Article

Measuring the Quality of Internet Connectivity Service Rendered to South African Public Libraries

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Abstract

The measuring of rendered services in any industry, especially in libraries, remains a critical tool to assess the satisfaction level of clients as well as the quality of the services. This article reports on a study that was undertaken to measure the quality of internet access service to South African public libraries by using the service quality model. The paper was guided by these objectives to identify the service quality models applicable to public libraries' internet access; to determine how the quality of internet access service fits within the South African broadband policy; and to apply service quality dimensions to public libraries' internet access. The study employed a quantitative approach and survey design in which a questionnaire was used to collect data from 322 heads of public libraries in South Africa. The stratified sampling method was used to obtain a proportional representation of public libraries. It emerged that most respondents regarded their internet service providers (ISPs) as incapable of solving their technical problems. It was further found that in most cases ISPs applied the internet access policies inconsistently to public libraries they served. The study recommended, among others, that internet connectivity to public libraries be centralised and that a competent provider be appointed to manage this service.

Keywords: South Africa; public libraries; community libraries; internet access; service quality models

Background and Introduction to the Study

Connecting public libraries to the internet is a key factor towards bridging the digital divide. Public libraries, particularly in South Africa, serve as places of choice for internet access by communities largely because access is provided free of charge. The quality level of the internet connectivity to these libraries should, however, be of a high

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standard to ensure that clients can make effective use of this commodity. The quality of the internet service should, therefore, be constantly evaluated. Nejati and Nejati (2008, 574) define the concept of service quality in the library as the difference between library users' expectations and perceptions towards service performance. Based on this definition, Zakaria et al. (2011, 67) argue that service quality is about what public library users receive from public library services that lead to their behaviour and satisfaction towards the services. At the same time, public libraries expect to receive the same high level of quality internet connectivity from internet service providers (ISPs).

The internet connectivity to public libraries in South Africa is provided by various telecommunication companies. Various connectivity options are provided to these libraries, resulting in some of them receiving poor quality internet access. The mode of connectivity to these libraries is also dependent on the available network infrastructure in areas where these libraries are situated. Consequently, the type of internet connectivity the library has, significantly impacts on the quality of this service. For instance, microwave access cannot have the same quality as a fibre connection.

Literature Review

Various information sources were used as a basis for the study.

Service Quality Models applicable to Public Libraries Internet Access

There are two main conceptualisations of service quality in the literature: one based on the disconfirmation approach (Grönroos 1984; Parasuraman, Zeithaml and Berry 1985); and the other on performance-only approach (Cronin and Taylor 1992). Several definitions of service quality have been suggested in the literature (Ghotbabadi, Baharun and Feiz 2012; Moolla and Du Plessis 1997; Parasuraman et al. 1985). The general consensus among researchers and practitioners (Alharbi and Drew 2014; Ghotbabadi et al. 2012; Röcker 2010; Gallivan 2001) is that service quality is an elusive and abstract concept that is difficult to define and measure. In his attempt to offer a definition, Lewis (in Moolla and Du Plessis 1997, 64) defines service quality as "how well the service delivered matches the customer's expectations."

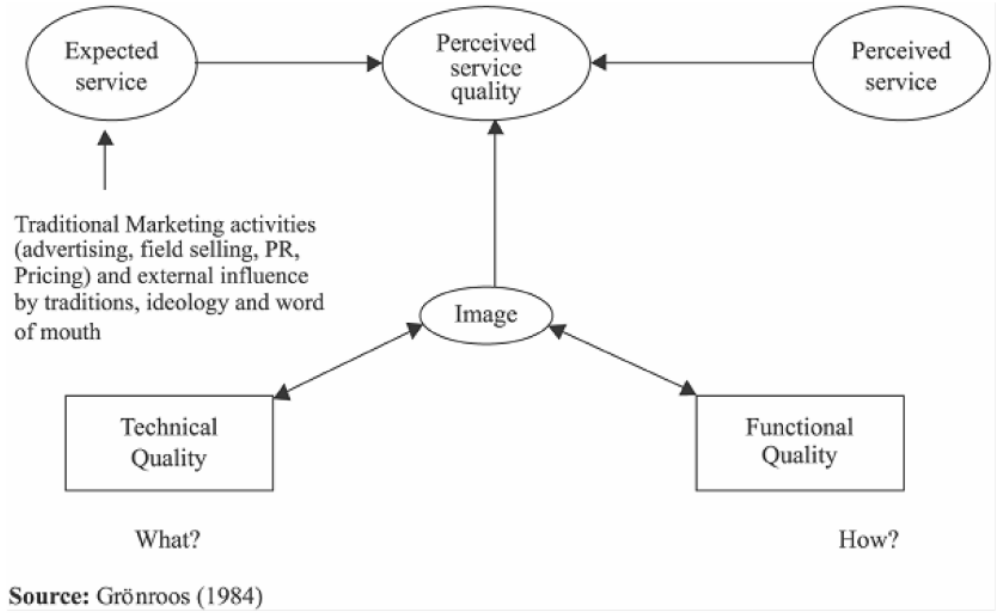
The Nordic school (Grönroos 1984) defines service quality using overall categorical terms that include the aspects of technical and functional quality (Ghotbabadi et al. 2012, 3). The American school (Parasuraman et al. 1985) on the other hand, uses descriptive terms and includes the five dimensions of reliability, responsiveness, assurance, empathy and tangibles (Brady and Cronin 2001, 44). Although both schools of thought highlight important aspects of service quality, it still seems from the literature that there is no consensus that these definitions fully capture the essence of the construct. In providing a general understanding of service quality, Pena et al. (2013, 1228) regard quality service as the ratio of the level of service effectiveness and expectations of the user.

There are many service quality models but, as indicated in the preceding paragraph, researchers are not of one mind about these models and their measurements (Ghotbabadi et al. 2012, 2). These authors further purport that four service quality dimensions, namely the Nordic, SERVQUAL, multilevel and hierarchical, are the mostly used and adopted models and are the basis of other service quality measurements. The ensuing sub-sections briefly discuss the four models of service quality.

Nordic Model

According to Ghotbabadi et al. (2012, 3), this service quality model was first conceptualised and formed by Grönroos in 1982, with improvements in 1984. The model defines service quality by technical and functional dimensions as depicted in Figure 1 (Grönroos 1984, 38). In this model, technical quality focuses on the outcome of the service or what the customers received from their interactions with service providers to satisfy their basic needs. Functional quality or process-related dimension represents the process which evaluates the manner of delivery of the service.

Figure 1: Grönroos Nordic model of service quality



Source: Grönroos (1984)

The Grönroos service quality model or the Nordic model has been used to measure consumers' perception of service quality (Chaipoopirutana 2008, 45). The shortcoming in Grönroos's model is that it is too generic and does not offer any technique on measuring technical and functional quality (Chaipoopirutana 2008; Seth, Deshmukh, and Vrat 2004; Parasuraman et al. 1985).

SERVQUAL or Gap Model

The SERVQUAL model of service quality was developed by Parasuraman et al. (1985) in an attempt to cover the weakness of the Nordic model by offering a new way for measuring service quality (Boulter and Bendell 2010, 3). In the SERVQUAL model, Parasuraman et al. (1985, 48) use the gap or difference between the expected level of service and the delivered level of service for measuring service quality perception. In other words, these authors are of the view that service quality is a function of the differences between expectation and performance along the quality dimensions. In this case, their initial 10 dimensions were reduced to five, namely reliability, responsiveness, assurances, empathy and tangibility (Moolla and Du Plessis 1997, 65).

Parasuraman et al. (1985) concluded that the difference or gap is the result of the gaps described below (Boulter and Bendell 2010, 4):

- Gap 1 is the difference between customer expectations and management's perception of those expectations.
- Gap 2 is the difference between management perceptions of customer expectations and service quality specifications.
- Gap 3 is the difference between service quality specifications and the actual service that is delivered by service contact staff on a daily basis.
- Gap 4 is the difference between service delivery and promises made in an organisation's external communications.
- Gap 5 is the difference between the culmination of the previous 4 gaps that leads to the difference between customer expectations and customer perceptions.

Figure 2 is a diagrammatic representation of the SERVQUAL model of service quality depicting the five dimensions of this model.

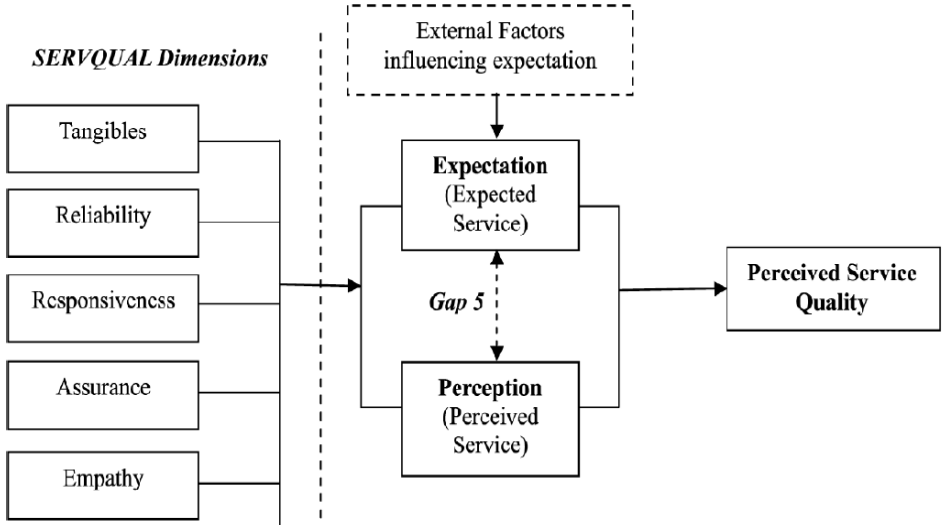


Figure 2: SERVQUAL model of service quality (Parasuraman et al. 1985)

SERVQUAL has been widely used in a private sector setting with limited application to the public sector environment (Orwig, Pearson, and Cochran 1997, 54). In other words, for the private sector to survive, customer satisfaction and loyalty secured through high quality products and services are key determining factors for success (Orwig et al. 1997). Although interest and the importance of this model have been shown by the public sector, quality issues inherent in the public sector have slowed down the exploration of this model (Orwig et al. 1997, 56; Wisniewski 2001, 382). The interest in the SERVQUAL model displayed by the public sector is indicative of governments' willingness to run the public sector along business lines. Exploration of this model contributes immensely to the surveys usually conducted to measure customer perceptions of the service. A number of studies on the application of SERVQUAL in the public sector have been conducted (Orwig et al. 1997; Wisniewski 2001; Iyikal and Celebi 2016). Equally, a number of studies were conducted globally on the application of this model in public libraries (Nejati and Nejati 2008; Paul 2017; Zakaria et al. 2011; Proctor, Usherwood, and Sobczyk 1997).

Multilevel or Retail Service Quality Scale Model

This model for service quality was developed by Dabholkar, Thorpe, and Rentz in 1996 upon realising that SERVQUAL factors are inconsistent and not comprehensive for different applications (Seth et al. 2004, 924). Dabholkar et al. (1996) found that the SERVQUAL model had not been fully applied to measure the service quality of retail stores and as a result developed the model for the retail environment (Chaipoopirutana 2008, 48). They suggested changing the structure of service quality models to a three-stage model, namely overall perceptions of service quality, primary dimensions and sub-dimensions as depicted in Figure 3 (Dabholkar et al. 1996, 7).

According to Dabholkar et al. (1996, 8), retail service quality has a hierarchical structure comprising five basic dimensions, namely: 1) physical aspects which look at the appearance and layout; 2) reliability which focuses on the kept promises; 3) personal interaction which entails personnel being courteous, helpful and inspire confidence in customers; 4) problem-solving which entails personnel being capable of handling customers' problems and complaints; and 5) policy which refers to policy implications and adherence.

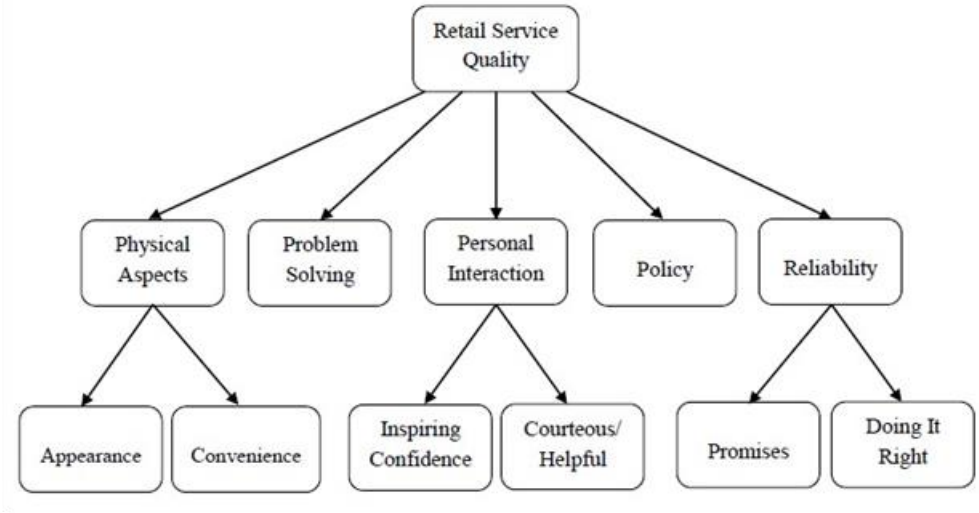


Figure 3: Multilevel model of service quality (Dabholkar et al. 1996)

Chaipoopirutana (2008, 48) argues that although the multilevel model proposes a new structure, it needs to generalise for different areas and consider the effect of some other factors such as environment and price.

Hierarchical Model

In this model, Brady and Cronin (2001, 36) conceptualised the five dimensions of the Dabholkar multilevel model into three dimensions and proposed nine sub-dimensions (Figure 4). According to Chaipoopirutana (2008, 48), Brady and Cronin combined the three-component model by Rust and Oliver (1994) and the multilevel conceptualisation of service quality by Dabholkar et al. (1996). The model suggests that service quality is formed by three primary dimensions, namely interaction quality, physical environment quality, and outcome quality (Brady and Cronin 2001, 34). They construed these three dimensions as factors that primarily determine service quality. Brady and Cronin (2001) further indicate that each of these dimensions is formed by three corresponding sub-dimensions such as: 1) attitude, behaviour and experience (interaction quality); 2) ambient conditions, design and social factors (physical environment quality); 3) waiting time, tangibles and valence (outcome quality) (Brady and Cronin 2001, 36). Therefore,

perceived service quality is the result of a multi-level evaluation where the customers first evaluate the primary dimensions based on the sub-dimensions.

Moreover, the reflective hierarchical model allows an approach to service quality with "customer reality" in mind, i.e. it is uncertain whether customers judge service quality attributes and overall evaluation of service quality separately, and whether they extrapolate their overall attitude to the individual service areas or encounters.

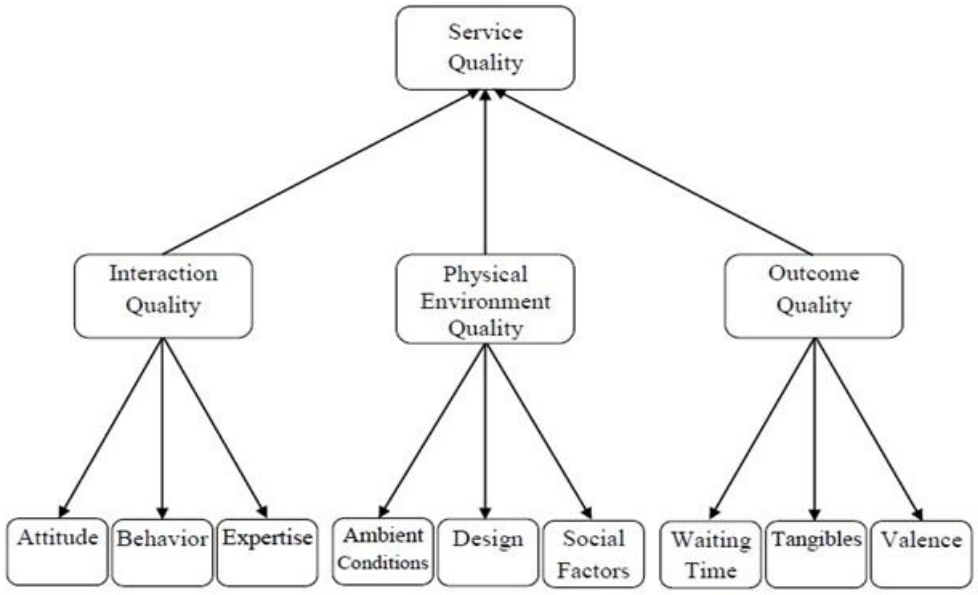


Figure 4: Diagrammatic representation of the Brady and Cronin hierarchical model.

The hierarchical model, as depicted in Figure 4, illustrates that service quality perception is multilevel and multidimensional.

The Quality of Internet Access Service within the South African Broadband Policy

The service quality model is applicable to different industries. Several authors have applied Dabholkar et al.'s multilevel model of service quality in their studies, as depicted in Table 1. As indicated, the model has been used in different fields of study, although it was originally developed for the retail industry. Table 1 indicates some of the authors who used the multilevel model of service quality in their research studies. The studies were selected based on their focus areas, namely library environment and retail industry. This was done to demonstrate the application of this model across various sectors, especially in the Library and Information Services (LIS).

Table 1: Studies that used the Dabholkar et al. multilevel service quality model

Model	Author	Title	Domain
Multilevel model of service quality	Wilson, K. (2015)	Does Competition Affect Quality? A Study of Internet Service Provision	Internet Service Provision
Multilevel model of service quality	Kiran, K., and S. Diljit (2012)	Modelling Web-based Library Service Quality	Library and Information Services
Multilevel model of service quality	Kim, Y. (2001)	A Study of Understanding the Impact of the Physical Environment on Perceived Service Quality in The Hotel Industry	Business Management
Multilevel model of service quality	Kim, S., and B. Jin (2002)	Validating the Retail Service Quality Scale for US and Korean Customers of Discount Stores: An Exploratory Study	Retail store
Multilevel model of service quality	Ndhlovu, T. (2013)	The Relationship between Service Quality, Customer Satisfaction and Customer Loyalty in the Retail Supermarket Industry	Retail

The application of the Dabholkar et al. model to this study conforms to the South African national broadband policy framework premised in the Electronic Communications Act, 36 of 2005 (ECA), which is the primary and broad framework governing the electronic communications industry in South Africa. This policy framework attempts to address various aspects of ICTs for development. This Act, among others, aims at:

- Promoting and facilitating the convergence of telecommunications, broadcasting, information technologies and other services contemplated in it.
- Promoting and facilitating the development of interoperable and interconnected electronic networks, the provision of the services contemplated in the Act and to create a technologically neutral licensee framework.

- Promoting the universal provision of electronic communications networks and electronic communications services and connectivity for all.
- Encouraging investment, including strategic infrastructure investment, and innovation in the communications sector.
- Providing a clear allocation of roles and assignment of tasks between policy formulation and regulation within the ICT sector.
- Ensuring that broadcasting services and electronic communications services, viewed collectively, are provided by persons or groups of persons from a diverse range of communities in the republic.
- Ensuring the provision of a variety of quality electronic communications services at reasonable prices.
- Ensuring information security and network reliability.
- Promoting the development of public, commercial and community broadcasting services which are responsive to the needs of the public.
- Promoting an environment of open, fair and non-discriminatory access to broadcasting services, electronic communication networks and to electronic communications services (ECA 36 of 2005).

The Dabholkar et al. model of multilevel service quality has a hierarchical structure with five dimensions, namely physical, problem-solving, personal, policy, and reliability. In this model, service quality is viewed as a higher-order factor defined by two additional levels of attributes, namely dimension and sub-dimension levels (Polyakova and Mirza 2015, 68).

Application of Service Quality Dimensions to Measure Public Libraries Internet Access

The multilevel model of service quality as indicated is a model by Dabholkar et al. To measure the quality of internet service in the South African public libraries, a multilevel model of service quality was chosen to provide a holistic evaluation of the service. The model encompasses these dimensions:

- Dimension 1: Personal interaction with the customer.
- Dimension 2: Reliability of service delivery to the customer.
- Dimension 3: Problem-solving for the customer.
- Dimension 4: Policy issues with respect to the customer.
- Dimension 5: Physical aspects of the relationship with the customer (Dabholkar et al. 1996).

The relevance of each of these five retail dimensions, as they relate to measuring the quality of internet access to South African public libraries, will be discussed.

Dimension 1: Personal Interaction with the Customer

Dabholkar et al. (1996, 6) suggest that in a retail service situation, personal interactions give employees an opportunity to instil confidence in customers that they have made the right choice about where to shop. Interaction also allows employees to demonstrate the ability to help the consumers with questions or problems (Blose and Tankersley 2004, 78). The personal interaction dimension is the grouping of SERVQUAL's responsiveness, assurance and empathy dimensions. This dimension measures customers' perceptions of whether ISP personnel do inspire confidence by being courteous and helpful (Dabholkar et al. 1996, 7). The personal interaction dimension also plays a role in determining the service quality of internet access in public libraries. ISPs interact with public libraries to address their daily internet connection problems. However, personal interaction with the ISP is minimal because most technical problems are solved online.

Blose and Tankersley (2004, 79) conclude that whether these interactions occur over the telephone, face to face or on an interactive web page, the extent to which ISP personnel exhibit the ability to handle such matters effectively, and whether they appear to care about tending to the consumer's request, should have an impact on perceptions of service quality. Gellings, in Blose and Tankersley (2004, 78), affirms that customers welcome the opportunity to talk to knowledgeable service representatives. Regular reporting meetings also encourage personal interaction with public libraries as clients.

Dimension 2: Reliability of Service Delivery to the Customer

Dabholkar et al. (1996, 7) define reliability as the extent to which the retail service provides what was promised when it was promised. The reliability dimension is similar to the SERVQUAL reliability dimension; the difference being that it has two sub-dimensions of promise and doing it right (Dabholkar et al. 1996, 7). In other words, reliability translates to keeping promises and doing it right. This dimension plays a significant role in the provision of internet access. Typically, the provision of internet access is continuous and clients expect non-interruption of this service. Any interruptions indicate a lack of reliability on the part of the ISP and create negative perceptions and decreased customer satisfaction.

Furthermore, failure by the ISP to keep its promises or do things in the correct way might result in customers defecting to competition and, in the process, spreading negative opinions by word of mouth. The extent to which such provision is continuous serves as a good indicator of reliability. As reliance on internet access increases, expectations for reliability also increase. As argued by the Corporation for National Research Initiatives (1998, 1), these expectations are driving clients to negotiate with their ISPs for guarantees that will meet client requirements for specific quality-of-

service levels. However, this poses a number of problems, such as the users' perception of service quality can extend end-to-end; that is, remote networks that extend beyond the responsibility of the customer's ISP can dictate application-level service quality; reaching agreement can be a complex and time-consuming task, encumbered by the myriad possible metrics that define service quality and the lack of any common definitions for these metrics; and there are no agreed-upon methodologies in place for measuring and monitoring negotiated metrics for compliance (Corporation for National Research Initiatives 1998, 1). In mitigating these challenges, a service level agreement, which details continuity mechanisms of internet access, might be entered into with the public libraries. However, the extent to which service personnel consistently and conveniently arrive and carry out their duties as scheduled should impact on consumer perceptions of service reliability.

Dimension 3: Problem-solving for the Customer

Problem-solving refers to an organisation's ability to show genuine and sincere interest in solving customers' problems and the employees' ability to handle complaints directly and instantly (Beneke et al. 2011, 30). This dimension of service provision addresses the handling of clients' problems and complaints. The ability of ISP personnel to attend to the queries presented to them is one part, but being able to resolve them is critical. Westbrook, in Dabholkar et al. (1996, 7), argues that customers are quite sensitive to how service providers attend to problems and complaints. This is affirmed by Huang (2009, 30), who contends that customers develop more positive and favourable perceptions of the organisations that show genuine interest in solving their problems and complaints over those who do not. Beneke et al. (2011, 30) conclude that organisations need to establish effective measures that can be implemented in order to handle customer problems and complaints. These measures can take the form of customer care lines, helpful personnel, customer service desks, as well as a website. In this case, ISPs have a range of help facilities aimed at resolving customers' queries.

Dimension 4: Policy Issues with respect to the Customer

Dabholkar et al. (1996, 7) suggest that the extent to which a store's policies influence consumer quality perceptions is directly related to whether the adopted policies meet customers' needs. Similarly, policies that relate to the provision of internet access would be expected to influence clients' quality perceptions regarding public libraries. There are a number of policy choices that the ISP should make with respect to meeting customer needs. These include applying an internet fair-use policy and blocking of undesired sites such as pornographic material. On the other hand, ISPs should adhere to the regulatory framework governing the sector. These include: Electronic Communications Act, 36 of 2005 (ECA), ICASA Act, 13 of 2000 (ICASA Act); Broadcasting Act, 4 of 1999 (Broadcasting Act); Electronic Communications and Transactions Act, 25 of 2002 (the ECT Act); Protection of Personal Information Act, 4 of 2013 (PoPI Act); National Broadband Policy; and National Radio Frequency Spectrum Policy. Similarly, public libraries should also adhere to available access

policies and procedures. They, in turn, have their own policies that regulate their operations. Generally, the extent to which an organisation's policies respond to customer needs would be an important factor in the customers' perceptions of service quality (Blose and Tankersley 2004, 81).

Dimension 5: Physical Aspects of the Relationship with the Customer

According to Dabholkar et al. (1996, 6–7), the physical aspects dimension has a wider meaning than the SERVQUAL tangibles dimension. The dimension includes not only the appearance of physical facilities, but also the convenience provided to the customer by the store layout. Blose and Tankersley (2004, 81) argue that the appearance of a store and the convenience of its layout are physical aspects of a retail service that have an impact on perceived service quality. A physical presence is important, especially when the customer needs to interact with the ISP. In the case of the public libraries, the customer will reflect on the physical location of the ISP, that is, whether the ISP operates from a small kiosk manned by one or two people on certain hours or in a standalone office park manned by full-time personnel. Information of this nature would influence the customer's perception about stability and permanency of the ISP. A stable and permanent residency boosts customer perception and avoids a derogatory phrase of being a "fly-by-night" service provider.

Problem Statement

Connecting public libraries in South Africa to the internet has been a huge achievement towards narrowing the digital divide (National Library of South Africa 2015). Since these libraries are built and funded by government, connecting them to the internet has become a government priority (National Library of South Africa 2015). Private telecommunications companies, referred to as internet service providers (ISPs), are competing to provide internet access to public libraries. This service is, however, managed through the Information Technology Department in the Premier's Office in most provinces (Ledwaba 2018). The mode of connectivity and the capacity provided to these libraries are dependent on the affordability or scope of the provincial department concerned. On the other hand, there are challenges experienced with the quality of internet access provided to these libraries. These challenges include, among others, resolution of technical problems, adherence to internet policies, access problems, as well as expertise of the ISPs' personnel (Ledwaba 2018).

The literature on public libraries and internet access indicates that much has been written on this subject (Bertot et al. 2009; Ledwaba 2018; Mojapelo 2019; Mugwisi, Jiyane, and Fombad 2016; Parent and Cruickshank 2009; Radijeng 2013; World Public Library 2015). These studies, however, focused more on internet access and use in public libraries than on measuring the *quality* of such a service to the public libraries. This study, therefore, intends to address the gap that exists in the measurement of the quality of public libraries' internet access. Measuring the quality of internet access in the South African public libraries would influence policy on funding for internet access,

compliance with regulatory policies governing internet access, and monitoring and evaluation of ISP services.

Purpose and Objectives of the Study

The purpose of this study was to measure the quality of internet access to South African public libraries by using the service quality model. The study was guided by the following research objectives:

- To identify the service quality models applicable to public libraries' internet access.
- To determine how the quality of internet access service fits within the South African broadband policy.
- To apply service quality dimensions to measure public libraries' internet access.

Methodology

The study adopted a quantitative research approach. It employed a survey design and used a questionnaire to collect data from a sample of 322 heads of public libraries in South Africa. Respondents were selected for the study because they were involved in the day-to-day running of the public libraries. The sample was derived from a population of 1 612 public or community libraries falling under the provinces' Department of Arts and Culture. The stratified probability proportional to size and systematic techniques were further used to select respondents to ensure a proportional representation. Sampled respondents were chosen proportionately to the size of the target population in a particular province. To obtain sampling frames, these respondents were further divided into strata to reflect the rural and urban categories. Elements in each stratum were subdivided to ensure that the sample remained unbiased and representative. The systematic sampling method was used to ensure unbiased selection of public libraries in each stratum. In the rural category within each province, public library number 1 was randomly selected as a starting point. A standard interval to distribute libraries was derived from using the formula: 85/17 (where 85 is the total number of rural public libraries and 17 is the sample size within a particular province), yielding a standard interval of 5. This calculation was based on the alphabetical list of provinces, of which Eastern Cape was the first. The standard interval of 5 resulted in the following rural public libraries to be included in the sample: 1, 6, 11, 16, 21 … until 85. It has been established that the standard interval was the same across all provinces. In the urban category, with Eastern Cape consisting of 59 public libraries, library number 2 was randomly selected as a starting point. The formula used to obtain a standard interval was 59/12=5. The formula indicated that the total number of urban public libraries (59) in Eastern Cape was divided by the number of urban public libraries required to form the sample size in this stratum (12) to obtain a standard interval (5). This meant that 2, 7, 12, 17, 22 … until 59 urban public libraries were selected to be included in the sample.

Most of the questionnaires were distributed to the respondents through their e-mail addresses, while some were handed directly to them. Of the 322 targeted participants, 203 responded to the questionnaire.

Findings and Discussion

The findings are discussed based on the three objectives stated in the study:

- To identify the service quality models applicable to public libraries' internet access.
- To determine how the quality of internet access service fits within the South African broadband policy.
- To apply service quality dimensions to measure public libraries' internet access.

As indicated, 203 responded to the questionnaire, making up a 63% response rate. Respondents were asked to indicate the extent to which they agree or disagree with each statement relating to the service quality of internet access that the library receives. The rating was on a scale of 1–3, where 1 = Disagree, 2 = Neutral, and 3 = Agree. Responses are captured in Table 2 based on their broad themes, namely physical aspects, reliability, personal interaction, problem-solving, and policy.

Table 2: Internet service quality and library satisfaction level n=203

Dimensions	**Rating and number of respondents**		
	Disagree (1)	**Neutral (2)**	**Agree (3)**
Physical aspects	13	0	190
Reliability	114	0	89
Personal interaction	28	4	171
Problem-solving	107	2	94
Policy	101	69	33

Physical Aspects

According to the responses, 94% agreed that the physical aspects of their ISPs were modern looking. It is only a small percentage (6%) of respondents who regarded ISPs' physical aspects old-fashioned. This aspect addressed the objective of the service quality dimensions to measure public libraries' internet access. As indicated, the dimension includes both the appearance of physical facilities and the convenience provided to the customer. Blose and Tankersley (2004, 81) concur that in retail, the appearance of a store and the convenience of its layout are physical aspects of a service that have an impact on perceived service quality. In this regard, information of this nature would influence the customer's perception about the stability of the ISP.

Reliability

In terms of the ISP's reliability, 56% of the respondents disagreed that their ISPs were reliable. Among issues raised were failure to address problems on agreed timelines, unstable internet access (which featured prominently), and inconsistent service deliverables. The challenge of unstable internet access is more prevalent in public libraries that are connected to the internet through satellite or a wireless mode of connectivity. These are mostly public libraries in rural areas where infrastructure is lacking. As clients expect continuous internet access, any interruptions suggest the ISP to be unreliable and, therefore, create negative perceptions. The Corporation for National Research Initiatives (1998, 1) attests that such expectations are driving clients to negotiate with their ISPs for guarantees that will meet their requirements for specific quality-of-service levels. Altogether 44% of the responses demonstrate their satisfaction with the level of service provided by their ISPs. This aspect talked to the objective of the service quality models applicable to public libraries' internet access, since it addressed the reliability of such service.

Personal Interaction

When asked about personal interaction with their ISPs, 84% agreed that they had personal interactions with their ISPs through visits to their libraries. The interactions were mostly to resolve reported problems. This indicates that most of the queries reported to the ISPs were often attended to on-site. The personal interaction aspect talked to the objective of the service quality models applicable to public libraries' internet access, as it influenced the service interactions between the client and the ISP. Gellings, in Blose and Tankersley (2004, 78), affirms that customers welcome the opportunity to talk to service representatives. It is even prudent for the customers to have a face-to-face conversation with the service representatives for better articulation and understanding of the challenges at hand. There were, however, 14% of respondents who had never had personal interactions with the ISPs. This could be due to the fact that their provincial IT personnel were used to addressing internet access challenges encountered by these public libraries.

Problem-solving

Respondents were also asked about the capability of their ISPs to resolve problems that they encountered in their public libraries. Most of the respondents (53%) disagreed that their ISPs were capable of solving their problems. They indicated that ISPs in some instances would leave their premises without resolving reported problems. This could be attributed to the challenges raised that some appointed ISPs were inexperienced. These were some of the verbatim responses: "These people have no experience at all." "Currently there is an Exco decision that gives [the] Office of the Premier [authority] to appoint all IT services." This indicated the level of dissatisfaction with the internet access service among the public libraries. Westbrook, in Dabholkar et al. (1996, 7), agrees that customers are quite sensitive to how service providers attend to problems and complaints. This aspect talked to the objective of the service quality models

applicable to public libraries' internet access. The resolution of the customer's problem would shape the service model going forward.

Policy

This aspect addressed the objective of how the quality of internet access service fits within the South African broadband policy. The emphasis was on how the policy impacted the quality of internet access. When asked about whether their ISP's policy was favourable to the public libraries, 50% disagreed. They mentioned that, for example, ISPs would replace damaged equipment at a cost, "something that was not clarified in the contract." Furthermore, respondents complained about the inconsistent application of their ISP's internet access policy. They indicated that: "We agreed on a 2mbps line but they reduce this during peak hours." One respondent further went on to say that "they change access rules as they please without informing us." Blose and Tankersley (2004, 81) allude that the extent to which an organisation's policies respond to customer needs would be an important factor in customers' perceptions of service quality. There are, however, a sizable number of respondents (34%) who did not agree nor disagree with the policy issues. It is assumed that these respondents did not interact directly with the ISPs.

Recommendations

The study makes the following recommendations:

Service Quality Models applicable to Public Libraries' Internet Access

Regular meetings with the public libraries and ISP should be scheduled to discuss the level of internet access service these libraries receive as a way of improving the service and mitigating against the potential challenges. There should be a transfer of skills to public libraries' personnel to resolve basic problems associated with internet access. This will greatly enhance the service and contribute to skills development.

The Quality of Internet Access Service within the South African Broadband Policy

Provision of internet access in public libraries should comply with the existing regulations. The internet access policy should be applied equally in public libraries. The service level agreements with the ISPs should be monitored and evaluated in order to ensure they are adhered to and to determine their relevance. There should be a common service level agreement for all public libraries within a particular province.

Application of Service Quality Dimensions to Measure Public Libraries' Internet Access

A dedicated technician should be assigned to public libraries on a full-time basis. Fixed lines such as fibre should be extended to public libraries for stable internet access and to eliminate challenges associated with wireless connectivity. On the other hand,

established and experienced ISPs should be contracted to provide internet connectivity to public libraries.

Conclusion

Different telecommunication companies (ISPs) are appointed in various provinces of South Africa to provide internet access to public libraries. The quality of internet access service provided to these libraries is generally unsatisfactory. The unreliable network infrastructure and a lack of expertise of some ISPs are among hindrances in providing a quality internet access service to the public libraries. The study concludes that a stable network infrastructure needs to be extended to public libraries, especially those in the rural areas in order to stabilise connectivity to the internet.

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