

In this particular case study, service quality measurement is a primary concern. Dale, Bamford and Van der Wiele (2016) note that the measurement of service quality has been the focus of various research studies and debate over the last 20 years. One of the main concerns regarding generic instruments is the fact that service quality is multidimensional and that these instruments cannot be applicable to all service industries and situations. It is therefore crucial to identify and measure appropriate service quality dimensions in various industries (Lee & Severt, 2018). This assists in customising the service offering for specific markets. As each service industry is unique with its own unique dimensions, it is crucial to develop industry-specific frameworks and models to fit each unique context (Mokoena & Dhurup, 2017).

The context of PHE in terms of quality and operations management needs some elaboration. Higher education (HE) is considered as part of the bigger service industry due to its inclination towards customer (student) service in an ever-increasing competitive environment. Menon (2015) states that competition in HE is increasing in public, private, and online providers. Providers of higher education should consider themselves as profit-orientated organisations, operating in a highly competitive environment, continuously looking for ways to obtain competitive advantages.

Operations management and production quality principles have entered the sphere of HE in relation to the delivery of quality services (Giannakis & Bullivant, 2016). This is even more so for private higher education institutions (PHEIs), because these institutions are faced with additional financial difficulties compared to their public institution counterparts. In the South African context, they do not have the benefit of receiving government subsidy and must find alternative ways of obtaining funds, mainly through student fees (Hashim & Mahmood, 2011).

Overview of the MMR design case

This section provides an overview (macro perspective) of the case. The research design was situated within a pragmatist paradigm fundamental to the MMR process followed. Pragmatism as a worldview is concerned with applications and solutions to problems angled towards ‘what works’. This is why multiple methods or pluralistic approaches are often highly possible and appropriate within one study, while one single point of view can never give the entire picture, as multiple realities may exist (Creswell, 2014; Saunders, Lewis & Thornhill, 2016).

The selection of the design was also based on the fact that no previous studies have addressed the issue of total quality service (TQS) in PHE. The importance and holistic scope of the study called for the selection of a methodology that would provide the results in line with its scope, namely an exploratory sequential mixed methods research design. It encompassed the conventional broad secondary and primary stages, with several in-between steps and sub-steps. The primary empirical phases consisted of a qualitative stage, followed by a quantitative stage. The stages were sequential, thus the first stage informed or directed the next stage (Saunders *et al.*, 2016).

The separate stages made it easy to finalise the first and prepare for the second. It also provided time for analysis, implementation, reporting, and the development of an instrument for the second phase. This design can be regarded as popular due to its numerous applications for developing instruments and tests (see Bilodeau, 2016; Copeland, 2015; Guetterman, 2015; Milton, Watkins & Studdard, 2003; Patsalides, 2015).

For a comprehensive framework to be developed, the TQS phenomenon had to be researched and explored extensively. Setting the scene with the selected participants (top managers and principals) of the PHEIs formed the first stage and included building rapport with participants and reminding them of the practical aspects of the quantitative phase. These processes motivated the first qualitative design and thus formed an integral part of the first qualitative process. For face validity, the researcher was accompanied by a senior researcher, which contributed to the trustworthiness of the qualitative stage. Other aspects, such as confirming detail, consent, ethics, schedules, selected participants, suggested changes, and the interviews were all included in this initial qualitative phase.

According to Creswell (2011), the main purpose (among other objectives) of an exploratory design is to generalise the qualitative findings based on a few individuals in the first stage to a larger sample in the second stage. The benefit of the two-stage exploratory design is that the results (after the thorough thematic analysis process) from the first qualitative stage can be utilised to develop the second, quantitative stage. To develop a good instrument, it was

necessary to explore TQS in depth and qualitatively to facilitate the development of a questionnaire – the quantitative measuring instrument. This approach is supported by Collins, Onwuegbuzie and Sutton (2006) who propose beginning with a qualitative exploration as a strategy to increase the applicability and value of an assessment instrument.

In support of the view of Saunders *et al.* (2016), Creswell (2011; 2014) purports that the exploratory sequential method begins with collecting and analysing qualitative data based on a thorough literature review. Thus, a literary review was incorporated in the secondary research phase. The research process then proceeded to the initial qualitative stage to explore the importance of service quality as well as to identify TQS dimensions from the perspectives of PHEI principals.

This was followed by an intermediate instrument development phase (based on the literature and qualitative findings). A pilot study to test the instrument preceded the quantitative stage, which was the final stage. The stages built on one another, with each stage producing distinct outcomes. Once an instrument developed was finalised (improved), the process continued with the next phase.

According to Creswell (2014), MMR provides different amounts (equal or unequal) of the types of data. In this study, the emphasis leaned towards the quantitative stage. The reason is that the purpose of the initial qualitative stage was exploratory (and preparatory of the next phases) to the development of a quantitative instrument to be utilised in the second, quantitative stage. The quantitative stage also included an open-ended (qualitative) question that was separately analysed and integrated with the eventual TQS framework. The next section provides the detail of the five-step integrated methodology.

The five-step integrated methodological approach

The detail of the case in terms of the integrated MMR approach is discussed next. Figure 1 below depicts the project plan of the five-step integrated methodological approach.

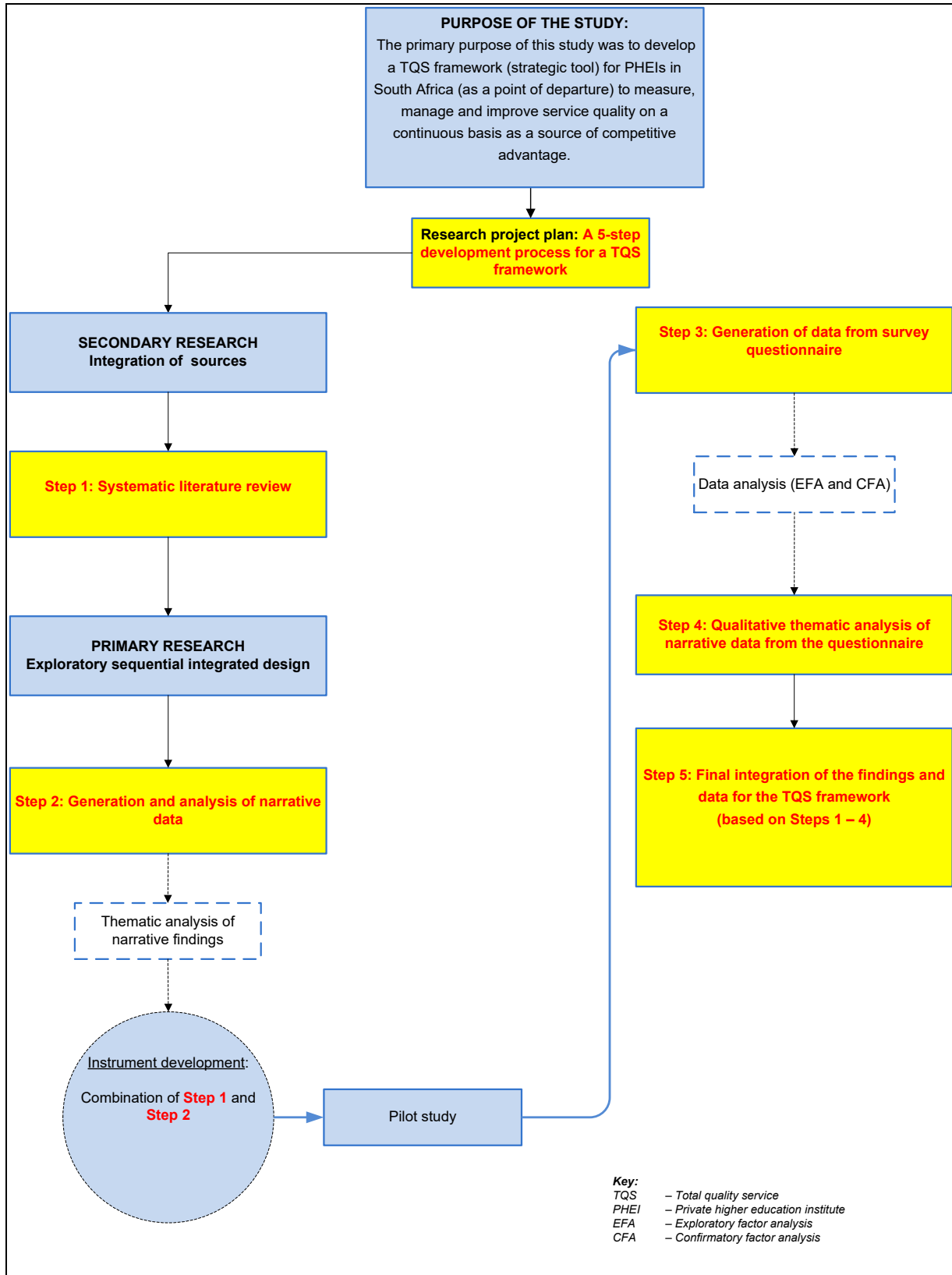


Figure 1. The five-step integrated methodological approach

Source: Author's compilation

Step 1: Systematic literature review

This phase involved the identification of TQS dimensions from literature, which generated new information from secondary data that was indispensable for the next step. The major advantage of a systematic literature review (SLR) is that it provides information covering various settings and empirical methods (Kitchenham, 2004), while the focus of an SLR is the synthesis of high-quality research related to a specific topic or phenomena (Byrne, 2016). The SLR was conducted on service quality frameworks and models to identify service quality dimensions, spanning the period 1988 to 2015. The SLR identified 73 service quality frameworks and models over a period of 27 years which comprised 26 countries, covering 29 different industries. The identified frameworks and models emanated a total of 184 dimensions. A systematic ‘funnel approach’ was followed, which included the logical combination, integration, re-grouping, and re-naming of these dimensions into the final 34 service quality dimensions identified from literature.

Following this, a second SLR was conducted to identify TQS dimensions and frameworks in various industries from 1991 and 2015. The SLR identified 17 TQS frameworks and models over a period of 24 years. A substantial total of 111 TQS dimensions were identified. Finally, a logical and systematic approach of combination and elimination was followed to reduce data and merge the 34 service quality dimensions and the 27 TQS dimensions into primary and secondary TQS dimensions.

Step 2: Generation and analysis of narrative data

This step consisted of the qualitative exploration of TQS dimensions for PHEIs in South Africa from a top management perspective. The goal of this step was to generate critical TQS dimensions to inform and contribute to the development of a quantitative instrument to be applied in step 3 of the research process. The target population consisted of six prominent PHEIs with 13 campuses or PHEI sites. From this population, a non-probability, homogeneous, purposive sample was drawn consisting of 15 top managers or principals. According to Teddlie and Yu (2007), purposive sampling is primarily used in qualitative studies where units (e.g. individuals, groups of individuals or institutions) are selected based on a specific purpose or where people are deliberately selected for the important information they can provide. Purposive sampling can also lead to greater depth of information from a smaller number of selected units. In addition, a homogeneous sample focuses on a subgroup where the sample members are similar, for example, a particular occupation or level in the hierarchy of an organisation (Saunders *et al.*, 2016). The target population in the current study consisted of top managers at the selected PHEIs, such as principals, vice-principals, deans, directors, academic managers, registrars, heads of school, and academic presidents.

Data were collected by means of semi-structured in-depth interviews following a conversational mode. An interview guide was developed for the individual interviews aimed at producing rich descriptions of TQS and TQS dimensions by incorporating questions related to the participants’ conceptions of TQS, service quality systems, service quality management, service quality improvement, and a holistic approach to TQS. The themes and questions for the interview guide were derived from literature, common sense, the authors’ experience in service quality, and the PHE sector, as well as discussions with researchers from various public and private HEIs. The PhD student conducted the interviews while he was accompanied by a senior researcher for purposes of face-validity and cooperative reflection after each interview.

The data were analysed thematically. According to Howitt and Cramer (2014), thematic analysis implies that the researcher identifies a limited number of themes, which sufficiently reflect the textual data. It is important that the researcher be familiar with the data if the analysis is to be significant; hence, data familiarisation (as in other qualitative methods) is the key to meaningful thematic analysis. To add, Fereday and Muir-Cochrane (2006) argue that thematic analysis is the search for themes that emerge as being important to the description of the phenomenon under investigation. Themes are identified through reading and re-reading of the data. It is thus a form of pattern recognition in the data where themes become categories for analysis. Table 1 below presents the phases of thematic analysis that were followed in the data analysis process.

Table 1. Phases of thematic analysis

Phase	Description of the process
1. Familiarising yourself with your data	Transcribing data, reading and rereading the data, noting down initial ideas
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme
4. Reviewing themes	Checking if the themes work in relation to the coded extracts (level 1) and the entire data set (level 2), generating a thematic ‘map’ of the analysis
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each them.
6. Producing the report	The final opportunity for analysis Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research objectives and literature, producing a scholarly report of the analysis

Source: Adapted from Braun and Clarke (2006:87)

The criteria for good thematic analysis as recommended by Braun and Clarke (2006) were applied in this research.

The validity and reliability of the data were tested via five strategies of trustworthiness, namely credibility, transferability, dependability, conformability and authenticity. The thematic analysis approach generated 30 critical TQS dimensions that formed the basis of the development of an instrument for the questionnaire survey.

Instrument development and pilot study

The instrument development stage was added as an intermediate stage of the integrated MMR approach. The general approach followed in developing the quantitative instrument was adapted from the recommendations by Barry, Chaney, Stollefson and Chaney (2011), as well as DeVellis (2003) for scale development. This culminated in a rigorous seven-step process for instrument development.

Firstly, the starting point in instrument development is to elucidate what will be measured and at which level of specificity. DeVellis (2003) maintains that the researcher should be well grounded in theories related to the phenomenon to be measured. In this study, the importance of identified dimensions for managing, measuring, and improvement of service quality on a continuous basis had to be included in a TQS framework.

Secondly, a pool of sample items was generated based on an extensive literature study and findings from the qualitative stage. The objective was to develop items that respondents would understand in a similar manner, which would result in an exact response, and which respondents would be willing to answer (Dillman 2007, cited in Barry *et al.*, 2011). All items were worded positively and at an appropriate reading level for respondents.

This was followed by the development of the item scale and instrument structure. The instrument consisted mainly of Likert-type questions. Section A of the questionnaire consisted of the demographic information of the respondents. This section distinguished between two types of respondents, namely external customers (students) and internal customers (lecturers). In Section B, respondents had to indicate the importance of each dimension (item or construct) in terms of measuring, managing, and improving service quality on a continuous basis as part of a TQS framework. Section C consisted of the same dimensions (items or constructs) as section B. Here, respondents were asked to group the dimensions in the categories provided. The final section (Section D) was qualitative and consisted of an open-ended question (for narrative data) where respondents could provide additional input (any unique suggestion in their own words) on what could additionally contribute to excellent service quality in a PHEI.

Fourthly, the item pool was reviewed by experts in the fields of operations and service quality management. The rationale behind this was to have knowledgeable people confirm the clarity of each item and its significance to the main construct being measured.

The next step involved the implementation of a crucial and comprehensive pilot test of the questionnaire. According to Leedy and Ormrod (2015), a pilot study is a brief exploration to determine the feasibility of procedures and measurement instruments to be used in a more exhaustive, follow-up research study. In the current study, the need for the pilot study was based on suggestions from Bell and Waters (2014, cited in Saunders *et al.*, 2016), for example, to determine how long the questionnaire took to complete, the clarity of instructions, whether the respondents felt uneasy to answer certain questions, whether all questions were clear and unambiguous, and whether there were any major topic omissions. One PHEI in Gauteng was selected for the pilot study. The questionnaire was randomly distributed to 50 possible respondents. These respondents were not sampled for the main quantitative study. It was found that all parts of the questionnaire were completed satisfactorily. The majority of the respondents specified that the questionnaire was clearly structured and did not contain irrelevant ideas.

The data were analysed using a statistical software package, namely IBM SPSS Statistics version 24. First, Cronbach's alpha was computed as a measure of scale reliability and internal consistency. An alpha value of 0.992 was obtained, which, according to Saunders *et al.* (2016), is indicative of excellent scale reliability. Second, item normality was investigated by means of two measures of dispersion, namely skewness and kurtosis.

Finally, the scale length was considered, and minor modifications were incorporated in the questionnaire after the instrument development process. The process therefore incorporated the combination of both TQS dimensions (27) and service quality dimensions (34) identified in literature with the identified 30 dimensions from the qualitative interviews. The final instrument (questionnaire) consisted of 37 dimensions (items or constructs) where respondents had to indicate the importance of these dimensions in terms of measuring, managing, and improvement of service quality on a continuous basis as part of the final developed TQS framework.

Step 3: Generation of data from survey questionnaire

The third primary step of the integrated research methodology involved the exploration of the importance of TQS dimensions from the perspective of both the internal customers (lecturers) and external customers (students). This step included recruiting a larger sample of different participants than for the qualitative strand. The goal was to identify primary TQS dimensions to be incorporated into the holistic TQS framework.

Initially, when this study was conceptualised, proportional stratified sampling was considered to select participants for the quantitative study. However, this approach was reconsidered due to the favourable support of the project in terms of the high level of access to respondents, the support, agreement, and acceptance from top management of all the PHEIs involved, as well as the risk possibility of a low response rate from participants. Another reason for the reconsideration of this approach was the primary objective of this research project: to develop a TQS framework for PHE in South Africa. In other words, the objective was to develop a framework for the PHE industry and not to measure and compare service quality between different providers.

The questionnaire was distributed via email to the target population, namely all specified students (second year and beyond) and lecturers (employed by the PHEI for more than one year at the time of this research) of selected PHEIs in the sampling frame. A total of 647 completed questionnaires were received from the 13 sites of delivery.

The biographic and demographic data of student and lecturer respondents were reported separately to provide a holistic view of the internal and external customers in PHEIs. Next, exploratory factor analysis (EFA) was conducted on the 37-item instrument. As in the case of the pilot test, SPSS was used to facilitate the quantitative analysis of the data. Cooper and Schindler (2014) explain that factor analysis is a technique used to discover patterns among variables to determine whether a combination of the original variables (a factor) can summarise the original set. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was used together with Bartlett's test of sphericity to determine whether the data was suitable for factor analysis. Following the clarification by Pallant (2011), EFA was used first to explore the interrelationship among the set of variables and for factor extraction. There are two commonly used approaches for determining the number of factors to extract, namely the scree test and

the eigenvalue rule (Hair, Black, Babin & Anderson, 2010; Pallant, 2011). Both were employed in this study. EFA was conducted to determine the number of constructs and belonging items.

With the view of developing a TQS framework, it was necessary to examine the results from EFA to determine whether modification of the structure was necessary. Consequently, confirmatory factor analysis (CFA) was applied to test the extent to which the pattern of factor loadings on the constructs, as obtained from EFA, represents the data. Hair *et al.* (2010:693) refer to CFA as “a statistical technique of testing how well measured variables represent a number of constructs”.

The results were validated through tests of unidimensionality and construct validity. A comparative fit index (CFI) of 0.90 or above implies strong scale unidimensionality (Duggirala, Rajendran & Anantharaman, 2008; Sureshchandar, Rajendran & Anantharaman, 2001). Construct validity was tested through several goodness-of-fit (GOF) measures as well as the achievement of convergent validity. A conceptual measurement model was presented consisting of five 26 dimensions (variables), represented by five primary constructs. Both the internal and composite reliability scores were strong, and the CFA yielded a model with good fit. The modified model thus demonstrated evidence of unidimensionality and construct validity.

Step 4: Qualitative thematic analysis of narrative data from the questionnaire

The fourth step of the process comprised the analysis of the open-ended question in the questionnaire. This is an example of how narrative data can be obtained from an instrument primarily designed to generate numeric data. From the completed questionnaires, 499 responses were obtained. These findings were also thematically analysed to identify additional service quality dimensions for inclusion in the final TQS framework. The same procedure of thematic analysis was followed as explained in step 2. The aim was to obtain additional and richer descriptions from the viewpoint of lecturers (internal customers) and students (external customers). The qualitative findings produced 11 dimensions and the dimensions were grouped into five categories, finally combined in one major theme.

Step 5: Final integration of the findings and data for the TQS framework

Finally, all data were integrated, culminated, and synthesised into the final TQS framework on three levels. First, integration transpired at the design level because the exploratory sequential mixed methods design implied a mix of qualitative and quantitative approaches. The initial qualitative stage informed the ensuing quantitative stage. Second, integration was done on the methods level. A visual, joint display of data was presented where the dimensions identified from literature and the qualitative findings were integrated to inform the dimensions (items or constructs) of the so-called quantitative instrument. Third, on a reporting level, the final TQS framework consisted of the integration of narrative qualitative data (from a top management perspective), the analysed numeric quantitative data, as well as the narrative data obtained from an open-ended question.

Conclusion

Principles of conceptual research were used to give perspectives related to MMR and to indicate how the freedom to use creative research designs promotes research. The authors believe that Southern African post-graduate students will benefit from this. A relative complex MMR case utilised by a PhD student from the University of South Africa was demonstrated, indicating another configuration of an MMR design. It was presented in terms of a five-step integrated methodological approach used for the development of a total quality service (TQS) framework.

Besides the South African context of the case and the potential benefits for Southern African students, the article portrays another clear argument in support of MMR in terms of creative integrated research designs. It debates and illustrates why it does not promote one school of thought or seek airtight distinctions between broad qualitative and quantitative methodologies. The case shows how methods, regardless of their description, follow and build on one another to obtain quality data, regardless of type. The unique design shows, among other things, how the phases (and sub-phases) build upon one another and how the unique integrated MMR approach provided two sets of narrative data from two independent processes of thematic analysis. The five-step MMR case supports the philosophy of Fetter (2018: 261-263) in terms of his third equation, namely $1 + 1 = 3$, according to which methods complement one another, providing synergy and yielding a whole greater than the sum of the individual parts.

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