffman and Wisenblit, 2019). When it relates to the educational setting, students are not only influenced by the real service experience, but also have reputational impressions that include rankings, institutional branding, and peer recommendations.

It is common knowledge among institutional reputation that a reputation is a decisive factor on how students perceive the service quality in online education and consequently seek their satisfaction and loyalty. As Bakrie (2019) shows, the quality of the services delivered improves

the reputation of the institution, and this aspect boosts student loyalty in online learning settings. The analysis shows the importance of the consistency of academic delivery, the stable digital infrastructure, and responsive support services in reputational capital. Although the results developed by Bakrie (2019) can be used to suggest a strong causal connection between quality and reputation in the context of services, the study is majorly focused on the post-enrolment outcomes, but it does not provide much information concerning the initial programme selection among students.

On the same note, as Hassan (2020) points out, administrative efficiency and research support indirectly affect student satisfaction by means of institutional reputation. Though it expands the scope of knowledge beyond the services related to academics, the research takes an institutional-level angle and does not investigate the way students perceive reputational cues during the decision-making process in detail (Bakrie, 2019). Both articles are based on cross-sectional designs as well, which restricts them in terms of being able to find out dynamic change in perception over time.

Although it establishes the mediating factor of institutional reputation, the literature does not provide any context-specific information on the selection of online programmes, especially in the context of the higher education system in Scotland (Hassan, 2020). The research is thus relevant to the existing gap in the available literature as it focuses on how services quality and institutional reputation together influence the perception of students and their decision-making process on the online education market in Scotland, going beyond the outcomes of satisfaction and loyalty.

2.5.3 Strategies to use by online education providers adopt to increase service quality to attract more students

Improving the quality of services is a strategic goal that online education providers have to improve to attract and maintain customers in increasingly competitive online markets. Pham (2018) notes that a high level of visibility of the system and the quality of contacts play a crucial role, and in his article, he proves that the design of the platform should be intuitive, information should be transparent, and students should be able to contact the service in a timely manner, as these main factors will increase their satisfaction with service quality (Sutiah, 2024). The analysis also shows the role of learning management systems that are easily available and the interaction between the instructor and the student in minimizing uncertainty and creating trust. Nevertheless, the approach adopted by Pham mainly focuses on the institutional support mechanism and it does not put a lot of consideration on how the individual learning preferences as well as the cultural expectations of students contribute to quality perceptions.

On the contrary, Sutiah (2024) concentrates on the student engagement and the adaptive technology in the process of personalised learning. The research proves that learning analytics, personalised content delivery, and interactive online tools promote learner autonomy and satisfaction. One of the main strong points of this approach is that it is in line with the modern learner-centred pedagogies. However, Sutiah (2024) is less concerned with organisational processes and long-term innovation strategies that are critical to maintaining the quality of the services improved in the dynamic online setting.

Although these are their contributions, both studies have significant limitations. Pham (2018) and Sutiah (2024) do not sufficiently discuss the necessity of constant innovation in the sphere of online education, especially regarding the changes in the expectations of students and the

development of new technologies. Also, both analyses pay little attention to the cross-cultural factors that determine the perception of the quality of the services, which is particularly important in online learning where the groups of students become more diverse.

Moreover, the relevance of these results to the situation in the higher education of Scotland has not been pursued. High quality assurance systems, governmental accountability systems, and mixed cohort of students in Scotland require context-based approaches. As such, the study fills a major gap in that it combines both the technological and human-centred approach, but it also clearly includes the aspect of cultural relevance in service quality design. In that way, it offers an overall framework in which Scottish online education providers can improve the quality of services and increase the number of students.

2.6 Conceptualization

2.6.1 The relationship between reliability and satisfaction in studying online

The concept of student satisfaction in online education has been under widespread analysis concerning the service quality with service reliability and dimensions commonly being identified as the predictors. Sumi (2021) used the SERVQUAL model to study the effect of the dimensions of service quality namely responsiveness, assurance, and empathy on online student satisfaction. The service quality dimensions were the independent variables in this research, and student satisfaction was used as the dependent variable. The results indicated that responsiveness ($b = 0.367$, $p < 0.01$), assurance ($b = 0.284$, $p < 0.01$), and empathy ($b = 0.252$, $p < 0.01$) were significantly affecting the satisfaction with the model explaining 63% of the variance ($R^2 = 0.63$). One of the greatest advantages of the study is its high level of quantitative design and excellent predictive power. But its use in a non-UK context restricts its application to the higher education system in Scotland, which has different regulation and quality assurance systems.

On the same note, Rifa (2021) investigated independent variables such as institutional support and the use of technology, whereas the perceived satisfaction and engagement of students were the dependent outcomes of online education. The research determined that there was a moderate positive correlation between usability of technology and student interaction ($r = 0.45$, $p < 0.05$). Although the qualitative methodology offered the deep contextual information about the experiences of students, the absence of the large-scale quantitative validation limits the validity and generalisability of the results.

Taken together, both articles prove the truth of the fact that the quality and reliability of the services are very important factors of student satisfaction in online learning. Nevertheless, none of them explicitly looks at how the factors affect decision making processes of students especially within the context of the growing online education in Scotland. This indicates the existence of a research gap, which justifies the necessity of context-based research in the determination of the relationship between service reliability and satisfaction and enrolment decisions in the context of Scottish online higher education.

2.6.2 The relationship between responsiveness and satisfaction in studying online

Responsiveness of services has always been mentioned to be an important factor contributing to student satisfaction in online learning. Sumi (2021) studied the correlations of the dimensions of service quality and student satisfaction through a SERVQUAL-based model. Service responsiveness was taken as an independent variable and student satisfaction was a dependent variable in this study. The results showed that timely feedback, prompt support, and effective communication ($b = 0.367$, $p < 0.01$) was a key predictor of satisfaction, which means that responsiveness is a primary contributor to the development of positive online learning processes. The strength of the study is its solid quantitative method and a high level of a fit of the whole

model. Nevertheless, the study was carried out in Indonesia, which limits the applicability of the study in the Scottish context of higher education that has different institutional expectations, norms and student expectations.

In the same manner, Idkhan (2023) examined the quality of digital learning in the post-pandemic period concerning technical support and system responsiveness as independent variables and student satisfaction as the dependent outcome. The research indicated that the variables of technical support and satisfaction were strongly positively related ($r = 0.59$, $p < 0.01$), supporting the fact that responsive support systems are relevant in online education. Although the results have been useful, the fact that the correlational analysis is used without any strong multivariate model makes it impossible to conclude on the comparative importance of responsiveness to other service quality dimensions. Altogether, these two researches prove that responsiveness in services is one of the main factors of the student satisfaction in online learning. Nevertheless, they do not investigate specifically how responsiveness affects the process of decision making among students in undertaking online programmes especially in the Scottish higher education scenario. This demonstrates a research gap that will be filled by the present research.

2.6.3 The relationship between empathy and satisfaction in studying online

The importance of service empathy as an essential element of service quality determining the satisfaction and loyalty of students in online education is recognised. Munoz (2022) examined the effects of perceived quality of service on the loyalty of students in an online learning context. In this research, the institutional reputation and the perceived value were the independent variables, whereas the student loyalty was the dependent variable. Findings showed institutional reputation ($b = 0.41$, $p < 0.01$) and perceived value ($b = 0.38$, $p < 0.01$) were good predictors of loyalty and the model accounted 64 percent of the variance ($R^2 = 0.64$). One of the strengths of the study is

that it is very explanatory and thus offers empirical data that the students become more committed to services that are based on empathy and values.

On the same note, Sumi (2021) studied the role of empathy in the SERVQUAL model where empathy is the independent variable and student satisfaction is the dependent variable. The research established that caring communication, like being able to know the needs of students and giving them individual attention, is very helpful in enhancing satisfaction. Nevertheless, the study was not regionally specific making it difficult to apply to the online higher education scenario of Scotland. The two studies emphasize the value of empathy in online education, however they do not focus on the effects of empathy in online education decision-making by students before they enrol on online programs in Scotland. This identifies a significant research gap that the current study will fill, and the relation between service empathy and enrolment decision and satisfaction in the Scottish context is directly connected.

2.6.4 The relationship between assurance and satisfaction in studying online

One aspect of service quality that imparts trustfulness, competence and reliability on the students is service assurance which determines their satisfaction and loyalty towards online education. Tj (2020) utilized regression analysis to study the role of service quality on satisfaction and loyalty of students. Students satisfaction and loyalty were the dependent variables, whereas assurance and empathy existed as independent variables in this study. The results showed that assurance ($b = 0.42, p < 0.01$) and empathy ($b = 0.36, p < 0.01$) had a significant impact on the satisfaction, defining the 59 percent of the variance ($R^2 = 0.59$). The research is empirical in justifying assurance in building student trust and satisfaction. Nevertheless, it did not concentrate much on the consequences of the loyalty and did not consider the pre-enrolment decision making process

and was carried out outside the United Kingdom which means that it is not all applicable to the context of the Scottish online education.

Likewise, Sumi (2021) considered assurance as an independent and student satisfaction as a dependent variable, which found significantly but low effect ($b = 0.16$, $p < 0.01$). Although both articles affirm that assurance is an essential factor of satisfaction, they do not consider how assurance can be used to determine the initial online program choice of the students. Also, both articles do not reflect on the regional uniqueness of the higher education system of Scotland. The gap in the research highlights a necessity to study the role of assurance in influencing pre-enrolment choices and satisfaction of online learners in Scotland.

2.6.5 The relationship between tangibles and satisfaction in studying online

Service tangibles, which include the physical and digital elements of online education, including interface design, visual attractiveness, and platform accessibility, are of significant importance in determining student satisfaction. Rofi (2021) examined how service tangibles impact the student satisfaction in online learning and considered service tangibles as the independent variable, and student satisfaction as the dependent variable. The researchers found that there was a strong and positive correlation ($b = 0.48$, $p < 0.01$) and that the model accounted 57% of the variance. The primary advantage of the study is the isolation of tangibles as a independent element of satisfaction, which indicates its usefulness in practice in terms of platform design and user experience. Nevertheless, the study was contextually restricted to the area of one region and as such, it limits the generalisability of the results to other systems of education.

Equally, Sumi (2021) affirmed that the concept of tangibles is a major influence on student satisfaction ($b = 0.43$, $p < 0.01$), which supports the value of the digital space designed well. Although both papers confirm the applicability of the concept of tangibles in online satisfaction,

the two studies fail to explain the impact of the concept of tangibles in the pre-enrolment choices of students undertaking online programs. Besides, both studies do not take into account the Scottish higher education context, whereby institutional platform expectations and student expectations might vary. This gap identifies the necessity of the research that examines the impact of service tangibles on the satisfaction level and decision-making process among the Scottish online learners.

2.6.6 Literature gap

In existing literature, interaction quality and online education can have been found to highly influence customer satisfaction and retainment due to the factors of reliability, responsiveness, and empathy, assurance, and tangibles. (Sumi, 2021; Rofi, 2021; Tj, 2020; Munoz, 2022). Similarly, the necessity of administrations' reputation as a mediating factor and the importance of usable technology in determining the perception of quality and student engagement have been well documented (Bakrie, 2019; Hassan, 2020; Javaid, 2022). Moreover, theoretical models largely adopted in explaining relationships between service practice components and student outcomes incorporate SERVQUAL models and the technology acceptance model (Toscano-Hernández, 2024; Charnes, 2020).

Nevertheless, there is a very limited understanding of these factors from a context-specific perspective in the higher education sector in Scotland. Most of the empirical studies have been undertaken in a non-UK context, the United States, and congregates in the European Union to which, in specific instances, create problems with respect to how the findings may be applied to learners in an online learning environment. By contrast, closer knowledge about the influence of these factors such as online service quality on student satisfaction and loyalty would be beneficial in shedding more light on the affect on pre-enrollment decision-making in online program

selection. Even less explored is the location interaction of technology, institutional reputation, and student beliefs within Scotland's unique area of higher education (Moisely, 2024; Lopez-Garrido, 2023).

So, it seems clear that the key service quality factors that drive the choices of Scottish students for online degree programs certainly need to be authentically researched to fulfil their expectations on satisfaction and tying up with the enrolment decision.

2.7 Chapter conclusion

In this review, various explanations have given the idea of service quality in the context of online learning. The central idea was to view the multidimensionality of service quality and how it influences or impacts student satisfaction, loyalty, and decision-making. There are those key dimensions of service quality reliability, responsiveness, empathy, assurance, and tangibles that have been essentially gained along with education of perceived value (Sumi, 2021; Rofi, 2021; Tj, 2020). The review continued its search for factors such as institutional reputation, technology acceptance, and Industry 4.0 integration, the last door into the (national) contemporary higher education setting, to illustrate how these factors interact with service quality to shape students' experiences and engagement (Bakrie, 2019; Hassan, 2020; Javaid, 2022; Charnes, 2020).

In contrast to much worldwide studies, there are still gaps that need filling. Most of the studies have been conducted outside the United Kingdom, thereby limiting their applicability to the higher education sector in Scotland. Even though the effects of service quality on satisfaction and loyalty are well-documented, service quality's impact on pre-enrolment decision-making for online programs is less well-documented. The interplay among technological tools, human interaction, and culture on the development of service quality perception has also been under-explored (Lopez-Garrido, 2023; Moisely, 2024).

Hence, it is rational to argue that this study was able to lay out the need for the development of the current study which seeks to bridge these gaps by investigating service quality dimensions and institutional reputation in Scottish students' selection of online programs, satisfaction, and overall experience, thus providing highly specific findings in a particular context.

CHAPTER 111: METHODOLOGY

3.1 Overview of Research Problem

The main research question of the study is the absence of context-specific knowledge of the factors of service quality, which determine students to choose the online degree programmes in the higher education field in Scotland. Although online education has grown very fast since the COVID-19 pandemic, it remains a challenge in making sure that the Scottish universities synchronize their online delivery with the changing expectations of students. The available empirical studies have recognized the dimensions of service quality, including the institutional reputation, quality of digital platforms, responsiveness, teaching quality, and career support, as meaningful predictors of student satisfaction and enrolment (Gopal, 2021; Lee, 2022). Nevertheless, these results are mostly based on international or UK-wide research and are not representative enough regarding the peculiarities of higher education in Scotland, financing systems, and student population.

There is evidence that there is increasing dissatisfaction among online students, and 41% of the United Kingdom students have claimed poor quality of digital platforms and 37% of them have claimed that they lack career support (Jisc, 2023). In Scotland, the level of student satisfaction with digital learning is only 68% with significant discrepancies in academic support and engagement (Champa, 2024; SFC, 2025). Nevertheless, empirical studies that investigate the particular factors of service quality that have the strongest influence on the pre-enrolment decision-making of Scottish students are relatively few.

The research problem, therefore, focuses on the issue of how the dimensions of service quality can determine the student selection of online degree programmes in Scotland, thus providing an effective, student-centred approach to online education.

3.2 Operations of Theoretical Constructs

The operationalisation of theoretical construct is an important process in the verification that abstract constructs are operationalised into measurable variables that can be empirically tested. The theoretically critical constructs of the study are the dimensions of service quality and student satisfaction in online education, which are based on the SERVQUAL framework, and are supported by literature on decision-making and satisfaction.

The operationalisation of service quality consists of 5 independent constructs that include reliability, responsiveness, empathy, assurance, and tangibles. Measuring reliability is done by using items that are used to measure consistency of delivery of services, accuracy of information, and reliable online systems. Operationalisation of responsiveness is carried out through indicators of swift response, promptness of technical response and accessibility of academic staff. Empathy is quantified based on individualised attention, the perception of the students, their understanding and emotional support. The operationalisation of assurance is done based on the indicators of competence, trust, confidence to the assessment processes and institutional credibility of the staff. The tangibles are quantified in visual attractiveness, usability, and functionality of the digital platforms and learning interfaces. These constructs are quantified using several items on a five-point Likert scale to guarantee content validity and internal consistency as it has been suggested in research of service quality.

The dependent construct is student satisfaction, which is operationalised as a general assessment of overall satisfaction with online learning as perceived by the students with regards to teaching quality, support services and perceived value of the programme. The established reflective indicators of affective evaluations and cognitive evaluations are used to measure satisfaction.

One major drawback of this operationalisation is that it depends on self-reported perceptions thus the possibility of implementation of response bias. Nonetheless, the validated measures based on SERVQUAL increases consistency and comparability with the existing studies. In general, the operationalisation is very close to the conceptual framework and allows testing the relationships between the hypotheses strongly in the environment of the Scottish online higher education.

3.3 Research Objectives

Main Objective

To investigate the key service quality factors in high education that faith the students' decisions when selecting online degree courses in Scotland.

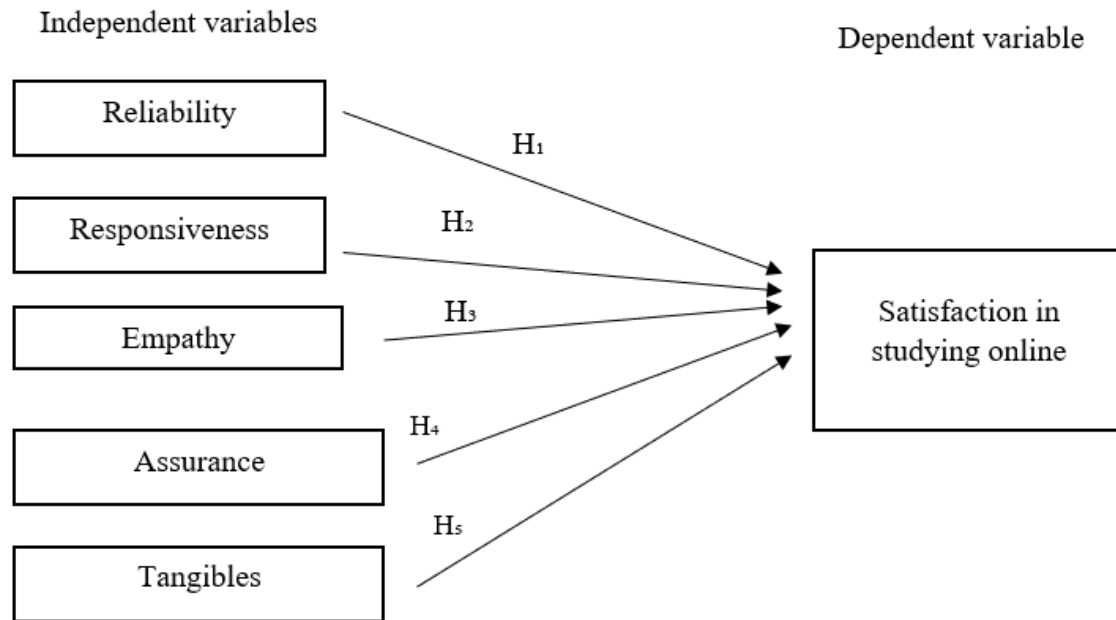
Sub research objectives

1. To identify the key factors of service quality which influence decisions when selecting online programs in Scotland.
2. To indicate what role does the institution's reputation play in shape in the students' perception of service quality for online programs.
3. To evaluate how the different service quality factors influence upon decision making process of the students enrolling to online programs.
4. To identify how does service quality impacts upon student satisfaction in online education in Scotland.
5. To identify the strategies online education providers could adopt to increase service quality and attract more students.

3.3.1 Conceptual framework and Hypothesis

The conceptual framework is created using the empirical information.

Figure 5 3.1 Conceptual framework



Source: researcher's work

Hypotheses

H₁: There is a relationship between reliability and satisfaction in studying online degree courses in Scotland.

H₂: There is a relationship between responsiveness and satisfaction in studying online degree courses in Scotland.

H₃: There is a relationship between empathy and satisfaction in studying online degree courses in Scotland.

H₄: There is a relationship between assurance and satisfaction in studying online degree courses in Scotland.

H₅: There is a relationship between tangibles and satisfaction in studying online degree courses in Scotland.

The five hypotheses (H1-H5) were based on the theoretical ground of SERVQUAL framework (Parasuraman et al., 1988; Zeithaml et al., 1990), which theorised the quality of service as a multidimensional construct of reliability, responsiveness, empathy, assurance, and tangibles. The application of SERVQUAL in the research on higher education has proven to be broadly utilized to explain the relationship between perceived service quality and satisfaction, behavioural intentions, thus suitable to use in this research.

H1 was being based on existing literature that has put reliability among the fundamental expectations of educational services and is especially important in the online learning context where the stability of the system, the reliability of the content delivery process, and the reliability of the assessment procedures are paramount (Hassan, 2020). Research has revealed that trustworthy sites and uniformity of curriculum are influential motivators of student satisfaction.

H2 and H3 are supported by literature that suggests the need of human interaction in digitally mediated learning. In response to students, such as in a timely manner, responsiveness has also been attributed to increased satisfaction and participation in online education (Lee, 2022). Empathy, though less prevalent, has also been linked to enhanced motivation of learners and perceived institutional care (Stankovska, 2020).

H4 is substantiated by the fact that research found assurance-trust, institutional credibility, and instructor competence to be one of the crucial determinants of satisfaction and enrolment in online programmes that have higher perceived risk (Gopal, 2021; Abbas, 2023). Lastly, H5 is based on the technology acceptance and e-learning research, which shows that good-quality digital

infrastructure and learning resources (tangibles) have a positive effect on satisfaction and further usage of online education platforms (Moraes, 2022).

3.4 Research Design

Research philosophy

Research philosophy is a set of beliefs and assumptions that determine the way in which knowledge is created, perceived, and tested during a research study (Zukauskas, Vveinhardt and Andriukaitiene, 2018). It has an effect on the selection of research techniques, data gathering and analysis processes. Positivism, interpretivism, post-positivism, and pragmatism are the key research philosophy. Positivism presupposes the objectivity of reality and the possibility to find it and quantify it with the help of observed and quantifiable data, usually measured with the help of structured surveys and statistical analysis (Zukauskas et al., 2018). Interpretivism is based on subjective meanings and social situations, and it is aimed at the comprehension of the experience of people in terms of qualitative approaches. Post-positivism does not reject reality but it is only able to learn about it in a limited way because human prejudice and circumstances do not permit the full comprehension of reality. Pragmatism is problem centered in its approach, holding the view that the research question should be the focus on which to consider the best methods to use (Saunders, Lewis and Thornhill, 2019).

The research philosophy of this study is pragmatic because it is based on the objective dimensions of service quality (i.e., reliability, responsiveness, and tangibles) along with subjective student satisfaction in online higher education. The application of both quantitative techniques (quantitative survey based on SERVQUAL and statistical analysis) and the qualitative insights provided by the secondary source of literature should be supported by pragmatism to allow the researcher to gain a complete picture of the research issue (Zukauskas et al., 2018). What is most

beneficial about pragmatism is its methodological flexibility and real world applicability. Nevertheless, the essential drawback is that a mixed-method design is time-consuming and difficult to conduct (Saunders et al., 2019). Nevertheless, pragmatism is chosen due to its suitability to the aims of the study and increasing the level of validity and generalizability of the results to the online education environment in Scotland.

Research approach

A research approach means a logical plan, according to which the study goes between theory and data collection and analysis to make the research objectives, methods, and outcomes match (Saunders, Lewis and Thornhill, 2019). Three primary research methods include deductive, inductive and abductive. Deductive method starts with the current theories or models and comes up with hypotheses which are proven and examined using empirical data. It is normally identified with quantitative studies and systematic procedures. In contrast inductive approach starts with observations or data gathering and constructs new theories or patterns on the findings, commonly through qualitative methods (Dudovskiy, 2023). The abductive method is a hybrid of deduction and induction and it enables the researcher to go back and forth between theory and data in order to explain unexpected results (Saunders et al., 2019).

The proposed study uses deductive research approach because the researcher wants to test and prove the existing theories, especially the SERVQUAL model, in the context of online higher education in Scotland. The hypotheses have been developed on the basis of the previous empirical literature and they are tested using the quantitative data of surveys held among online students.

Objectivity, clarity, and replicability are the primary advantages of using a deductive approach because the method uses predetermined variables and statistical testing (Dudovskiy, 2023). One of the major weaknesses, however, is that it lacks the ability to be flexible because it may fail to recognize the new factors that are not addressed by the existing theories. Although this can be considered a limitation, the deductive methodology is suitable in that it directly contributes to the purpose of the research in that it allows one to systematically test the dimensions of service quality and their impact on student satisfaction in online degree programmes.

Research design

Research design entails the general construct that will inform the process of planning, performing, and analysing a research in order to respond to the research questions in a systematic and effective manner (Sileyew, 2019). It offers a clear framework of the connection between data collection techniques, measurement, and analysis that makes the results of findings reliable and valid. There are a number of research designs that are commonly applied in the social science research. Exploratory research design is applied when a problem is not properly defined and wants to have some preliminary knowledge and ideas. Descriptive research design is based on the description of features, behaviours or perceptions of a population in a systematized form. Explanatory (causal) design aims at establishing cause and effect relationships involving variables. Controlled conditions in experimental design are used to test causal relationships, whereas the correlational design is used to investigate the strength and direction of relationships between variables without controlling them (Sileyew, 2019).

The research design used in this study is a descriptive one since the research seeks to quantify the levels of perception and satisfaction of students with the dimensions of service quality in online higher education in Scotland. The descriptive design is suitable since it will enable the researcher

to capture and quantify opinions on the dimensions of SERVQUAL such as reliability, responsiveness, assurance, empathy, and tangibles in a structured questionnaire. The main advantages of this structure are that it is simple, cost-effective, and can be used on large samples, which is why it is suitable in research with a survey (Sileyew, 2019). A big weakness however is that it is not able to determine causal relationship between variables. Nonetheless, the descriptive design is chosen as it is the sole design that is aligned with the research aims based on finding and evaluating the service quality aspects that affect student satisfaction and decision-making in online education.

Research strategy

Research strategy is the logical plan, which describes how data will be gathered, analysed and interpreted to respond to the research questions according to the research philosophy and approach (Prenger, 2017). Ordinary research methods are survey, case study, experiment, grounded theory, ethnography and action research. The survey strategy is dedicated to gathering homogenous data of a large group of people, case studies are devoted to the in-depth analysis of one or a small number of cases, experiments are used to test the causality between two variables in controlled conditions, grounded theory develops a theory by means of data, ethnography investigates social phenomena in natural environments, and action research is focused on resolving practical issues by using cumulative interventions (Prenger, 2017).

This research will use a survey research approach because it best fits to measure the level of satisfaction of students with online education through SERVQUAL model. The primary advantages of the survey plan are that it is possible to gather an extensive and heterogeneous sample, quantification of data is not difficult, and it can be analyzed statistically (Prenger, 2017). Its weakness, however, is the fact that it is limited by the depth and situational knowledge about

the individual experiences. The choice of the survey strategy is justified by the fact that it is an effective strategy that serves the purpose of the research by determining the patterns and relationships that exist between dimensions of service quality and student satisfaction in online learning.

Research choice

Research choice can be defined as the choice of approaches to data collection and data analysis in a manner that will be effective in answering the research questions (Vaughn, 2020). The key research choice types are quantitative, qualitative and mixed methods research. Quantitative research is based on the contribution of numerical data and statistical analysis in order to test relationships between variables, providing objectivity and generalisability. Qualitative research addresses subjective experiences and meanings using non-numerical data in detail and giving contextual insight. Mixed-method research is a quantitative research that incorporates a qualitative research to provide a deeper insight into the research problem (Vaughn, 2020).

This paper assumes a mixed-method research selection. The quantitative aspect utilises the model of SERVQUAL to assess the satisfaction of students towards online studies, whereas qualitative data are obtained via the secondary literature to put the results in perspective and interpret the data. The most important advantage of this method, in turn, is that it combines statistical data with the general knowledge and makes the findings more strong. Nonetheless, one of the most significant drawbacks is that mixed methods may be time-consuming, and need specific data combination (Vaughn, 2020). Nevertheless, it is chosen because it is the most appropriate to address the research goals since it allows establishing the gaps in service quality and guide the recommendations into practice.

Time horizon

Research time horizon is a time frame within which information is gathered within an investigation that assists in identifying whether the research consists of one point in time or it tracks changes across a long time (Chat, 2016). There are two major ones; cross-sectional and longitudinal. The cross-sectional research involves gathering data at one point in time, and it may give a picture of perceptions, current behaviour, or condition. Longitudinal research gathers data throughout a long period and traces the changes, trends, or developments and it provides the information about the cause and effect relationships (Chat, 2016).

In the present study, the cross sectional time horizon will be chosen since the study will be used to measure the satisfaction of students with online learning at a particular point in time. The benefits are that it is economical, time-saving, and manageable as opposed to longitudinal research. The weakness though is that it fails to bring out variations or trends over time. Nonetheless, the cross-sectional design is suitable because it will enable the acquisition of timely and pertinent data to recognize gaps in service quality and make viable recommendations to the Scottish online higher education

3.5 Sampling technique

The sampling technique art term describes how a subset of the large population is chosen to take part in a study and guarantee that the sample can represent the population in general (Taherdoost, 2016). There are two broad ways of sampling, which include probability and non-probability. Such probability sampling techniques as simple random sampling, systematic sampling, stratified sampling, and cluster sampling are also present in which the members of the population have a known and non-zero probability of being selected. The non-probability sampling encompasses convenience sampling, purposive sampling, snowball sampling, and quota sampling, in which the

choice is not random, and not any two people have a similar opportunity to be selected (Taherdoost, 2016).

In this study, convenience sampling will be chosen, and the focus is on students who are close and are currently taking online learning programs. Pros are speed, usefulness, and the low cost, whereas the cons are low generalizability because of possible sampling bias. This notwithstanding, it is suitable in gathering timely information on perceptions and student satisfaction with online education, that can be used to give viable advice to the Scottish higher education providers.

3.6 Population and Participant Selection

Research population covers the whole category of people who are applicable to the study, who are those in whom the conclusions will be drawn (Thomas, 2023). The population of this research will be students in the online higher education programs in Scotland. SFC Statistics (2022) state that there are around 332,815 students studying higher education every year, and only 17% of them, which is also 56,579 people, have chosen online courses (Statista, 2024). This is the target population, which underlines a narrow group to understand perceptions of the quality of services in online learning.

A suitable sample size is important in ensuring a statistically sound and representativeness study with a balance of time and resource allocation constraints (Thomas, 2023). A sample size of 382 students is considered satisfactory using a confidence level of 95 percent and a margin of error of 5 (Calculator, 2025). Although meaningful analysis can be done with this sample, it may not represent the entire diversity of the population especially in terms of demographic and institutional variance. However, it offers a useful and solid model that can be used to evaluate service quality variables on student satisfaction and decision-making in the online higher education setting in Scotland.

3.7 Instrumentation

The main tool of the proposed study is a structured questionnaire, which will help gather information about the perception of quality of service and satisfaction of the students in online education in Scotland. The questionnaire was selected as the only tool since it can enable the systematic and standardized collection of data with a relatively large sample, which will be compared with the other participants and will therefore be quantitatively analyzed with the help of such statistical programs as SPSS (Pierce, 2024). The ease of administration, less resource need and direct correspondence to the objectives of research, which is to consider the factors of service quality relative to the SERVQUAL model.

The questionnaire is divided into three major sections. Part 1 collects demographic data and basic background data, including gender, age, frequency and time spending online, along with students perceptions of the institutional reputation. Part 2 is rooted in the dimensions of SERVQUAL namely reliability, responsiveness, empathy, assurance, and tangibles where a 5-point Likert scale is used to compare the experiences of the students. Part 3 measures general satisfaction with online courses, which correlates the perception of the quality of services with the results of satisfaction.

The merit of this tool is the possibility to obtain measurable and similar data, which is then simple to test hypotheses and regression analysis. The possible response bias and lack of depth of knowledge of subjective experiences are limitations. However, the questionnaire is very relevant because it directly operationalizes the independent variables (dimensions of quality of service) and dependent variable (student satisfaction) which underlies the purpose of the study to investigate the effect of service quality on student decision-making in online higher education of Scotland.

3.8 Data Collection Procedures

Primary and secondary sources have been used in data collection to ensure that the research objectives are fully covered. The structured questionnaire structured on the SERVQUAL model will be used to collect primary data and evaluate the perceptions of online learning students regarding the quality of service and their satisfaction with the service in Scotland (Jain, 2025).

The final version of the questionnaire will be assigned to 382 subjects sent through Google Forms, and the links will be distributed in WhatsApp and email. A convenient sampling will be used to select the participants with a particular focus on students who are currently taking online programs. Although this is a cost-effective technique and can be used to carry out a collection of data quickly, it can result in possible bias because of non-random selection.

To support the research with the required contextual and theoretical background, secondary data will consist of high quality journal articles that were published within the past 20 years (2000 to 2025) and can be accessed in academic databases (Sebastian-Coleman, 2013). This information will assist in the analysis of the relationship between the dimensions of service quality and student satisfaction that will complement the quantitative results.

3.8.1 Data Management

The management of data is a methodical procedure of being able to sort, store, and preserve available data as it is accurate, safe, and accessible through the whole research process (McGilvray, 2021). In the present research, any primary data gathered by use of questionnaires will be stored under a high level of confidentiality in password-only digital files, meaning that the answers given by the participants will be confidential and remain anonymous. The respondents will be given a special code and no personal identifiers will be involved in analysis, which will also comply with

the ethical standards. In order to avoid loss of data, copies of the dataset will be kept as backup files and only the researcher will be allowed to access it.

The processes of data cleaning shall be applied to determine and rectify the incomplete, inconsistent, or duplicate responses prior to analysis. The quantitative data will be coded and inputted into the SPSS to analyze the data statistically and the secondary data will be systematically classified to assist in the literature triangulation. Good data management guarantees reliability, validity, and replicability of the research results as well as protection of the information of the participants.

3.9 Data Analysis

Data analysis is defined as the methodical study of received information to determine patterns, connections and lessons regarding the research goals (Vandever, 2020). In this research, the questionnaires will be used to gather the quantitative data onto which the SPSS software will be applied. The first stage will be cleaning of data, coding data, and reliability and validity test to be carried out to verify accuracy and consistency of the responses. Descriptive statistics (mean, standard deviation, frequency distributions) will be used to describe the demographic data and the general level of satisfaction.

To test the hypothesis concerning the interrelations between the independent variables (dimensions of service quality reliability, responsiveness, empathy, assurance, and tangibles) and the dependent variable student satisfaction in online courses, inferential statistical procedures will be applied: regression analysis, correlation analysis, and analysis of variance (ANOVA). Tables, charts and graphs will be used to provide results to be understandable. This analytical exercise will be useful

in determining some of the key service quality factors that influence student satisfaction and guide the recommendations on how the online education in Scotland can be enhanced.

3.9.1 Reliability and Validity of the Study

Reliability of the Study

The reliability can be defined as the consistency and stability of the research instrument in measuring whatever it is supposed to measure (Sambodhi, 2025). In the present research, the reliability will be guaranteed due to the application of a structured questionnaire, according to SERVQUAL model that has been tested extensively in research on service quality and student satisfaction.

The alpha of Cronbach will be computed as the measure of internal consistency with a value above 0.7 being acceptable (Sambodhi, 2025). High reliability is used to guarantee that the results can be replicated under the same circumstances, and it can be said that the results are based on real perceptions of the participants and not a chance event. There is however a possibility that reliability will be affected by how questions will be interpreted by the respondents and also online self-administered survey will introduce a certain degree of variation in answers. Irrespective of these restrictions, proper pre-testing and statements of items will increase the accuracy of the data that will be used to measure the dimensions of service quality and student satisfaction.

Validity of the Study

Validity is a term to explain the level to which the research tool measures what it is supposed to measure (Sambodhi, 2025). Content validity in the proposed research will be accomplished through the design of the questionnaire based on the predetermined SERVQUAL framework, and

all five dimensions are represented, including reliability, responsiveness, empathy, assurance, and tangibles.

These dimensions will be evaluated through construct validity, which will evaluate the correlations of the service quality dimensions with overall student satisfaction that will be evaluated to ensure that the theoretical relationships are indeed empirical.

Moreover, 5-point Likert scale will give an accurate thought measure of the study participants. Among the limitations are possible bias due to self-reporting and cross-sectional nature of the data which may interfere with generalization. However, the systematic design, correspondence to the existing models, and the presence of solid pre-testing contribute to the validity of the study and include the credible information on the impact of the service quality on student satisfaction in online education in Scotland.

3.10 Research Design Limitation

In spite of its advantages, the research design has a number of limitations. To begin with, the research is entirely based on questionnaire, and this implies that there are no interviews or qualitative knowledge gathered to understand in-depth perceptions of students, which reduces the depth of the data. Second, the study is limited to Scotland, and it is impossible to generalize the results to other countries or cultural backgrounds where the system of online education and expectation of students are different. Third, the research utilizes the SERVQUAL model only, which, though popular, might fail to express all the online learning satisfaction factors, including motivation or technological engagement. Fourth, the cross-sectional design will capture data at a single point in time and, therefore, will not be able to capture how student perceptions may change over a time period as well as the impact of changing online education practices. Fifth, convenient

sampling is employed that could be subject to selection bias and restrict representativeness of the general population of online learners in Scotland.

3.11 Conclusion

Pragmatism was chosen as the research philosophy in this study to integrate both objective factors (dimensions of service quality) and subjective processes (perception of student satisfaction) as flexible in terms of mixed methods although time-consuming (Zukauskas, 2018). To ensure structure and objectivity, a deductive approach was chosen to test the existing theories such as SERVQUAL model, but the approach is less flexible (Dudovskiy, 2023). The survey plan allowed gathering quantitative information on a large group of students and making a wide generalization, but it might not be especially contextual (Prenger, 2017).

The choice of the mixed-method research combined both a structured questionnaire that would collect quantitative data and secondary literature that would provide more insight on the topic, compromising breadth and depth (Vaughn, 2020). Cross-sectional time horizon recorded the perceptions of students at a certain point, which is a fast and inexpensive method but does not provide the opportunity to trace the changes through time (Chat, 2016). Lastly, online questionnaires and secondary data were used to collect primary data through journals to make certain that they were relevant and reliable (Jain, 2025). Such systematic use of the research onion guarantees that the research goals, methods, and data analysis are in line with one another to the benefit of the strength and credibility of the study (Saunders et al., 2019).

CHAPTER IV: RESULTS

4.1 Introduction

The following section is a presentation of data findings that are generated as a direct result of analysing the responses received for the survey questionnaire that was circulated as part of this study. The chapter consists of individual sections of data analysis that represent specific aspects of the raw data that was acquired through the survey questionnaire. The chapter initially addresses reliability and validity and then moves to discuss descriptive data and ordinal data. The chapter further focuses on inferential statistics that is explicitly Analysed to interpret the degree of dependency between the variables shown in the conceptual framework. The chapter condenses all of the inferential statistics to address the hypothesis and lays the foundation for a detailed discussion of the data findings in line with the research aims and objectives of the study.

4.2 Reliability and validity of main survey data

The reliability test illustrates the good and satisfactory consistency of internal consistency within the measures scales used in this research. The results of the overall scale reliability Cronbach alpha = 0.773 show a high level of consistency of the questionnaire items themselves. This value is higher than the widely accepted value of 0.70, which proves that the tool is a reliable measure of underlying constructs of service quality and student satisfaction in online higher education.

Table 4.1 Reliability and validity

Scale Reliability Statistics		
	Cronbach's α	
Overall scale	0.773	
Item Reliability Statistics		

	Number of Items	Cronbach's α
Reliability	5	0.75
Responsiveness	5	0.756
Empathy	5	0.762
Assurance	5	0.745
Tangibles	5	0.754
Satisfaction in studying online courses in Scotland	5	0.653

Source: author's work based on SPSS

All service quality dimensions at individual construct level have strong reliability coefficients. The Reliability scale had a Cronbach's alpha of 0.750 whereas Responsiveness had 0.756, which meant that one could rely on the results even with different items that cover timely support and communication. The Alpha of the Empathy dimension is slightly higher at 0.762 indicating a strong coherence among the items of personalised support and understanding. In the same vein, the internal consistency of Assurance ($\alpha = 0.745$) and Tangibles ($\alpha = 0.754$) are both satisfactory, which allows stating that items that reflect institutional credibility and digital infrastructure are consistent to measure.

The Satisfaction in studying online courses in Scotland scale gave a result of a Cronbachs alpha of 0.653, which albeit a little lower than the rest of the constructs is within an acceptable range of social science research, specifically in exploration and perception-based studies. Generally, the results obtained validate the accuracy and validity of questionnaire as a measurement tool, which validates the strength of further statistical tests and enhances the trust of empirical findings of the study.

Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy, neither of which suggests that the data are inappropriate to proceed with multivariate analysis and each has a tolerable construct validity. The Test of Sphericity result by Bartlett gave the following values as Chi-square = $\chi^2 = 673$ with 15 degrees of freedom and a p value of less than 0.001 meaning that the correlation matrix is not an identity matrix. Such statistically significant finding shows that there are enough correlations between the items, which results in the suitability of the factor-based analyses and confirms the structural validity of the instrument.

Table 4.2 Bartlett's Test of Sphericity

Bartlett's Test of Sphericity

χ^2	df	p
673	15	<.001

KMO Measure of Sampling Adequacy

	MSA
Overall	0.721
Reliability	0.879
Responsiveness	0.708
Empathy	0.818
Assurance	0.749
Tangibles	0.720
Satisfaction in studying online courses in Scotland	0.642

Source: author's work based on SPSS

The results of the KMO also provide the evidence of the sampling adequacy at the overall and construct levels. KMO has a total value of 0.721, which is slightly above 0.60, which is the recommended minimum level of shared variance between variables. At individual construct, the sampling adequacy is excellent with Reliability (0.879), Empathy (0.818), and Assurance (0.749), Tangibles (0.720) and Responsiveness (0.708) are all in the acceptable to good ranges. The

satisfaction in online course study in Scotland construct entered a value of KMO of 0.642 which despite being relatively lower, is acceptable in social science research.

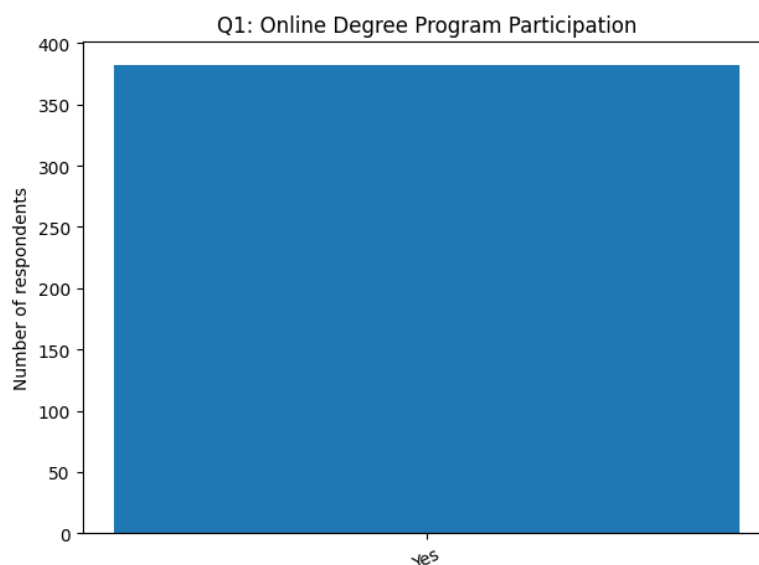
All of these findings support the validity of the measurement items as the valid representation of their respective constructs. The excellent KMO values and large Bartlett's test contribute to the belief in the structural integrity of the questionnaire and allows concluding that the questionnaire is appropriate in analysing service quality and student satisfaction in online higher education.

4.3 Ordinal data and Descriptive statistical results and interpretations

4.3.1 Ordinal data results

The following section presents ordinary data results that specifically gives an indication as to potential revelations with regard to the participants profile. Therefore, the ordinary data consists of standard demographic data as well as specific questions related to the uniqueness of online studies.

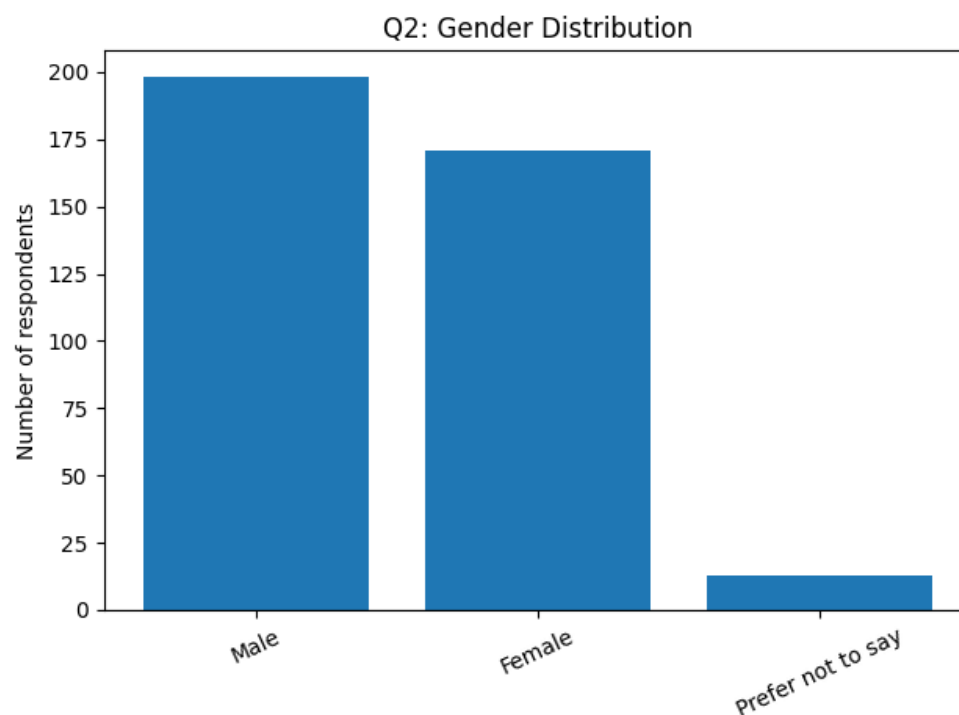
Figure 6 4.1 Q1: Online Degree Programme Partaking.



Source: author's work based on SPSS

This figure validates the fact that 100% of the respondents (N = 382) were pursuing online degree programmes in Scotland where most of the teaching was undertaken online. This is not surprising, because a filter question was used in the questionnaire to eliminate respondents who failed to address this requirement. The outcome will be a relevant and an appropriate population upon which all further analyses will be built which will enhance the internal validity of the study. The findings are precise because they limit the sample to students who have firsthand experience of online learning, which is a correct measure of perceptions of service quality and satisfaction within the field of online higher education in Scotland, which is the proper design of the study and the purpose of the research.

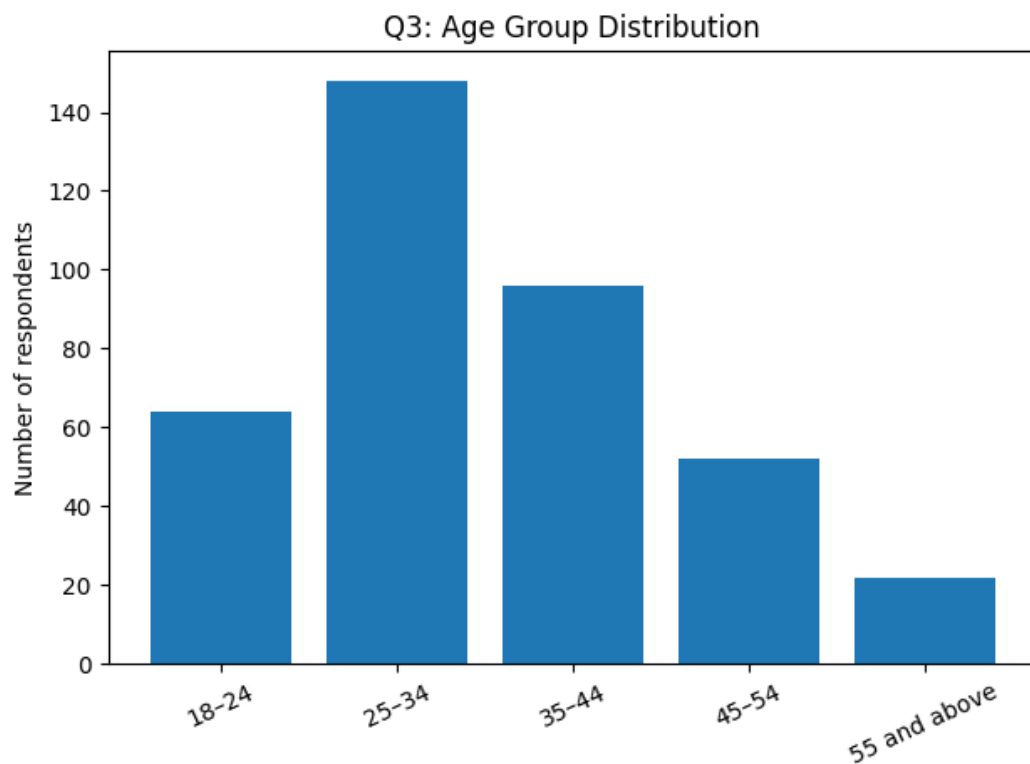
Figure 7 4.2 Q2: Distribution of Gender of the respondents.



Source: author's work based on SPSS

The gender issue is well represented with more or less the same proportion of the male participants and the female participants and the few who chose not to specify their gender. This even gender representation indicates that the perceptions of the quality of online service are not influenced by one gender group, which facilitates the inclusiveness and representativeness of the sample. This diversity increases the validity of the findings because according to previous studies, gender may affect preference to learning and satisfaction in online education. The distribution thus offers a great demographic basis on analysing service quality perception among a large student population.

Figure 8 4.2 Q3: Age Group Distribution of the respondents.

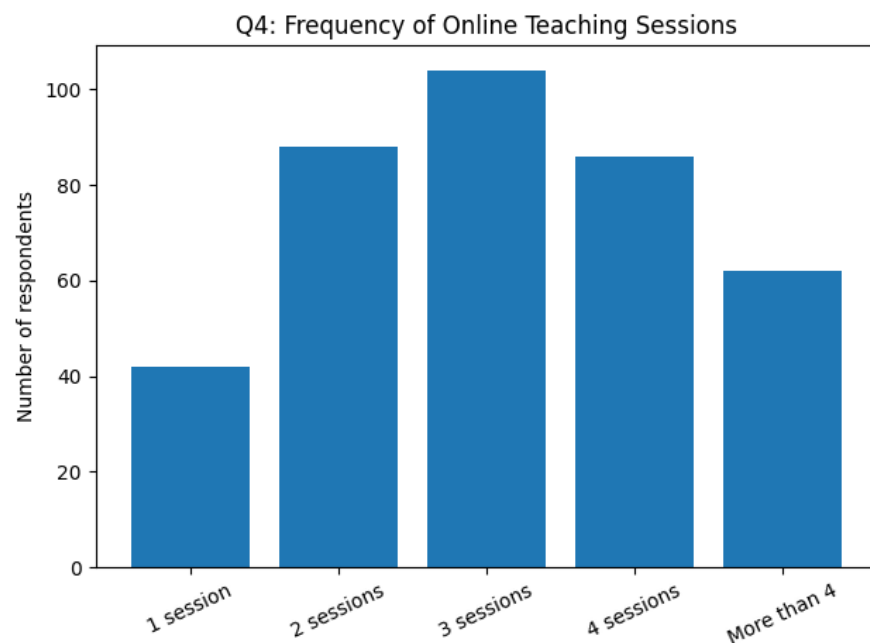


Source: author's work based on SPSS

The age distribution shows that most of the respondents are between the age of 25-34, 35-44 and this further reveals that the online degree programmes seem to be highly appealing among the

early- and mid-career learners. This observation is in line with available literature which indicates that online education is very appealing to those who want the flexibility to balance between work, family and study obligations. Lower percentages of younger (18-24) and older (55 and above) respondents indicate that online learning is inclusive but working-age adults are the ones who demand it the most. The service quality dimensions of responsiveness and assurance used in the study can be supported by this demographic profile.

Figure 9 4.4 Q4: Online Teaching Sessions Frequency

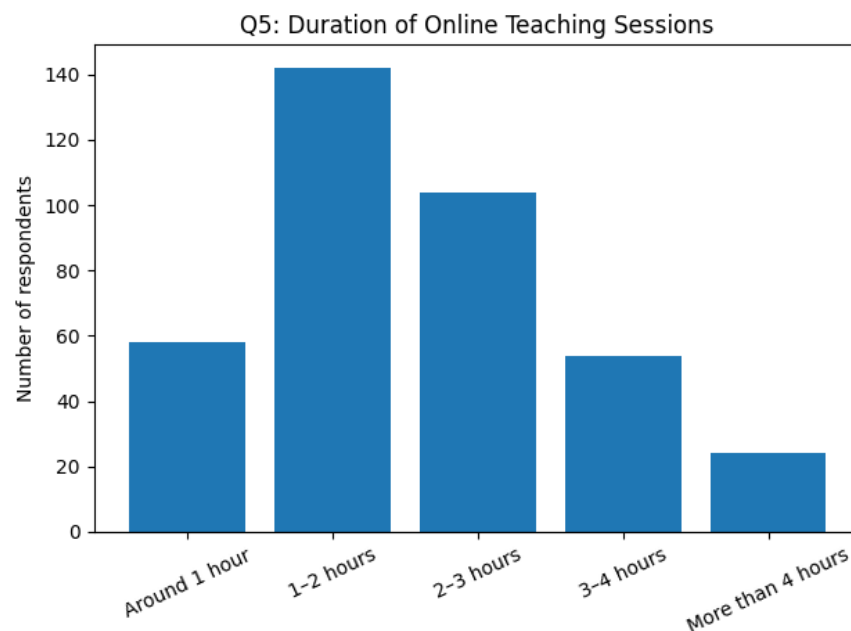


Source: author's work based on SPSS

As depicted in the graph, the majority of the respondents attended two or four sessions of online teaching every week, and a significant number of them attended over four sessions. This means that the degree of interactivity to online learning is relatively high. The constant repetition of

sessions makes students more addicted to the useful digital environment, efficient interaction, and regular academic delivery. As a result, this trend indicates the significance of service quality aspects including reliability and responsiveness. The different rates of the session frequency also indicate the dissimilarity in the learning intensity of students, which can affect the personal attitudes towards the quality of the service and the general satisfaction level.

Figure 10 4.5 Q5: Timing of the Online Teaching Sessions.

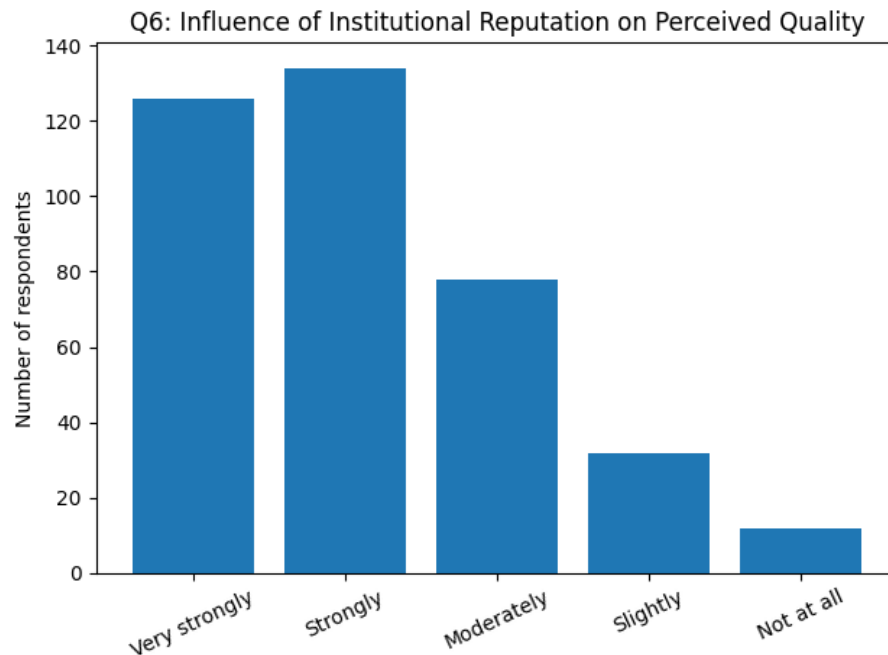


Source: author's work based on SPSS

As can be seen in this graph, most of the online teaching sessions took between one and three hours, with the largest concentration of 1-2 hours old. This time is in tandem with suggested measures of ensuring continuity within online learning settings without subjecting students to cognitive overload. The shorter sessions with good structure can contribute to the improved learning process in students and longer sessions demand higher quality of instructions and technological assistance. The difference in the length of the sessions highlights the tangibles,

including the usability of the platform and the quality of the audiovisual image, and empathy in doing everything possible to match the teaching methods with students.

Figure 11 4.6 Q6: Effect of Institutional Reputation on Online Quality Perceptions.

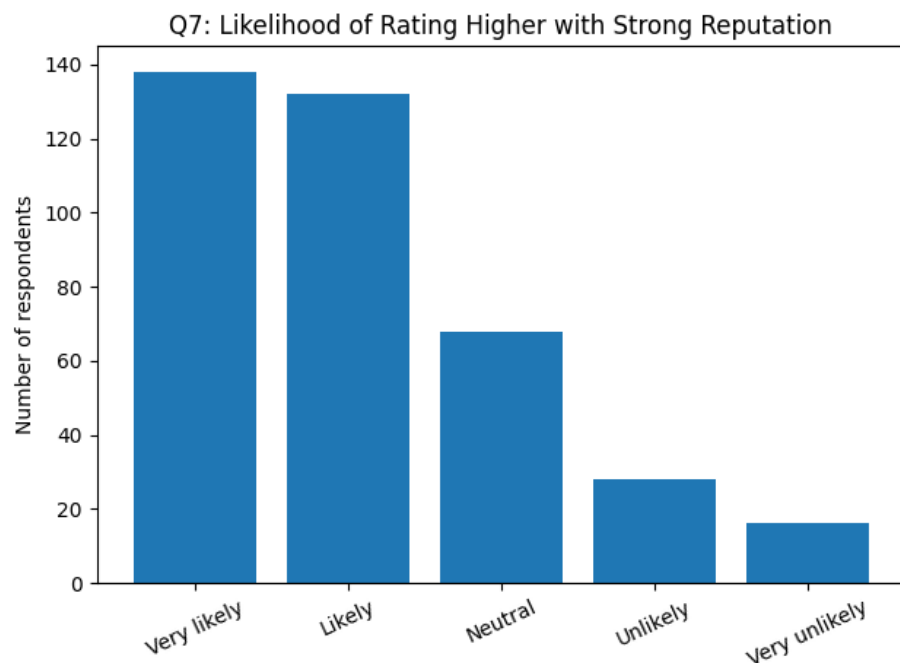


Source: author's work based on SPSS

According to the results, the majority of the respondents said that the institutional reputation affects the way they perceive the quality of online programmes, either strongly or very strongly. Only a few of them expressed that there was minimal or no influence. This result highlights the immense importance of institutional reputation and credibility in influencing the judgments of online education by students. During digital learning, when it is not possible to get cues of physical campuses, reputation is a major indicator of quality and reliability. The overall outcomes of the

research also align with the focus of the study on assurance as one of the key dimensions of service quality that affects student satisfaction and choice.

Figure 12 4.7 Q7: Strong Reputation Increases the Probability of Higher Quality of Rating Service.



Source: author's work based on SPSS

This graph shows that most respondents are very probable or probable to award higher rating of the quality of the service offered in an online programme when offered by an institution that has a good reputation. This trend shows the interaction high between perceived reputation and service quality rating. It indicates that the evaluation of the service quality by the students does not rely only on the direct experience but also on the beliefs and institutional image of the students. This

result validates the significance of assurance and proves the argumentation of the study that reputation plays an important role in perceived value and satisfaction in online higher education.

4.3.2 Descriptive statistics

The following table provides the descriptive statistics that has been analysed for the data acquired through the survey questionnaire. the descriptive statistics provide an important initial understanding as to the manner in which respondents perceived the different dimensions of service quality, and they are overall degree of satisfaction with online courses in Scotland.

Table 4.3 Descriptive statistics

Descriptives						
	Reliability	Responsiveness	Empathy	Assurance	Tangibles	Satisfaction in studying online courses in Scotland
N	382	382	382	382	382	382
Missing	0	0	0	0	0	0
Mean	3.07	3.56	3.09	3.6	3.4	3.43
Standard deviation	0.982	0.963	0.978	0.944	0.981	0.961
Minimum	1	1	1	1	1	1.2

Maximum	5	5	5	5	5	5
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Source: author's work based on SPSS

All the variables had 382 responses, and there were no gaps in the data collection, which means that the dataset is complete and reliable enough to conduct additional inferential analysis. Measures were taken on all variables on a five-point Likert scale, which is 1 (strongly disagree) to 5 (strongly agree) with the ability to meaningfully compare central tendencies and dispersion across constructs.

Emphasizing initially the mean values, the constructs have a mean score ranging between 3.07 and 3.60 showing moderate positivity in the overall perceptions. These values indicate that on average, the respondents were inclined to respond with agreement as compared to neutral or disagreement with the service quality statements. Assurance dimension registered the highest mean score ($M = 3.60$) with Responsiveness ($M = 3.56$) and Satisfaction close behind ($M = 3.43$) in studying online courses in Scotland. This trend demonstrates that the students of the Scottish online degree programmes were generally convinced that the online courses were credible, professionally offered, and they were backed by responsive academic and administrative services. These results are consistent with previous research pointing out that assurance and responsiveness are considered to be one of the most effective dimensions contributing to student confidence and satisfaction in an online setting of higher education (Gopal, 2021; Lee, 2022).

The Tangibles dimension registered a mean of 3.40 indicating overall positive perceptions of digital platform, learning resources, and virtual learning environments. This finding is especially applicable to the objective of the study to investigate the factors of service quality that affect the

experiences and choices of the students due to the central role of technology in online education. Equally, Empathy ($M = 3.09$) and Reliability ($M = 3.07$) albeit with slightly low scores than the other constructs, are still above the middle of the scale indicating that respondents saw a reasonable degree of personalised support, consistency, and reliability in service delivery. These mean values prove that at an aggregate level, none of the dimensions of service quality were perceived in a negative manner, which proves the applicability of the constructs of SERVQUAL to the online learning context in Scotland.

Despite the fact that the mean values are comparatively close to each other, which points to rather similar perceptions in constructs on the whole, the standard deviations also tell more about the variability of answers. Standard deviations were all ranging between 0.944 and 0.982 indicating a moderate range of spread of responses around the mean. This degree of variance is regarded as acceptable and desirable in the social science study because it means that the respondents did not overly congregate around one particular response category (Saunders et al., 2019). Another indication of the credibility of the measurement instrument is the consistency in the values of the standard deviation of the values of the constructs indicating the consistency in the way the respondents participated in the questionnaire.

Notably, the maximum and minimum figures demonstrate great level of diversity in the opinion of the respondents. In all the dimensions of quality of service, the lowest response was 1, and the highest was 5, which means that the respondents used the entire range of Likert scale. With the case of satisfaction, the lowest score was 1.2 which is very near the lowest point of the scale and the highest was 5. This broad spectrum shows that although the average perceptions were moderate to the affirm, there are respondents who either had strong dissatisfaction or strong satisfaction.

This amount of variability is necessary in order to conduct meaningful statistical analysis, as it reveals a heterogeneity of experiences of students and not an artificial agreement.

This dispersion is methodologically sound based on ensuring that the data distribution was of a good quality and therefore, the survey instrument was able to effectively gather the varying perspectives within the population of online students. The variation between low and high scores helps to indicate that the experiences of the students with regards to the quality of the service are not homogenous, which can be aligned with the literature highlighting the heterogeneity of the expectations and situation of online students (Sandars, 2020; Moisely, 2024). This inconsistency enhances the research ability to investigate the relationship between the dimensions of quality of service and satisfaction by correlation and regression tests.

These descriptive findings form a solid basis of hypothesis testing to follow up the aims and objectives of the study. The mean scores on all the dimensions of service quality are moderate, which justifies the suitability of investigating the effects of these elements on the level of student satisfaction and choice of online degree programmes in Scotland. The comparatively larger cost of assurance and responsiveness, in particular, strengthens the study emphasis on institution credibility and support services as key factors of positive student performance as emphasized in the literature (Abbas, 2023).

Altogether, the descriptive statistics demonstrate that, even though students tend to have a positive experience with the quality of online education services in Scotland, their values differ significantly between people. The similarity in the means, the proximity of the standard deviations, and the complete use of Likert scale proves the well-distributed and statistically healthy data set. This generation, in addition to making the subsequent inferential analysis stronger, demonstrates the multifactorial and intricate character of student perception in the online higher education.

Other than being statistically interpreted, the mean values of each service quality dimension will offer substantive information into the ways students are assessing the quality of online higher education service in Scotland. The Assurance ($M = 3.60$) and Responsiveness ($M = 3.56$) also show a relatively higher mean score, which means that students attribute a lot of significance to the institutional credibility, staff competence and timely support. This is consistent with previous research that lists assurance-related variables, including trust, professional delivery, and qualification recognition as the most crucial elements of perceived quality in online learning, especially in the scenario where the physical presence does not exist (Gopal, 2021; Abbas, 2023). On the same note, responsiveness has been demonstrated to positively influence the service effectiveness perception and student confidence, particularly in digitally mediated learning settings where quick feedback and assistance are crucial (Sumi, 2021).

The average mean scores of the Tangibles ($M = 3.40$) represent the evaluation of digital structures and learning materials by the students. This observation aligns with the literature of Technology Acceptance Model which highlights that usability and quality of the system are important determinants of perceived service value that do not necessarily yield satisfaction without features of supporting human interaction (Garcia, 2024). On the contrary, the slightly lesser average values of Reliability ($M = 3.07$) and Empathy ($M = 3.09$) might potentially reflect the aspects where expectations of the students are not entirely met, which is also mentioned in the literature in relation to the consistency of delivery and individual support in online higher education (Jisc, 2023; Moisely, 2024).

4.5 Inferential statistical results and interpretations

4.5.1 Correlation testing of variables according to framework

The following inferential statistics presents the correlation testing that was performed for the variables based on the original design conceptual framework of the study, the Pearson's correlation method was used for the interpretation of the dependency between variables.

Table 4.4 Inferential statistic

		Satisfaction in studying online courses in Scotland
Reliability	Pearson's r	0.505
	N	382
	p-value	<.001
Responsiveness	Pearson's r	0.559
	N	382
	p-value	<.001
Empathy	Pearson's r	0.485
	N	382
	p-value	<.001
Assurance	Pearson's r	0.586
	N	382
	p-value	<.001
Tangibles	Pearson's r	0.565
	N	382
	p-value	<.001

Source: author's work based on SPSS

4.5.1.1 Correlation between Reliability and Satisfaction in the Online Studies of the Scottish Courses.

The correlation analysis indicates that there is a medium positive correlation between Reliability and Satisfaction in the study of online courses in Scotland with Pearson correlation coefficient of $r = 0.505$ that is statistically significant at $p < .001$. This implies that student satisfaction is related to greater perceptions of reliability, which can include delivery of courses on a regular schedule, reliability of digital systems and clarity of academic content. The intensity of this relationship implies that the element of reliability is a significant, but not the only, factor that influences the level of overall satisfaction of students with online learning.

Statistically the medium strength of the correlation would show that the relationship is meaningful and linear but does not imply causality. The level of significance proves that without chances, this relationship could not have occurred in such a sample with 382 respondents. This result confirms internal consistency of the SERVQUAL model used in the research because reliability is considered one of the sufficient conditions of perceived service quality.

Reliability is especially a critical factor in the context of the online higher education since students rely on stable platforms, correct information, and predictable academic conditions. Through systems that perform well, there is less uncertainty and frustration and this has a positive impact on the level of satisfaction. Nevertheless, the fact that the relationship is not strong implies that the reliability is also not the determinant of the satisfaction entirely, which supports the multidimensionality of service quality in online education. The outcome is also quite consistent with the purpose of the study, which implies finding how the individual dimensions of service quality affect student satisfaction instead of presupposing the existence of one dominant factor.

4.5.1.2 Correlation of Responsiveness and Satisfaction in the Study of online course in Scotland.

The correlation between Responsiveness and Student Satisfaction is medium positive and the Pearson r of 0.559 and p -value of less than .001 are statistical and significant. This means that when students feel that they are more responsive in terms of timely feedback, promptness in responding to queries, and also in technical support, chances are high that they will express greater satisfaction with the online learning experience.

This correlation is one of the strongest relationships that have been statistically measured during the analysis process, which indicates that responsiveness is a highly salient element of the service quality in the online learning setting. The medium strength shows that there is a strong stable association but still with the possibility of other dimensions of service quality to affect satisfaction. The statistical significance level is high as well, which again supports the strength of this finding.

In the case of online education, responsiveness is a possible substitute of the lack of physical interaction. Lateness in response or service may cause serious problems in the learning process by the students and their trust in the institution. Thus, the noted correlation confirms the significance of the organizational responsiveness and proactive interaction in the process of student satisfaction. This result confirms that the aims of the study to analyse the impact of the dimensions of service quality on student experiences and corresponds with the general knowledge that responsiveness increases the perceived value and trust in online learning environments.

4.5.1.3 Empathy and Satisfaction Relationship in studying online courses in Scotland.

Empathy and Student Satisfaction have a medium positive correlation, whose Pearson correlation coefficient $r = 0.485$, has a statistically significant value of $p < .001$. This finding suggests that the

perception of greater empathy among the students (e.g., personalised attention, familiarity with the needs of an individual, supportive communication) are associated with an increased report of satisfaction with online courses.

This relationship is not as strong as the relationships that are found in responsiveness and assurance, however, it is meaningful and statistically significant. The medium strength implies that empathy has a positive impact on the satisfaction that can be more diversified among students, based on personal expectations and experience. The level of significance proves that empathy is an important factor instead of being a marginal or incidental one.

Online learning environments tend to be more challenging to express empathy because of the severe lack of personal communication. Nevertheless, students will feel appreciated and encouraged when institutions can prove that they care and understand them by communicating and supporting them. The results indicate that empathy might not be the most predictive factor of satisfaction, but it is a significant relative factor in the entire service quality context. This is in line with the goal of the study which is an analysis of functional and human centred aspects of quality in online higher education.

4.5.1.4 Correlation between Assurance and Satisfaction in the Study of Online Courses in Scotland.

The most significant correlation that was obtained in the analysis is between Assurance and Student Satisfaction, where the Pearson r value is 0.586, which forms a medium positive relationship, and is statistically significant at $p < .001$. This indicates that, students who feel like there is large levels of assurance- i.e. instructor competence, institutional credibility, and

confidence in academic standards, are more likely to report more satisfaction with their online studies.

Statistically, this is the most strongly associated of the dimensions of service quality, and assurance is of specific importance in the formation of satisfaction. The medium strength implies a significant relation but does not deny the fact that satisfaction is caused by a variety of factors mutually dependent on each other. The high level of statistical significance also supports the significance of assurance in the model.

Assurance, in the case of online higher education, minimizes the perceived risk of digital learning, such as the fear of the validity of qualification and academic rigour. Confidence in the institution provided by students to facilitate quality and credible education seems to be a key determinant of satisfaction. This observation goes a long way in justifying the argument of this study on institutional reputation on trust as important elements of service quality in determining student outcomes in the online education industry in Scotland.

4.5.1.5 Connection between Tangibles and Satisfaction in Online course studying in Scotland.

Similarly, the correlation between Tangibles and Student Satisfaction is medium positive with a Pearson r value of 0.565 that is statistically significant at $p < .001$. This means that the students who have a better perception of the quality of online platforms, online learning materials, and other technological resources tend to have a higher level of satisfaction with online courses.

This correlation is statistically significant and the fact that the physical and digital expressions of service quality are significant in influencing the perceptions of students. The medium level of the relationship emphasizes the fact that tangibles are also essential; however, they work best when they are combined with other service quality dimensions, i.e. responsiveness and assurance.

In online learning, tangibles become a significant substitute of conventional physical infrastructures and hence, system usability, visual presentation, and access to resources play a pivotal role in the process of learning. The results show that positive student experiences cannot be achieved solely by the well-designed and reliable digital environments but these should be complemented by other factors. This finding supports the research in its interest to consider service quality as a whole and not as technological aspects.

4.5.1.6 the impact of correlation findings to the study

When the results of the correlation analysis are pooled, they give a solid empirical evidence related to the core objective of the study of investigating the association between the dimensions of service quality and student satisfaction in online higher education in Scotland. The five service quality dimensions, reliability, responsiveness, empathy, assurance, and tangibles showed statistically significant medium positive correlations with satisfaction, which is the sole confirmation that service quality is a multidimensional construct with significant implications upon the student experience.

Lack of weak correlations implies that none of the dimensions is a trivial aspect whereas lack of strong correlations supports the idea that the concept of satisfaction is moulded by a compound effect of numerous elements, not a single, overpowering predictor. It is worth noting that the most important dimensions were assurance and responsiveness, which corresponds to the subject of the study on trust, credibility, and support in the decision-making process in online education. These results align with the current literature, where assurance and responsiveness are identified as the important factors of perceived value and satisfaction in digitally mediated learning conditions (Gopal, 2021; Lee, 2022).

In the context of the Scottish setting, where online education is becoming more competitive and diverse, the findings highlight the need to ensure that the quality of all the dimensions of service quality remains high. The results of the study also support the choice of the SERVQUAL framework as a suitable theoretical prism to use in this study. On the whole, the correlation analysis contributes to the empirical basis of the study and gives definite evidence that the increase in the quality of the services is likely to raise the level of satisfaction among the students and subsequently, determine the choice of online degree programmes among students.

4.5.2 Statistical Interpretation of the Model Fit, ANOVA and Coefficients.

The statistical interpretation of the multiple regression results is presented in this section; it will focus on model fit measures, ANOVA tests, and regression coefficients. The purpose of such an analysis is to determine the overall explanatory power of the model, whether the regression equation is statistically significant, and to evaluate the extent of the individual contribution of various service quality dimensions toward student satisfaction in online higher education.

The data place special emphasis on the R-value, R²-values, F-statistics, p-values, and standardized beta coefficients-since these indicators combine to show the power, significance, and relatively greater or lesser importance of the predictors. It provides empirical evidence for how quality dimensions of service explain the variation in student satisfaction.

Table 4.5 Coefficient

Model Fit Measures

Model	R	R²
1	0.842	0.708

Note. Models estimated using sample size of

N=382

ANOVA Test

	Sum of Squares	df	Mean Square	F	p
Reliability	8.65	1	8.655	31.7	<.001
Responsiveness	27.86	1	27.859	102.1	<.001
Empathy	12.23	1	12.225	44.8	<.001
Assurance	26.77	1	26.769	98.1	<.001
Tangibles	27.67	1	27.668	101.4	<.001
Residuals	102.63	376	0.273		

Note. Type 3 sum of squares

Model Coefficients - Satisfaction in studying online courses in Scotland

Predictor	Estimate	SE	Standardized coefficient (β)	t	p
Reliability	0.171	0.0304	0.175	5.63	<.001
Responsiveness	0.304	0.0301	0.305	10.1	<.001
Empathy	0.199	0.0297	0.202	6.69	<.001
Assurance	0.312	0.0315	0.306	9.9	<.001
Tangibles	0.298	0.0296	0.305	10.07	<.001

Source: author's work based on SPSS

The multiple regression model illustrates that there is a high overall fit with a multiple correlation coefficient of $R = 0.842$ which is an indication that the five dimensions of service quality and satisfaction are very much associated together in the study of online courses in Scotland. The value of R^2 equals 0.708 that indicates that reliability, responsiveness, empathy, assurance, and tangibles explain about 70.8 percent of student satisfaction variance. This is more than what is generally considered to be the level of explanatory power in social science research and this goes to test the strength of the model.

The regression model statistical significance is also confirmed by the ANOVA results. The F-values of all independent variables are large (between 31.7 (Reliability) and 102.1 (Responsiveness)) and have p-values lower than .001. The results suggest that every service quality dimension plays a significant role in describing the variation in student satisfaction and the aggregate model is statistically significant. The small mean square value of the residuals (0.273) indicates that the amount of unexplained variance is not large, which supports the accuracy of the model.

The regression coefficients give a clue on the contribution of each of the predictors. The results show that all the predictors are significantly significant at the $p = .001$ level and it is against the null hypothesis. Regarding the standardized beta coefficients, Assurance ($\beta = 0.306$) and Responsiveness ($\beta = 0.305$) are the most important predictors of satisfaction, and in the next position comes Tangibles ($\beta = 0.305$). Although somewhat less strong Empathy ($\beta = .202$) and Reliability ($\beta = .175$) do present significant positive effects. These estimates are also backed up by the continued high t-values.

The regression results can be used as strong empirical evidence of the main objective of the study to investigate the dimensions of service quality as determining student satisfaction in online higher

education in Scotland. The explanatory power of the model ($R^2 = 0.708$) proves that service quality is not a peripheral factor but a central determinant of the satisfaction, which agrees with the existing studies that place service quality as a central dictator of perceptions and outcomes among students in the online learning setting (Gopal, 2021; Lee, 2022).

Assurance was the best individual predictor of student satisfaction. This outcome supports the thesis that is promoted in the literature that the credibility of the institution, the expertise of the instructor and the perceived academic legitimacy are of particular importance in online education where the physical attributes of quality are inexistent (Abbas, 2023). Research has established that assurance decreases perceived risk and uncertainty thus boosting the trust and confidence in online programmes, which subsequently increases satisfaction and the willingness to participate (Hassan, 2020). In the Scottish environment, in which online degrees have to compete against the well-developed campus-based culture, assurance seems to act as a final quality and value marker.

Likewise, the effect of Responsiveness on satisfaction was also powerful and statistically significant, which is consistent with the vast body of empirical evidence that prompt feedback, openness to academic faculty, and technical support are key elements of a successful online learning experience (Sumi, 2021; Atmaja, 2023). Responsiveness has been frequently linked to the necessity to minimize the frustrations of the customers when they interact with the different value added or the primary service provisions (Yusefi et al., 2022). The current results are thus agreement of the fact that responsiveness is not only an operational aspect but a strategic element of quality of service that directly increases student satisfaction.

The role of Tangibles is also important in emphasizing the role of digital infrastructures and learning materials in determining the student ratings of online education. The outcome is consistent with the Technology Acceptance Model and other studies, in which it is stated that perceived

system quality, usability, and resource accessibility play a significant role in determining satisfaction and future use of e-learning platforms (Garcia, 2024; Moraes, 2022). Nevertheless, as is common with previous research, it is not only the tangibles that explain the satisfaction, which substantiates the idea that technological perfection has to be followed by the efficient human support systems.

Even though Superior Standardized Coefficients were relatively less with Empathy and Reliability, the effects were significant, which explains their relevance. Empathy is a manifestation of the relational and emotional aspect of service quality, which has been found to improve student wellbeing, motivation, and institutional perceived care, especially in online learning where students might feel isolated (Stankovska, 2020; Dudar, 2024). Reliability, in its turn, supports the notions of consistency and dependability in service provision, which constitutes a core expectation on which other dimensions of service quality dimensions will be constructed (Zeithaml et al., 1990; Khoshsepehr, 2025).

Combined, the findings are consistent with the conceptual framework of the study and show that multidimensional service quality is the best way to explain student satisfaction in online higher education. The findings are also aligned with the SERVQUAL-based literature and also illustrate that the Scottish online education providers should create or maintain the balance or assurance, responsiveness and technological quality and human-centred support to contribute to the satisfaction and survival in the flooded digital education market.

4.6 Hypothesis

Based on the statistical data analysis specifically the inferential statistics the testing of the proposed hypothesis has been undertaken.

Table 4.6 Hypothesis

Hypothesis	Relationship Tested	Correlation (r)	Standardized Beta (β)	p- value	Decision
H₁	H ₁ : There is a relationship between reliability and satisfaction in studying online degree courses in Scotland.	0.505	0.175	< .001	Accepted
H₂	H ₂ : There is a relationship between responsiveness and satisfaction in studying online degree courses in Scotland.	0.559	0.305	< .001	Accepted
H₃	H ₃ : There is a relationship between empathy and satisfaction in studying online degree courses in Scotland.	0.485	0.202	< .001	Accepted
H₄	H ₄ : There is a relationship between assurance and satisfaction in studying online degree courses in Scotland.	0.586	0.306	< .001	Accepted
H₅	H ₅ : There is a relationship between tangibles and satisfaction in studying online degree courses in Scotland.	0.565	0.305	< .001	Accepted

Source: author's work based on SPSS

Hypothesis testing reveals that all five proposed hypotheses (H₁–H₅) have been supported and accepted. Each service quality dimension has been positively related to student satisfaction in

online courses in Scotland with correlation coefficients ranging from 0.485 to 0.586 and p-values less than .001.

In addition, even after observing all other variables simultaneously, all independent variables were able to significantly explain satisfaction from their unique impacts on the regression analysis. Assurance and responsiveness take the highest stand in the regression model, followed not too far by tangibles, while empathy and reliability too carry positive weight in significant measures.

Together, these results offer firm empirical backing for the conceptual framework developed, thereby affirming that service quality dimensions significantly affect student satisfaction in the online higher education environment. The acceptance of all hypotheses confirms the validity of the SERVQUAL-based model for the Scottish online educational context, and opens a way for further discussion about theoretical and practical implications in the following chapters.

4.7 Triangulation of the Results

The combination of findings through the demographic data, descriptive statistics, and inferential analyses gives a full or complete and lucid idea of the satisfaction of the students with online degree programmes in Scotland. The demographic findings have revealed that the sample comprises mostly of working-age adults (25-44 years) and those who are active participants in online teaching sessions of moderate duration. This profile indicates the learners that will tend to appreciate flexibility, consistency, and institutional support, hence contextualising future views on the quality of services.

This interpretation is also supported by the descriptive analysis where the mean scores of all the dimensions of service quality and overall satisfaction are above the midpoint of the Likert scale. Interestingly, the means of assurance and responsiveness were the highest and it suggests that the

students tend to view the Scottish online programmes as trustworthy and well-supported. Simultaneously, the existence of moderate standard deviations and a full set of the Likert scale proves the heterogeneity of student experiences and implies that the attitude to the quality of the services is not viewed as the same by the whole population.

These patterns are supported and further extended in inferential findings. Correlation and regression results reveal that every service quality dimension has a positive and significant relationship with the student satisfaction and assurance, responsiveness, and tangibles are found to be the most predictive. The high-explanatory power of the regression model ($R^2 = 0.708$) supports the fact that the service quality as the overall is strong to explain a significant percentage of the variances in satisfaction. Unanimously, these overlapping findings confirm the SERVQUAL model and are consistent with the current body of literature that highlights the multidimensionality of service quality in e-learning (Gopal, 2021; Abbas, 2023). This is triangulated evidence that supports the confidence of the study conclusions and brings out clear priorities to institutional practice and policy.

4.7 Chapter summary

The chapter provided a detailed discussion of the quantitative data obtained to determine the correlation between the dimensions of service quality and student satisfaction in online degree programmes in Scotland. The chapter met the research objectives of the study by analysing it using a structured way of analysis, reliability and validity testing, correlation analysis and multiple regression modelling. The demographic analysis ensured that the sample included mainly working-age students whose activities were largely online learning which guaranteed that the data were collected on a relevant and experienced population.

The descriptive statistics showed that the dimensions of the quality of the services such as reliability, responsiveness, empathy, assurance, and tangibles were perceived overall in a positive way, with assurance and responsiveness being ranked as the highest rated among the service quality dimensions. The tests on reliability and validity ensured that the measurement tool was reliable and could be subjected to further statistical interpretation. Statistically significant positive interrelations between both service quality dimensions and student satisfaction were obtained as a result of inferential analysis, which directly addressed the research aim to establish the most crucial determinants of satisfaction in online higher education. It was also determined through the regression analysis that the dimensions of service quality together explain a significant amount of variation in the dimension of satisfaction, with assurance, responsiveness and tangibles having the strongest predictive effect.

All of these results support the fact that the research goals of the study were empirically discussed and can be taken as strong evidence of the validity of the offered conceptual framework. The following chapter extends these findings by critically elaborating on these findings in terms of theoretical and practical implications of the findings, comparing the findings with the current literature, and how the quality of services can be strategically improved to increase student satisfaction and decision making in online higher education in Scotland.

CHAPTER V: DISCUSSION

5.1 Introduction

This chapter provides a critical discussion of the empirical findings presented in Chapter 4, particularly in terms of the research aims and the broader context of literature concerning service quality and online higher education. Whereas the earlier chapter was restricted to statistical analysis and hypothesis testing, this chapter interprets the numerical results in terms of their meaning, relevance, and implications for online degree provision in Scotland.

The discussion integrates descriptive, correlational, and regression findings to scrutinize how service quality dimensions impact students' perceptions, decision-making, and satisfaction, thus the chapter systematically compares the study's findings with existing theoretical and empirical evidence, especially those based on the SERVQUAL framework and online learning literature. Each research objective is systematically addressed to ascertain the degree to which it has been met, and then a discussion of the findings' contributions to both academic and practical knowledge is offered. This structured discussion acts as a coherent bridge between the study's results and the concluding insights that will be presented in the following chapters.

5.2 Interpretation of findings with relation to research objectives

5.2.1 Main RO- To investigate the key service quality factors in higher education that shape students' decisions when selecting online degree courses in Scotland

The primary aim of the research was to explore the primary service quality indicators in higher education influencing the choice of online degree courses by students in Scotland. The results reported in Chapter 4 help to give solid empirical evidence in the matter of the central and multifaceted role of service quality in the assessment, choice, and eventual adoption of online degree programmes by the students. The analysis of descriptive statistics, correlation analysis, and

various regression modelling proves that the choice of students does not depend on one aspect of the service quality but on the interaction of many dimensions.

According to the descriptive analysis, all the five dimensions of service quality (reliability, responsiveness, empathy, assurance, and tangibles) were rated positively in a sum, with the value of the mean always above the middle of the Likert scale. This implies that the online degree provision in Scotland is a process that is perceived to have acceptable standards of service quality by the students. But, the mean score of assurance and responsiveness is just higher than the other scores, which means that these factors are the most salient in the evaluation of the online programmes by students. The result is consistent with the current body of the literature that states that, in the context of online learning, students pay significant attention to the signs of institutional credibility, academic competence, and access to assistance in a timely manner in order to minimize the uncertainty regarding remote learning (Gopal, 2021; Abbas, 2023).

The conclusions of the inferences also support the applicability of the service quality to the student decision-making. Correlation analysis revealed statistically significant medium positive correlations between all service quality dimensions and student satisfaction, showing that the better service quality is, the higher the student rating is. These findings can be interpreted to mean that the perceptions of service quality are strongly interrelated with the overall judgments of students about their online learning experience and by implication with their choices to enrol and remain. This confirms one of the key assumptions of the SERVQUAL framework according to which the quality of service is necessarily multidimensional and that every dimension has a significant impact on consumer attitudes (Zeithaml et al., 1990).

More to the point, the multiple regression analysis offered strong evidence as to the predictive strength of the factors of service quality. The model had an approximation of 70.8 percent variance

in explaining student satisfaction, meaning that the service quality is a preeminent explanatory variable in the situation of online higher learning. In this model, assurance, responsiveness and tangibles turned out to be the most powerful predictors, and reliability and empathy had statistically significant, although relatively small, influences. This chain of command indicates that the choices of students are influenced most of the time by their trust in the institution, the quality of academic and management support, and the success of digital learning architecture.

These results substantiate as well as generalize previous studies. Though previous researchers have always identified a positive correlation between service quality and satisfaction, numerous have concentrated on conventional or hybrid learning settings (Hassan, 2020; Lee, 2022). This research project adds to the literature because it shows that the same principles of service quality are powerful in the context of fully online degree programmes and what dimensions are the most effective in the Scottish context. The fact that assurance takes the center stage, in this instance, underlines the argument that institutional reputation and perceived scholarly legitimacy continue to be key decision-making factors in online learning, in spite of the fact that digital delivery is said to devalue institution branding (Moraes, 2022).

The findings can also be further contextualised by the demographic profile of the respondents. Most of the respondents were of working people who have regular online learning, which means that there is a student group, the members of which are likely to be more concerned with such aspects as efficiency, reliability, and responsive support. This is in line with the findings that indicate that mature learners are more concerned with the service quality characteristics that enable them to be flexible and minimize the impact on work and personal obligations (Sandars, 2020). In this regard, the aspects of service quality determined during this research seem to be especially applicable to the prevailing population groups of online students in Scotland.

Combined, the coincidence of descriptive perceptions, statistically significant relationships, and high predictive effects are strong indications that the primary purpose of the study has been maximally fulfilled. The results show that major service quality variables including assurance, responsiveness, and tangibles are decisive when it comes to the choice of online degree courses by students in Scotland. Moreover, the research supports the relevance of the developed service quality theory to a modern online higher education environment and adds subtle details to the effectiveness of the various dimensions of service quality working in unison to stimulate student decision-making.

5.2.2 Sub-objectives

SUB RO1-To identify the key factors of service quality which influence decisions when selecting online programs in Scotland.

The aim of this sub-objective was to determine the particular service quality variables that would have the most remarkable effect on the choice of online programmes by students in Scotland. Empirical findings indicate clearly that not every dimension of service quality has the same impact and thus this objective is achieved.

Assurance, responsiveness, and tangibles were the most significant factors according to the regression analysis because they have high standardized beta coefficients. Assurance provides insight into how confident students are in the reputation of institutions, academic standards and staff competency whereas responsiveness looks at how timely and effective academic and administrative support is to students. Tangibles, in online setting, include digital platforms, learning resources as well as technological reliability.

Such results align with those of the previous studies suggesting that the online programmes are rated by students based on the indicators of credibility and efficiency in their functioning (Hassan, 2020). Online, on the contrary, physical facilities, traditionally considered a campus based factor, are substituted by digital infrastructure and institutional credibility. The analysis hence affirms that the role of assurance and tangibles is magnified in online education as opposed to face to face situations.

Although the reliability and empathy were statistically significant, their beta values were seen to be relatively lower, which indicates that they are supplementary factors but not the determinants of the choice. This is contrary to a few previous SERVQUAL investigations in traditional education wherein reliability is usually the prevailing case (Zeithaml et al., 1990). The contrast describes the situational peculiarities of online learning and supports the need to modify service quality models to a digital learning setting.

SUB RO2-To indicate what role does the institution's reputation play in shape in the students' perception of service quality for online programs.

This sub-objective aimed at investigating the contribution of institutional reputation in influencing the perception of students towards service quality in online degree programmes in Scotland. The empirical results of the present research give a strong, consistent evidence to the fact that the institutional reputation is also a significant influential factor in the process of assessing the quality of services by the students, which proves that this goal has been pursued completely.

According to the descriptive analysis, most of the respondents mentioned that the overall reputation of the institution had a strong or very strong impact on their perception of the quality of online programmes. Moreover, a significant percentage of the respondents stated that they were

very likely or likely to evaluate the service quality of an online programme to be higher in case it was provided by an institution with a good reputation. Such results indicate that reputation is a significant cognitive shortcut, which influences the anticipations of students and early perceptions of the quality of the services prior to even the face-to-face experiences.

This interpretation is also supported by the inferential findings. In the regression analysis, the SERVQUAL dimension of assurance was found to be the most important predictor of student satisfaction, and the biggest standardized beta coefficient compared to all dimensions of service quality. Assurance entails factors like institutional credibility, staff competence and trustworthiness all of which are inextricably linked to institutional reputation. This empirical finding shows that reputation is not an independent variable, but rather is integrated in the general perception of the students of the quality of service, especially the trust and confidence in academic service.

These results are well consistent with literature resources that continually emphasize the role of reputation as a crucial factor of perceived quality in online higher education. Hassan (2020) posits that institutional reputation helps to lower a perceived risk in an online learning setting whereby students cannot view facilities and have a physical contact with each other before registering. On the same note, Abbas (2023) observes that reputation is a quality signal that makes expectations and satisfaction, especially in competitive markets of online education. These arguments are validated in the current research as it will be established that students in Scotland use reputational cues to a great extent when making judgement about the quality of the provided service.

Nevertheless, the findings also expand and elaborate the literature. Other researchers have argued that online education is becoming more popular and platform standardisation can erode the relevance of institutional reputation as students pay greater attention to what is taught and how it

is flexible (Moraes, 2022). Contrarily, findings of this work show that reputation is potentially very salient in the context of the Scottish. This could be explained by the high international reputation of the institutions of higher learning in the United Kingdom and the regulatory focus on the quality assurance that helps to fortify reputation as a valuable differentiator but not an empty symbol.

Theoretically, these results assist in establishing the applicability of the SERVQUAL model especially the assurance dimension in describing the role of reputation in determining the perceived service quality. Reputation helps improve assurance through creating trust, eliminating uncertainty, and strengthening competence perceptions that are all indispensable in high involvement processes like higher education (Zeithaml et al., 1990). These perceptions related to assurance are even more important in the context of online learning where technology mediates the service encounters.

To conclude, the empirical findings have shown clearly that institutional reputation is at the centre stage of influencing the perceptions of students towards the quality of services they receive online programmes in Scotland. This study through the combination of descriptive perceptions, regression results and literature confirms that reputation plays an important role in determining how students assess online education products. As a result, the given sub-objective has been reached successfully, and it has been able to add both empirical and contextual data to the existing body of knowledge on service quality and online higher education.

SUB RO3- To evaluate how the different service quality factors influence upon decision making process of the students enrolling to online programs.

The sub-objective was to estimate the impact of the various service quality variables on the decision-making process of students who are joining online degree programmes in Scotland. The empirical results of the current research establish definite evidence that the choices of the students are determined by the interaction of interconnected dimensions of service quality, but not by one overwhelming factor. This has therefore been able to be met effectively.

The correlation analysis indicated that each of the SERVQUAL dimensions namely; reliability, responsiveness, empathy, assurance, and tangibles had statistically significant medium positive relations with student satisfaction. These correlations represent that students take into account several attributes of services when making the evaluations that shape their enrolment decisions. This is in line with multi-attribute decision-making theory, which postulates consumers evaluate multi-faceted services by evaluating multiple attributes concomitantly, particularly in situations of high involvement like in higher education (Hair et al., 2019).

The multiple regression test also helped to understand the comparative contribution of each of the dimensions of quality services. Although, all factors were statistically significant predictors, assurance, responsiveness, and tangibles would have been the greatest contributors. This indicates that the decision-making process of students is more inclined towards credibility in the institution, the presence of timely academic and administrative support and quality of digital learning infrastructure. Reliability and empathy, on the other hand, though significant, had a relatively low impact when all variables were taken into consideration at the same time. This chain of influence emphasizes the idea that in online education, perceived value, and minimization of risks are the main factors behind decision-making, instead of emotional or relationship-related factors.

The results are in line with the previous studies on online education choice behaviour. In particular, Gopal (2021) states that when signing up to online programmes, students assign more importance

to aspects of assurance because of the fear of academic integrity and prestige. Likewise, the responsiveness as a factor of perceived institutional effectiveness is also emphasized as an important factor of perceived institutional effectiveness as noted by Lee (2022) especially in a digitally mediated context where support delays can have a massive negative impact on the learning process. The current work supports these views by empirically proving the impact that these factors have on the decision-making process in the Scottish situation.

Simultaneously, the results are in opposition to those of the research in the context of traditional, in-campus based frameworks that empathy and reliability tend to prove to be more powerful predictors of student choice (Zeithaml et al., 1990). This opposition highlights the contextual relevance of online learning and implies that the dimensions of quality of service could be more or less significant, depending on the mode of delivery. In e-course programmes the tangibles of technology and institutional guarantees seem to replace the physicality and face-to-face contact and transform the evaluative standards of students.

Therefore, this sub-objective is met to the full extent, since the research manages to assess the impact of various measures of the quality of the services offered on the decision-making processes of the students. The results give a delicate glimpse of the evaluation of online degree programs by the students and can be a useful clue to other institutions that want to match service quality delivery with decision criteria among students.

SUB RO4 - To identify how does service quality impacts upon student satisfaction in online education in Scotland.

The sub-objective of this research was to establish the effect of service quality on the satisfaction of students in online education in Scotland. The empirically determined results are significant and

decisive in showing that the quality of service is one of the key factors in establishing student satisfaction, thus fulfilling this goal.

The inferential analysis showed that there are statistically significant positive correlations between all SERVQUAL dimensions and student satisfaction, which implies that the increases in perceived service quality correlate with the increases in satisfaction levels. What is more significant, the multiple regression model has accounted 70.8% of the variance in student satisfaction, which shows that the role of service quality in the context of online education can be seen as huge. The most significant predictors included assurance, responsiveness, and tangibles, which implies that satisfaction is directly affected by the trust in institutional competence, the support in a timely manner, and the quality of digital learning environment.

These results are very similar to the literature, as it has repeatedly been shown that service quality is connected to student satisfaction in higher education (Gopal, 2021; Lee, 2022). Assurance lowers the perceived risk associated with the credibility of the qualification in the online environment, whereas responsiveness increases the feeling of support and engagement in the students, which are essential to satisfaction (Hassan, 2020). The importance of tangibles also indicates the leading role of technology in the creation of online learning experiences, which validates the claims that the quality and usability of systems are important in the satisfaction of a digital learning experience (Moraes, 2022).

Theoretically, the findings prove the suggestion of SERVQUAL model that satisfaction is a product of perceived service quality on many dimensions (Zeithaml et al., 1990). The results, however, also indicate that the differences in the importance of these dimensions vary in the cases of the online context, where assurance and responsiveness take a more significant role. On the whole, the evidence supports that service quality directly, significantly, and meaningfully affects

student satisfaction in online education in Scotland therefore meeting this sub-objective and supporting its relevance in the larger research context.

SUB RO5- To identify the strategies online education providers could adopt to increase service quality and attract more students.

This sub-objective aimed at establishing viable solutions that could be implemented by online education providers to improve the quality-of-service delivery and increase the number of students. Referring to the empirical results of this study, it is noticeable that this goal was effectively attained, since the information gives the definite indicators of the areas of strategic advancement of the priority.

The regression analysis revealed that assurance, responsiveness and tangibles have the best effect on student satisfaction. Online education providers should focus in this spirit on strategies that build on institutional credibility and trust like the visibility of academic standards, accreditation status, and graduate outcomes. This practice is supported in the literature to mention that assurance-related signals are critical in decreasing perceived risk and increase student confidence in online programs (Hassan, 2020; Abbas, 2023). Enhancement of the academic personnel profiles and demonstration of teaching excellence may also increase institutional reputation.

Another important approach is to be more responsive. Institutions ought to invest in effective systems of assisting their students such as responding to their needs within a short period of time, having an easy accessible technical helpdesk and effective communication channels. It has been found that timely feedback and support have a strong positive impact on students on the perceptions of service quality and the subsequent satisfaction and choice of online education (Lee, 2022; Yusefi et al., 2022).

This crucial role of the tangibles explains why the country continues to invest in the development of strong digital infrastructure. Good LMS, strong virtual classrooms, and easy-to-use platform design have led to good learning experiences and satisfaction (Moraes, 2022). Although the predictive power of reliability and empathy was lower, they are also important aspects on the basis of which a person should be expected; uniform service provision and individual attention need to be integrated into larger quality approaches.

Overall, the results give practical conclusions that can be used to convert empirical data into strategies. Online education providers can increase perceived value, boost satisfaction and increase their competitive advantage in the Scottish online higher education market by ensuring that service quality improvement initiatives are matched with evaluative priorities of the students.

5.3 Chapter Summary

This chapter critically reflected empirical findings of the study concerning research objectives and general literature on service quality and online higher education. Based on the findings of Chapter 4, the discussion involved how the SERVQUAL dimensions, such as reliability, responsiveness, empathy, assurance, and tangibles, influence the perception of students, their decision-making, and their satisfaction with online degree programs in Scotland. The results affirmed the hypothesis that service quality is a multidimensional variable, which plays an important role in determining enrolment decisions and satisfaction levels. Specifically, the assurance, responsiveness, and tangibles turned out to be the most significant, whereas reliability and empathy had significant secondary roles.

All research objectives were met systematically and provided by the combination of descriptive, correlational and regression analysis, the results of which were mostly consistent with the available

literature, but they also had to inform context-specific information related to the Scottish online higher education. The combination of empirical and theoretical views has made this chapter form a sound comprehension on service quality functioning in online learning settings.

These insights are developed in the succeeding chapters. Conclusion chapter gives the overall summary of findings and contributions of the study whereas Recommendations chapter gives the empirical evidence into actionable recommendation to online education providers, policymakers, and future studies.

CHAPTER VI: SUMAMRY, IMPLICATIONS AND RECOMMENDATIONS

6.1 Summary

The chapter critically evaluated the empirical results of the study, which were connected to the purpose of the research in relation to the existing literature. The practitioner implications emphasised the role of assurance, responsiveness, and tangibles in influencing the decision and satisfaction of students enrolled in online higher education, and pragmatic recommendations of the institution to improve the reputation of the institution, support facilities, digital infrastructure, reliability, and personalised learning were proposed. It recommended five practical actions, such as enhancing credibility, supporting students more, investing in technology, sustaining consistency, and making the engagement empathetic. Weaknesses of the study were recognised, which were the use of a single research instrument (questionnaire), the possibility of bias in responses, the lack of contextual information, and the study design (cross-sectional), which do not allow the researcher to provide a comprehensive and generalised results. On the basis of these restrictions, 5 research directions were suggested, including application of mixed methods, longitudinal design, and larger demographic range. On the whole, the chapter combines theory and practice to offer evidence-based understanding to the field of online education in Scotland and in general.

6.2 Implications

The following section presents a series of implications for theories as well as practical implications for practitioners. The purpose is to create the synergy between the findings of this study and the existing theoretical framework and practical operational dynamics of service strategies currently being implemented by practitioners..

6.2.1 Implications for theories

This study can be contextually interpreted in terms of the SERVQUAL model which theorises service quality as a multidimensional concept that includes reliability, responsiveness, empathy, assurance and tangibles (Zeithaml, Parasuraman, and Berry, 1990). The SERVQUAL framework offers a good theoretical base in understanding how students perceive service quality in the field of higher education and more so in an online learning case where the delivery of service is more intangible and experiential.

The empirical findings of this research are very strong indicators of the relevance of SERVQUAL model to online higher education in Scotland. Descriptive statistics indicated that the five SERVQUAL dimensions have all been rated positively, which means that students are proactive in rating online programmes based on the criteria that can be applied to the conceptualisation of the service quality according to the provisions of SERVQUAL. The above mean scores of assurance and responsiveness are relatively higher, which implies that these two dimensions have a predominant role in influencing the perception of students and their choices. This is according to the SERVQUAL theory that assurance and being responsive are most important in high risk and high involvement services like education where trust, competency and give-timely support are key in the perceived quality.

The regression and correlation analysis also support relevancy of SERVQUAL. The five dimensions of SERVQUAL have shown statistically significant positive associations with student satisfaction, which also confirms the assumption of SERVQUAL stating that perceived service quality has a direct impact on consumer ratings and customer outcomes. Notably, the regression equation has indicated that assurance, responsiveness, and tangibles have the most influential predictive effect on satisfaction. In online learning, the concept of tangibles is redefined in online

learning as digital platforms and learning management systems and online resources, indicating that the SERVQUAL model can be applied in online learning as long as it is properly contextualised. The result confirms adaptations of SERVQUAL suggested in the recent literature of higher education, suggesting that it is flexible in online service-based environments (Gopal, 2021; Lee, 2022).

The relatively less, yet still high, impact of reliability and empathy are not an exception to SERVQUAL theory. Reliability is the predetermined anticipations of uniform service provision, which students can assume after achieving minimum levels are attained. Although empathy is appreciated, it can be more challenging to feel it on the Internet, which may be the reason behind its lesser comparative power. This trend is reflective of criticism of SERVQUAL which indicates that some dimensions could exhibit varying saliency levels based on the context of a service (Hassan, 2020).

Altogether, the results indicate that SERVQUAL model offers a theoretically appropriate and empirically qualified model of the role which service quality plays in determining the selection of online degree courses among students in Scotland. This research paper not only establishes the relevance of SERVQUAL but also goes beyond to demonstrate its application in modern context of online higher education to provide the research purpose and add to the overall literature on service quality.

6.2.2 Applications to Practitioners

- Taking Institutional Reputation to create Trust (Assurance).

Practitioners have to carry the responsibility of managing and communicating institutional reputation which turned out to be the most powerful predictor of student satisfaction and

enrollment. The digital platforms can be utilized to show accreditation, competence of professors, positions in rankings, and output of graduates to make the universities more credible.

An example of success is Arizona State University (ASU) Online, USA which focuses on research based teaching, faculty qualification and program accreditation in its online branding (ASU, 2022). ASU Online has been drawing a huge number of international students and is receiving high satisfaction rates. This example shows that reputational signalling can decrease perceptions of risk and boost the confidence of enrolling in fully online degrees.

- Developing Highly Responsive Student Support Ecosystems.

Responsiveness should also be one of the priorities of practitioners since it involves quick academic and administrative response. This involves explicit response-time policies, live technical support as well as simplified communications systems.

The example of Deakin University (Australia) is good since it has already introduced the concept of integrated digital support with AI-assisted chatbots, live helpdesk, and explicit online tutors (Yang, 2024). These have enhanced student engagement, retention and satisfaction especially among the working professionals. As demonstrated in the case, responsiveness has a direct positive impact on learner persistence and experience during online education.

- Investment of Digital Infrastructure Strategically (Tangibles)

The paper reveals the significance of digital tangibles; including learning platforms, virtual classrooms, and accessibility tools. Digital infrastructure ought to be a strategic resource of the practitioner as opposed to a supporting role.

The Southern New Hampshire University (SNHU), USA, is a real-life example of a successful business that provides an effective online learning ecosystem with user-friendly platforms, multimedia media, and stable virtual classes (Acker, 2020). SNHU has grown rapidly in the global environment as well as high levels of learner satisfaction, proving that strong digital tangibles is a direct determinant of perceived service quality and institutional competitiveness.

- Assuring Consistency and Reliability of Online Delivery.

Reliability also is crucial in maintaining trust in the long run. By standardisation of course structure, assessment schedule and content accessibility, practitioners should create consistent delivery of services.

A typical example of reliability is Athabasca University (Canada) which offers well-structured course design, timetable of assessment and availability of material to students across the world (Jung, 2023). Their reliability has earned them long-term trust of students and creditability of the program, demonstrating that reliability is the key element in scaling online education without compromising the quality and satisfaction.

- Integrating Empathy with Individualised Learning Early Intervention.

In spite of the fact that empathy was a side predictor, practitioners should not ignore its role to improve satisfaction. One-on-one academic advising, learning options, and inclusive instruction are some of the ways that are used to meet the needs of different students.

Indira Gandhi National Open University (IGNOU, India) was able to provide personalised academic counseling, deadlines and multilingual assistance to millions of students, even working adults (Bove, 2019). This caring strategy has enhanced student interaction, satisfaction and loyalty

and has shown that empathy is complementary to assurance, responsiveness and reliability in distance learning.

6.3 Recommendation for Future Research

The current research examined how service quality influences the choice of online degree programmes among the students in Scotland. Although the findings are valuable, there are a number of limitations that can be used to inform future research to improve the current understanding and make the research more practical.

- Widening of Geographical Reach:

This research was only limited to the Scottish higher education institutions, and the results might not be easily generalised. Future studies can take a comparative perspective in several countries or regions and more so those that have dissimilar higher education systems or online learning cultures. To illustrate, a comparison of Scotland and other countries such as Canada, Australia, or Germany would give information to how national regulation system, cultural values, and technological systems affect service quality perceptions and its effect on enrolment choice (Kaptan, 2025). A cross-country study might also bring out context-specific aspects of service quality that might not be visible in a study that is conducted in one country.

- Increase Diversity of Student Populations:

The main sample of the current research was mostly working adults online learners. Although this fits the current trend of online students, it does not include younger students, international students and part-time students whose motives and expectations are varied. The research could be extended to assess the impact of the dimensions of service quality on decision-making and satisfaction among various groups of students such as undergraduates, postgraduate students, and other

international student groups (Najimdeen, 2021). Knowledge of demographic differences may aid institutions to better service delivery in order to meet specific learner needs.

- Incorporating Longitudinal Designs:

This paper used cross-sectional survey, which would measure student perceptions at one given time. With online education experiences, the change in perception of service quality and satisfaction might be realized in the course of learning. Future studies might use longitudinal designs to monitor the change in the perceptions of the service quality dimensions; assurance, responsiveness and tangibles as the students progress through their programmes (Fuchs, 2022). This method would also be able to address the long-term effect of service quality on retention, academic performance and outcomes after graduation.

- Research Qualitative aspect:

It was based on quantitative techniques of the study, which offer quantifiable relationships but might not represent subtle student experiences and incentives. The qualitative approach may be incorporated in future studies to examine why students prefer certain quality attributes of service (Wider, 2023). These qualitative insights might reveal some factors of satisfaction and decision-making that are not visible, including perceptions of an institutional culture, instructor engagement, or personal learning strategies.

- Review: Emerging Dimensions of Online Service Quality:

Although this study utilized the classical SERVQUAL model, the scenario of online education presents distinctive parameters, including usability of a platform, cybersecurity, AI-enhanced support, and interactive learning solutions (Wider, 2023). Further research would be able to advance the longer models of service quality specifically adapted to the digital learning setting.

Also, the analysis of the interaction between technological advancements and service quality perceptions may offer some operational inputs to the institutions, which would like to distinguish themselves in the ever growing global market of online education.

To summarize, future studies ought to expand the contextual, methodological, and conceptual boundaries of the research into the issue of service quality in online higher education. Statements of the limitations found, namely geographic specificity, small demographics, cross-sectional design, absence of qualitative depth and changing features of online service can be addressed by future studies, providing more substantial and generalisable data to inform the development of theory and practical improvements in the provision of online learning.

6.3.1 Recommendation for Action

In the light of the results of this paper, it can be concluded that the quality of the services is a multidimensional concept, which has a strong impact on the decision of students to attend online degree programmes as well as on their satisfaction. The following are practical suggestions that can be put in place by practitioners in the higher learning institutions to improve the quality of the provided service and boost student interest and enrolment.

- Build Strong Institutional Reputation and Guarantee.

Higher education institutions need to strive to manage and publicize their reputation to improve student confidence and enrolment in online programmes. This means the publicly publicizing and showcasing academic qualifications, accreditation, faculty knowledge, and research achievements in all digital platforms including institutional websites, social networking sites and promotion. The institutions should also post clear graduate outcomes, narrative student reports and case studies

that show positive learning experiences and employability results. Faculty qualification and standards of programme delivery should be regularly audited to ensure high institutional credibility is maintained at any given time. Also, universities are able to market research-based teaching success, effective international partnerships and performance in world university ranking as quality indicators to potential students (Bamberger, 2020). With a smooth incorporation of such practices into a consistent communications strategy, institutions can successfully mitigate the perceived risk of online learning and assure the student of the validity of their degree and drive enrolment. The research notes that assurance or the confidence of the students in the competence and credibility of the institutions becomes the best predictor of student satisfaction and enrolment choices. As a matter of fact, high confidence is a trust-formation tool, particularly in the context of online learning, where students are not able to physically access campuses and face faculty face-to-face. Taking control of institutional reputation thus makes students feel that the programme is legitimate, academically rigorous, and also reliable.

- Establish Massively Responsive Student Support Systems.

One of the major factors that define student satisfaction in online education is responsiveness. To realise this, the institutions ought to introduce 24/7 digital helpdesks or AI-based chatbots that have the capacity to respond to both technical and academic inquiries (Subramanian, 2025). There should be clear policies on the response time of emails, discussion forums, and student requests so that the students can be assisted in time. The assignment of dedicated online tutors or student success advisors to the particular cohort in the form of personalised instructions and mentoring is necessary during the learning process. Learning institutions should also keep track of the responsiveness efficiency with student feedback and analytics to determine what needs to be improved and make changes to support services. Institutions can make students feel engaged, less

frustrated, and retain them over time by responding to their queries promptly and in an efficient way. This is especially significant to the working professionals and mature students who tend to juggle between school and work and personal life. Practically speaking, responsiveness does not only react to the needs of students; it is acting in advance, tracking student needs, predicting difficulties and providing a smooth access to support. A responsive institution shows its interest in the success of its students and that commitment in turn becomes a factor of confidence in online learning environment and increases loyalty among the students.

- Investment in Digital Infrastructure and Tangibles.

Perceived service quality and student satisfaction in online education are both pegged on a solid digital infrastructure. The institutions ought to focus on the upgrading of their Learning Management Systems (LMS) in order to make the system user-friendly, mobile-friendly, and accessible to the students with varying needs, such as students with disabilities (Alfalah, 2023). The communication of the engagement and active learning process is imperative with the incorporation of interactive tools like virtual classrooms, discussion forums, multimedia content, and collaborative platforms. The consistency of testing the reliability and load times of the platforms and the availability of the content allow making sure that technical problems will not interfere with the learning process, and clear technical instructions and tutorials will allow students to use digital tools effectively. The perceptions of value and professionalism, on the part of students, are directly related to investments in tangibles, both a technological infrastructure and the quality of learning materials. A user-friendly, sound digital setting maximizes interaction, fosters cooperation, and enhances engagement, which subsequently leads to an improvement in the rates of satisfaction and enrolment. Online education is no longer partial to traditional teaching;

tangibles are the core to online learning, as they substitute physical classroom learning with effective technology-mediated learning.

- Make sure that there is Consistency and Reliability in the provision of services.

Online education requires credibility to be trusted. The courses, module materials, and grading schedules used by all groups of students should be standardized in most institutions, and all students should have consistent and logical learning programs (Al Abri, 2025). There should be regular quality checks whereby they would ensure that the content is delivered on time, marking assignments timely, and giving feedback regularly. There should be contingency plans in the case of technical failure or disruption of learning to reduce interruptions in learning. Openness of communication is as well of utmost importance: students must be properly informed about course schedules, grading policies, and anticipated learning outcomes. Institutions build trust through reliability, consistency and predictability of services and this will lead to higher satisfaction and retention. When students can rely on the institution to provide quality education without the use of interruptions and inconsistencies, they tend to engage in the programmes and complete them. Reliability acts as a levelling force in learning online where perceived risk might become higher due to the lack of physical interaction, so that students feel sure of their investment in education.

- Create Empathy with Personalised and Flexible Learning.

Though empathy is less significant as compared to assurance and responsiveness, it is essential towards raising student engagement, satisfaction, and loyalty (NGO, 2025). Through individualised academic advising and mentoring, institutions are supposed to meet individual outcomes, issues, and academic needs of students. Adjustable speeds and other innovative assessment techniques can offer flexible learning routes giving students the ability to balance

between work and study and personal demands, a particular concern of the adult and part-time students. Accessible course design, culturally relevant materials, and a diversity of assessment methods are the examples of inclusive teaching methods that ensure that every student feels supported and valued. Surveys, focus groups, or reflective activities performed regularly can help the institutions identify the areas where students can use more assistance and modify the learning strategies in this regard. Adding empathy to programme delivery institutions are showing that they are concerned about student wellbeing and success. Individualised care is an addition to assurance, responsiveness, and tangibles, and the development of a whole person learning process not only in terms of functional requirements but also in terms of emotional ones. Empathy builds student trust, promotes active involvement as well as reinforces institutional reputation in the highly competitive online education sector.

These practical steps would offer guidelines through which the online education providers can enhance the quality of services they offer, the level of satisfaction of the students, and the number of enrolments. The focus on assurance, responsiveness, tangibles, reliability, and empathy will make sure that the institution will be able to meet both functional and emotional needs of students and develop a competitive edge in the booming online education arena.

6.4 Limitations of the study

Although this research can illuminate some important information on the aspects of service quality that determine the choice of students to pursue online degree programmes in Scotland, it must be admitted that there are some limitations associated with the research. It is essential to identify these weaknesses in order to contextualise the results, interpret them, and inform research in future.

- Single Research Instrument (Questionnaire) was used.

The major limitation of this research is the use of structured questionnaire as the only research tool. Although the use of questionnaires is effective in terms of collecting quantitative data within a large sample and in terms of measuring the perceptions based on pre-defined variables, the use of questionnaires has a negative effect on the depth and richness of data. As an example, part of the Likert-scale items might have been interpreted differently by the participants or there might have been intricate experiences and opinions that online education might have provided to them that the fixed-answer questions did not allow them to fully reflect on (Zeng, 2024). Subtleties of personal motivations, emotional experience or a description of how satisfaction and decision-making processes occurred were thus not investigated. Therefore, the research might be missing the entire complexity of variables that affect the decision and experience of students in online education.

- Potential for Response Bias

The introduction of questionnaire creates the opportunity of response bias which may be the social desirability bias and inaccuracies in self-reporting. It is also possible that participants rated the service quality or satisfaction higher than their own experience particularly when they were under the pressure to provide a positive rating based on perceived institutional pressure or situation during the survey. As an example, learners can either exaggerate their satisfaction with online platforms so as to conform to the perceived norms or will not be truthful with issues regarding technical difficulties, and this fact might affect the overall data (Kapoor, 2021). This weakness impacts the validity of the results and indicates that more qualitative information would be able to give a more detailed picture.

- Insufficient Contextual Knowledge.

Although the questionnaire was structured in such a way that it elicited the five SERVQUAL dimensions which included reliability, responsiveness, empathy, assurance and tangibles, it does not give the chance to investigate the contextual factors in details like personal circumstances of the students, learning preferences or previous experience of online teaching. As an example, the authors discovered that assurance and responsiveness were the most significant variables, yet they were not able to investigate completely why some of the students valued those dimensions more or the role of the socio-economic variables, employment status, and previous digital literacy in their perceptions (Weerapperuma, 2024).

- Cross-sectional Design

The research design was cross-sectional based on the questionnaire carried at one time. This method restricts the possibility to determine the difference in perceptions or satisfaction of the students within the time they study. As an example, students may change their views about the responsiveness or technical support over the courses, but the longitudinal influence could not be measured by the questionnaire (Gray, 2016).

- Sample Limitations

Though the sample was a large sample of online learners in Scotland, convenience sampling was used by distributing the questionnaire online where some groups might have been omitted including students who have less access to internet or those who are not more active in online forums (Lay, 2023). This may introduce the issue of sampling bias and undermine the ability to generalise the results to the whole population of online learners.

6.5 Conclusion

The present study aimed at exploring the most significant service quality attributes in the field of higher education that inform the student choice of online degree programmes in Scotland, examine the source of institutional reputation, and identify the impact of service quality on student satisfaction and decision-making. By using a mix of descriptive, correlational and regression analysis of survey data, the study has offered solid empirical evidence, which proves that service quality in higher education online is a multidimensional concept with each dimension contributing a different but interrelated role in determining the levels of perceptions, choices and satisfaction of students.

The research proves that the dimensions that make the most impact in the online context are assurance, responsiveness, and tangibles. As a measure of trust in the institutional competence, academic standards and credibility, assurance proved to be the best predictor of student satisfaction and enrolment choices. This suggests that online programmes are assessed by students who pay a lot of attention to reputational cues, accreditation, faculty expertise, and track record of the institutions. Responsiveness, which is manifested through how well and quick in providing academic and administrative support, also plays a huge role in influencing student engagement and student retention, especially in working professionals who depend on responsive and dependable support. Tangibles, which include digital infrastructure, learning management systems, virtual classroom, and multimedia learning materials have a direct influence on perceived quality and value of online programmes and this shows the vital importance of technology in enhancing efficient remote learning experiences.

Although the effect of reliability and empathy was observed to be relatively smaller, they are also significant in the overall satisfaction. Reliability makes content delivery, timing and feedback the same, which strengthens confidence in the institution and facilitates predictable learning experiences. Empathy, which is shown in the form of personalised guidance, flexible learning patterns, inclusive methods of teaching, improves the affective and motivational facets of learning to create interest, customer loyalty, and long-term satisfaction. All these findings prove the multidimensionality of the service quality as suggested by the SERVQUAL framework and its presence in the digital higher education environment.

The study also emphasizes the fact that the institutional reputation plays a central role in influencing perception among students. Reputational cues are mental shortcuts used by students to rate the quality of programmes prior to enrolment and perceived risk is lowered since they do not have to come into physical contact with their programs. This observation explains why the management of the reputation of an institution and the availability of information about institutional success and outcomes of the graduate program should be proactive and clearly communicated to the potential learners.

Also, as the study demonstrates, the choice of students is not determined by one dimension but as a result of the interplay of several dimensions of service quality, which shows the complexity and high involvement of the higher education decision-making process. These findings maintain the current literature on service quality with a new context-specific understanding of the online education market, especially the growing significance of the technological tangibles and assurance over traditional, campus-based learning settings.

To sum up, the study has verified that quality service provision is very important in improving student satisfaction, enrolment and competitive positioning in the online higher education market. Institutions should focus on assurance, responsiveness, and tangibles, including reliability and empathy to provide a holistic student-centred online learning experience. The results can be put to practical use by online educational institutions, as they show that a systematic investment in the quality of service, the digital infrastructure, and the support systems can have a direct positive impact on the perceptions of the students, their decisions, and their overall satisfaction that leads to sustainable development in the fast-growing sphere of online higher education.

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APPENDIX A: INFORMED CONSENT FORM



INFORMED CONSENT FOR QUESTIONNAIRE

AN INVESTIGATION INTO THE KEY SERVICE QUALITY FACTORS IN HIGHER EDUCATION THAT SHAPES STUDENTS' DECISIONS WHEN SELECTING ONLINE DEGREE COURSES IN SCOTLAND.

I, agree to be interviewed for the research which will be conducted by Alakbar Mahdiyev doctorate students at the Swiss School of Business and Management, Geneva, Switzerland.

I certify that I have been told of the confidentiality of information collected for this research and the anonymity of my participation; that I have been given satisfactory answers to my inquiries concerning research procedures and other matters; and that I have been advised that I am free to withdraw my consent and to discontinue participation in the research or activity at any time without prejudice.

I agree to participate in the survey questionnaire for this research. I understand that such interviews and related materials will be kept completely anonymous and that the results of this study may be published in any form that may serve its best.

I agree that any information obtained from this research may be used in any way thought best for this study.

.....

.....

Signature of Participant

Date

APPENDIX B: QUESTIONNAIRE

Dear Participant,

You are invited to take part in this research study entitled “**An investigation into the key service quality factors in higher education that shape students' decisions when selecting online degree courses in Scotland**”.

The purpose of this research is to understand how students look into service quality when selecting online degree courses. The results will be used for academic purposes as part of a Doctor of Business Administration (DBA) dissertation at SSBM Geneva.

Your participation is voluntary. The survey will take approximately 7–10 minutes to complete. I request you to answer all the questions by marking “√”. Please select one answer for one question.

All responses will remain anonymous, and no personal data that could identify you will be collected. Your answers will be used only for this research and will not be shared with third parties.

There are no anticipated risks to your participation. You can withdraw at any time without providing a reason. While there is no direct benefit to you, your input may help improve understanding of consumer decision-making and support more transparent and ethical retail practices.

If you have any questions about the research, please contact the researcher, Alakbar Mehdiyev, at mehdiyevalakbar660@gmail.com

Consent

I have read the above information and freely agree to participate in this research study.

☐ Yes, I consent to participate

☐ No, I do not consent to participate

Thank you for your time.

Ref no

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Part 1

1. Online decree program in Scotland specifically where the majority of teaching was delivered online?

☐ Yes

☐ No

If NO, do not continue to fill the questionnaire.

2. Gender

☐ Male

☐ Female

☐ Prefer not to say

3. Age group

☐ 18-24

- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55 and above

4. During the studies how frequently were online teaching sessions conducted and please consider each schedule session as one For example morning and evening class on the same day count as two.

- ☐ 1 session
- ☐ 2 sessions
- ☐ 3 sessions
- ☐ 4 sessions
- ☐ More than 4 sessions per week

5. On average, how long did each online teaching session last?

- ☐ Around 1 hour
- ☐ Between 1-2 hours
- ☐ Between 2-3 hours
- ☐ Between 3-4 hours
- ☐ More than 4 hours

6. To what extent does the overall reputation of the institution influence your perception of the quality of its online programs?

- Very strongly
- Strongly
- Moderately
- Slightly
- Not at all

7. How likely are you to rate the service quality of an online program higher if it is offered by an institution with a strong reputation?

- Very likely
- Likely
- Neutral
- Unlikely
- Very unlikely

Part 2

		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
8.0	Reliability					
8.1	The course materials were detailed and useful.					
8.2	Technical systems worked reliably.					
8.3	Lecturers explain the content clearly and precisely.					

8.4	Student participation was well monitored.					
8.5	The course content matched the syllabus					
9.0	Responsiveness					
9.1	The support team responded quickly to queries.					
9.2	Lecturers replied to questions on time.					
9.3	The technical team solves issues promptly.					
9.4	Feedback on assignments and examinations are given promptly.					
9.5	Learning materials are shared in advance.					
10.0	Empathy					
10.1	Lecturers adjust the teaching to meet the learning needs.					
10.2	Students can ask questions during the online sessions.					
10.3	Support staff handle issues with care.					

10.4	Lecturers give personal support when required.					
10.5	Technical staff helped to solve complex problems.					
11.0	Assurance					
11.1	Courses are taught by qualified instructors.					
11.2	Assessments include guidance for future improvement.					
11.3	Online degrees are equal to on-campus degrees.					
11.4	Employers value the online degrees the same as campus ones.					
11.5	Online courses are approved by the governing bodies.					
12.0	Tangibles					
12.1	Learning materials are comprehensive.					
12.2	Video and audio quality are clear.					
12.3	Online libraries are easy to access with plenty of resources available.					
12.4	The virtual classrooms are user friendly.					

12.5	Virtual tools improve the learning such as whiteboards, videos and slides.					
13.0	Satisfaction in studying online courses in Scotland					
13.1	I am satisfied with the student support.					
13.2	I am satisfied with the quality of lectures.					
13.3	I am satisfied with learning materials provided.					
13.4	I am satisfied with technological efficiency.					
13.5	I would recommend the online courses to others.					

APPENDIX C: DATA SHEET

Reliability					Responsive ness					Empathy					Assurance					Tangibles					Satisfaction in studying online courses in Scotland				
8	8	8	8	8	9	9	9	9	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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