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Development and Validation of the Librarians' Perceptions of Factors influencing Library Service Quality (LPF-LSQ) Scale

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Abstract: *This study aims to develop and validate a comprehensive, psychometrically sound scale to measure librarians' perceptions of the internal and external factors that influence Library Service Quality (LSQ)—a perspective missing from existing user-centric instruments like LibQUAL and SERVQUAL. The scale was developed through a multi-stage process: (1) Item generation from literature and expert consultations (60 initial items); (2) Content validation using Lawshe's Content Validity Ratio (CVR) with 33 experts; (3) A pilot study (n=308); (4) Exploratory Factor Analysis (EFA) and (5) Confirmatory Factor Analysis (CFA) to establish the factor structure and model fit (n=309); and (6) Reliability testing using Cronbach's alpha and composite reliability. The final LPF-LSQ scale consists of 34 items across seven distinct, reliable factors: Library Staff (5 items), Physical Environment (6 items), Leadership (6 items), Government Funding & Policies (4 items), Users' Demand (5 items), Global Trends (4 items), and Library Location (4 items). All constructs demonstrated high reliability (α > 0.87) and good model fit (CFI = .925, RMSEA = .074). This is the first validated scale designed specifically to capture librarians' diagnostic perceptions of LSQ drivers. It provides library administrators and researchers with a powerful tool for internal assessment, strategic planning, and benchmarking to proactively enhance service quality.*

Introduction

The pursuit of service quality is a central tenet for the sustainability and relevance of academic libraries in the 21st century. As dynamic, service-oriented entities within higher education, libraries are increasingly compelled to demonstrate their value and impact by meeting and exceeding user expectations (Hernon & Altman, 1996; Nitecki, 1996). The concept of Library Service Quality (LSQ) has consequently evolved into a critical metric for assessing library performance, informing strategic planning, and justifying resource allocation (Cook & Thompson, 2000; Rehman, 2012).

The measurement of LSQ has been dominated by user-centric paradigms, most notably through standardized instruments like SERVQUAL (Parasuraman, Zeithaml, & Berry, 1988) and its library-specific adaptation, LibQUAL+® (Cook, Heath, & Thompson, 2003). These tools are predicated on the "gap model," measuring the disparity between users' expectations and their perceptions of received service.

Their widespread adoption has provided invaluable insights into the user experience, enabling libraries to identify deficiencies in service delivery from the patron's viewpoint (Fagan, 2014; Mahmood, Ahmad, Rehman, & Ashiq, 2021). Studies utilizing these instruments, including within Pakistan (Arshad & Ameen, 2010; Rehman, 2012), have effectively benchmarked performance and highlighted areas for improvement from the consumer's perspective.

However, a significant limitation inherent in these user-centric models is their fundamentally reactive nature. They excel at diagnosing the "symptom"—the level of user (dis)satisfaction—but offer limited direct insight into the underlying "causes" or "diagnostics" within the library's internal and external environment that produce these outcomes (Miller, 2008). For instance, a poor score in the "Information Control" dimension of LibQUAL+® might be attributed by users to a lack of resources. Yet, the root cause could stem from various factors unmeasured by the tool: inadequate skills among library staff, restrictive government procurement policies, insufficient funding from university administration or a failure by leadership to anticipate global trends in digital resource acquisition. Library managers are thus often left with a clear picture of *what* is wrong but lack empirical data to understand *why* it is wrong from an operational and strategic standpoint.

This creates a critical gap in the library assessment ecosystem. While "the voice of the customer" is essential, it must be complemented by "the voice of the practitioner" to form a complete diagnostic picture. Librarians and library leaders possess a unique, ground-level perspective on the enablers and barriers to high-quality service (Duncan, 1972; Stueart & Moran, 2012). Their perceptions of factors such as staff competence, the adequacy of the physical environment, the effectiveness of leadership, the constraints of government policies, the pressure of user demands, the challenges of adapting to global technological shifts, and the implications of library location are crucial data points for any meaningful intervention strategy. Despite the importance of this perspective, no rigorously validated instrument exists to systematically capture and measure these librarian perceptions of the factors influencing LSQ.

Therefore, this study aims to address this salient gap by developing and validating a novel, psychometrically robust scale designed specifically to measure Librarians' Perceptions of the Factors influencing Library Service Quality (LPF-LSQ).

The objectives of this research are to:

1. Generate a comprehensive item pool based on a synthesis of extant literature and expert opinion.
2. Establish content validity through quantitative expert evaluation.
3. Purify the scale and explore its underlying factor structure through Exploratory Factor Analysis (EFA).
4. Confirm the hypothesized factor structure and establish construct validity through Confirmatory Factor Analysis (CFA).
5. Assess the scale's reliability and validity for use in research and practice.

The development of this scale provides a necessary complement to existing user-focused tools. It empowers library administrators and researchers with a proactive, diagnostic instrument to conduct internal audits, identify strategic strengths and vulnerabilities, and make evidence-based decisions that can enhance service quality at its source, ultimately leading to improved user outcomes and demonstrating library value in a complex academic environment.

Literature Review & Conceptual Foundation

The development of the LPF-LSQ scale is grounded in a synthesis of literature spanning service quality theory, library management, and organizational studies. This review establishes the conceptual

foundation for the scale by first examining the established paradigms of LSQ measurement, then identifying their limitations, and finally, justifying the specific internal and external factors that form the core constructs of the new instrument.

The Dominant Paradigm: User-Centric Measurement of LSQ

The measurement of service quality in libraries has been overwhelmingly shaped by models borrowed from the marketing and business sectors, primarily the SERVQUAL instrument developed by Parasuraman, Zeithaml, and Berry (1985, 1988). This model conceptualizes quality as the gap between customers' expectations and their perceptions of performance across five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Its application in libraries (Nitecki, 1996; Cook & Thompson, 2000) confirmed its utility but also highlighted the need for context-specific adaptations.

This led to the development of LibQUAL+® by the Association of Research Libraries (ARL), a tool specifically designed to measure library service quality (Cook, Heath, & Thompson, 2003). LibQUAL+® refined the dimensions into: *Affect of Service* (combining empathy, responsiveness, and assurance), *Information Control* (reliability and access to resources), and *Library as Place* (tangibles and environment). Its robustness and ability to provide benchmarking data have made it a de facto standard in academic library assessment worldwide (Voorbij, 2012; Fagan, 2014). Studies in diverse contexts, including Pakistan (Rehman, 2012; Mahmood, Ahmad, Rehman, & Ashiq, 2021), have successfully employed LibQUAL+® to gauge user satisfaction and identify service shortfalls, providing invaluable "voice of the customer" data.

Identifying the Gap: From Measuring Outcomes to Diagnosing Causes

Despite their widespread use, these user-centric tools are inherently diagnostic of outcomes, not of causes. They answer the question, "What is the level of quality?" but not "Why is the quality at this level?" (Miller, 2008). A low score in Information Control, for instance, signals a problem with resource access but does not elucidate whether the cause is inadequate funding, poor staff training, inefficient leadership, restrictive licensing policies, or insufficient technological infrastructure.

This limitation is significant because library service quality does not emerge in a vacuum. It is the product of a complex interplay between an organization's internal capabilities and the external pressures it faces. This view is supported by organizational theory, which posits that an organization's performance is influenced by its ability to manage both its internal environment (e.g., culture, staff, resources) and its external environment (e.g., economic conditions, regulations, stakeholder demands) (Duncan, 1972; Stueart & Moran, 2012). As Pettigrew (1977) notes, strategic decision-making is deeply affected by these intertwined contexts. Therefore, a complete understanding of LSQ requires tools that capture these underlying drivers from the perspective of those managing the service—the librarians.

The Conceptual Foundation: Internal and External Factors of LSQ

To address this gap, this study synthesizes literature to define the key constructs that constitute the LPF-LSQ scale. The factors are categorized into internal (controllable within the library) and external (largely uncontrollable) environments.

Internal Factors

- **Library Staff (LS):** Library personnel are the primary interface with users, and their attitude, competence, and commitment are fundamental to service delivery. Research consistently shows that staff behavior significantly impacts user perceptions of quality (Schneider, Parkington, & Buxton, 1980; Bitner, 1990). Studies, including in developing contexts, confirm that positive staff attitudes are crucial for equitable access and service utilization (Oden & Owolabi, 2021; Ekong & Men, 2017).

- **Library Physical Environment (PE):** The workplace environment, encompassing layout, furniture, lighting, noise, and ambient conditions, significantly affects both staff productivity and user experience (Bitner, 1990; Djukic et al., 2014). In libraries, a conducive physical environment is critical for attracting users, facilitating learning, and enabling effective service delivery (Ramlall, 2003; Badmus & Ogunlana, 2020).
- **Library Leadership (LL):** Effective leadership is a critical but often overlooked component of library management (Mullins & Linehan, 2006; Hernon, 2017). Leadership provides vision, motivates staff, secures resources, and fosters a culture of innovation and service excellence. Studies on library leadership highlight the importance of communication, strategic planning, and staff empowerment (Riggs, 2001; Ammons-Stephens et al., 2009).

External Factors

- **Government Funding and Policies (GFP):** Particularly in countries like Pakistan, government funding through bodies like the Higher Education Commission (HEC) is the lifeblood of public universities and their libraries (Khan & Bhatti, 2016). Funding levels and national policies directly dictate a library's ability to acquire resources, maintain infrastructure, and develop services (Ogunjimi, Bello, & Olaniyi, 2018). Budgetary constraints have been a perennial challenge, impacting service quality (Khan, 2011; Mahmood, 2009).
- **Users' Demand (UD):** The modern library user is increasingly demanding, seeking instant, remote access to digital resources and personalized services (Berners-Lee et al., 1992; Fischer, 2012). Understanding and anticipating these evolving demands is crucial for libraries to remain relevant. This construct captures the librarians' perception of the pressure and expectations exerted by their user community (Owolabi, Jimoh, & Okpeh, 2010).
- **Global Trends (GT):** Academic libraries operate in a globalized digital ecosystem. Trends like the shift to electronic resources, open access, social media engagement, and new technologies (e.g., AI, makerspaces) create both opportunities and imperatives for change (Otike & Barát, 2021; Palmer, 2021). This construct measures the extent to which librarians perceive the need to adapt to these overarching trends.
- **Library Location (LOC):** The geographical placement of a library within a university campus significantly influences its accessibility, visibility, and footfall, thereby impacting its utilization and effectiveness (Jain & Jain, 2015; Kennedy & Weaver, 2014). A central, accessible, and well-situated library is more likely to be integrated into the academic life of the institution.

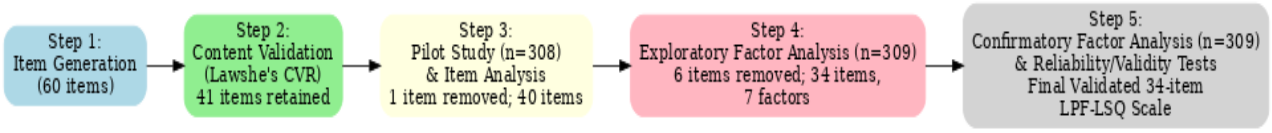
Conclusion of the Review

The literature reveals a clear trajectory: while immense effort has been devoted to measuring the *outcomes* of library service through user perceptions, a parallel need exists for a validated instrument to diagnose the *drivers* of those outcomes through staff perceptions. The seven factors outlined above—derived from a robust body of LIS and management literature—form the conceptual bedrock of the LPF-LSQ scale. This study posits that by systematically measuring librarians' perceptions of these internal and external factors, library administrators and researchers can gain a diagnostic, holistic understanding of LSQ dynamics, enabling more effective and targeted strategic interventions.

Methodology

The development of the Librarians' Perceptions of Factors influencing Library Service Quality (LPF-LSQ) scale followed a rigorous, multi-stage process aligned with established psychometric principles (DeVellis, 2016; Hair et al., 2010; Worthington & Whittaker, 2006). The sequential stages ensured the scale's content validity, reliability, and construct validity, culminating in a psychometrically sound instrument.

The procedural flowchart for the scale development is summarized in Figure 1.



Stage 1: Item Generation and Construct Definition

The initial phase focused on generating a comprehensive item pool to ensure content validity by capturing the full domain of the constructs (Hinkin, 1998). A thorough and systematic review of extant literature in Library and Information Science (LIS) and management sciences was conducted to identify potential factors influencing Library Service Quality (LSQ). This review, encompassing seminal and contemporary works, revealed eight broad themes: four internal factors (Library Staff, Library Physical Environment, Library Leadership, Library Culture) and four external factors (Government Funding and Policies, Users' Demand, Global Trends, Library Location).

From this theoretical foundation, a pool of 60 initial items was generated. Each item was crafted as a clear, concise statement reflecting a specific attribute of one of the eight constructs. For example, an item for "Library Staff" was "Library staff shows a welcoming attitude to the users," while an item for "Global Trends" was "Library has embraced new technologies like ICT." This process ensured the scale had a strong theoretical grounding and face validity.

Stage 2: Content Validation via Lawshe's Method

To quantitatively assess content validity, Lawshe's (1975) Content Validity Ratio (CVR) was employed. A panel of 33 experts—comprising senior academics, seasoned library directors and professionals from the fields of LIS and Management Sciences—was assembled. Each expert received the list of 60 items alongside the definitions of the eight constructs and was asked to rate each item on a 3-point scale: *1 = not necessary, 2 = useful but not essential, 3 = essential*.

The CVR was calculated for each item using the formula:

CVR=(ne−N2)N2$CVR = 2N(ne - 2N)$

where ne is the number of experts rating the item as "essential," and N is the total number of experts (N=33). For a panel of this size, the minimum acceptable CVR value for statistical significance at $p < 0.05$ is 0.33 (Lawshe, 1975). Items failing to meet this threshold were deemed not to possess sufficient content validity and were eliminated. This process resulted in the retention of 41 items that exhibited statistically significant CVR values, effectively refining the item pool based on expert consensus.

Stage 3: Pilot Study and Item Refinement

The 41-item questionnaire was administered in a pilot study to a sample of 308 librarians from various university libraries across Pakistan. This step aimed to pre-test the instrument for clarity, readability, and to perform initial reliability and item analysis (Polit & Beck, 2006).

The collected data was analyzed using SPSS version 23. The reliability of the entire scale was estimated using Cronbach's Alpha, which yielded an excellent value of $\alpha = 0.954$, indicating very high internal consistency (Nunnally, 1978). To further refine the scale, item-total correlation analysis was conducted. This measures the correlation between each individual item and the total score of the scale. Following the recommendation of Nunnally and Bernstein (1994), a minimum threshold of 0.4 was set. One item (GT3) demonstrated a low item-total correlation (.179) and was subsequently removed from the pool. This resulted in a refined 40-item instrument ready for factor analysis.

Stage 4: Exploratory Factor Analysis (EFA)

The 40-item instrument was administered to a new, independent sample of 309 university librarians to

explore the underlying factor structure without contamination from the pilot sample.

Data Suitability: The suitability of the data for EFA was confirmed by two tests. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.936, classified as "marvelous" by Kaiser (1974), far exceeding the recommended minimum of 0.6. Bartlett's Test of Sphericity was significant (χ^2 = 10603.107, *p* < .001), indicating that the correlations between items were sufficiently large for factor analysis (Hair et al., 2010).

Factor Extraction and Rotation: Principal Component Analysis (PCA) with Varimax rotation was employed. The analysis was conducted iteratively. The criteria for retention were: (1) factors with eigenvalues greater than 1.0 (Kaiser's criterion), (2) items with primary factor loadings exceeding 0.5, and (3) no significant cross-loadings (above 0.4 on another factor) (Field, 2018). Over three iterations, items that violated these criteria (e.g., items LC1, LC2 with low loadings; items from the "Library Culture" construct that cross-loaded) were systematically removed.

Final EFA Solution: The final EFA yielded a clear and interpretable structure of 34 items loading onto 7 distinct factors, which together accounted for 74.691% of the total variance. The factors were labeled as: Library Physical Environment (PE, 6 items), Library Leadership (LL, 6 items), Library Staff (LS, 5 items), Government Funding & Policies (GFP, 4 items), Users' Demand (UD, 5 items), Global Trends (GT, 4 items), and Library Location (LOC, 4 items).

Stage 5: Confirmatory Factor Analysis and Validation

Confirmatory Factor Analysis (CFA): The 7-factor, 34-item model derived from the EFA was tested using Confirmatory Factor Analysis (CFA) in AMOS version 23 on the same sample of 309 respondents. The maximum likelihood estimation method was used to assess how well the hypothesized model fit the observed data. The model demonstrated a good fit to the data based on standard fit indices (Hu & Bentler, 1999; Schumacker & Lomax, 2004):

- **χ^2/df = 4.227** (acceptable value between 3 and 5)
- **Comparative Fit Index (CFI) = 0.925** (exceeds the 0.90 threshold for good fit)
- **Tucker-Lewis Index (TLI) = 0.912** (exceeds the 0.90 threshold)
- **Root Mean Square Error of Approximation (RMSEA) = 0.074** (below the 0.08 threshold for reasonable fit)
- **Standardized Root Mean Square Residual (SRMR) = 0.051** (below the 0.08 threshold)

Reliability and Validity Assessment:

- **Reliability:** The internal consistency of each construct was assessed using Cronbach's Alpha and Composite Reliability (CR). All seven constructs displayed high reliability, with Cronbach's Alpha values ranging from .871 to .918 and CR values ranging from 0.808 to 0.897, all significantly exceeding the recommended threshold of 0.70 (Nunnally & Bernstein, 1994).
- **Convergent Validity:** This was assessed using Average Variance Extracted (AVE), which measures the amount of variance captured by a construct relative to the variance due to measurement error. Six of the seven constructs had AVE values above the 0.50 benchmark. The Users' Demand (UD) construct had an AVE of 0.452, which is slightly below 0.5. However, given that its Composite Reliability was high (0.831), convergent validity was still deemed adequate, as CR is considered a more reliable indicator of a construct's internal consistency (Fornell & Larcker, 1981).

The outcome of this rigorous five-stage process is the final, validated 34-item LPF-LSQ scale, a robust instrument for measuring librarians' perceptions of the factors that drive library service quality.

Results: The Final LPF-LSQ Scale

The rigorous multi-stage scale development process culminated in the final, validated Librarians' Perceptions of Factors influencing Library Service Quality (LPF-LSQ) scale. The results presented below detail the definitive factor structure, the psychometric properties of each construct, and the complete instrument with its standardized factor loadings.

Final Factor Structure and Psychometric Properties

The Confirmatory Factor Analysis (CFA) confirmed a robust 7-factor model comprising 34 items. The model fit indices, as detailed in the methodology, indicated a good fit to the data ($\chi^2/df = 4.227$, CFI = .925, TLI = .912, RMSEA = .074, SRMR = .051), providing strong evidence for the hypothesized structure (Hu & Bentler, 1999; Schumacker & Lomax, 2004).

Table 1 summarizes the psychometric properties of each construct within the final model. All constructs demonstrated high internal consistency, with Cronbach's Alpha (α) and Composite Reliability (CR) values significantly exceeding the recommended threshold of 0.70 (Nunnally & Bernstein, 1994). Average Variance Extracted (AVE) was used to assess convergent validity. While six constructs surpassed the ideal 0.50 benchmark, the Users' Demand (UD) construct had an AVE of 0.452. However, as Fornell and Larcker (1981) suggest, a CR value above 0.60 can indicate adequate convergent validity even with an AVE below 0.50, provided the CR is sufficiently high. The CR for UD was 0.831, justifying its retention and confirming the scale's strong overall convergent validity.

Table 1: Psychometric Properties of the Final LPF-LSQ Constructs

Construct	No. of Items	Cronbach's Alpha (α)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Library Staff (LS)	5	.904	.832	.499
Physical Environment (PE)	6	.915	.897	.594
Library Leadership (LL)	6	.918	.876	.542
Gov. Funding & Policies (GFP)	4	.896	.811	.519
Users' Demand (UD)	5	.888	.831	.452
Global Trends (GT)	4	.871	.833	.500
Library Location (LOC)	4	.892	.808	.514
Overall Scale	**34**	**.954**	-	-

The Validated LPF-LSQ Scale

The final LPF-LSQ scale is presented in Table 2. It consists of 34 statements measured on a 7-point Likert scale (e.g., 1 = Strongly Disagree to 7 = Strongly Agree). The standardized factor loadings from the CFA are included for each item; all loadings are high and statistically significant (*p* < .001), providing strong evidence that each item is a reliable indicator of its intended latent construct (Hair et al., 2010). The factors are organized into the two overarching categories identified by the conceptual framework: Internal Factors and External Factors.

Table 2: The Librarians' Perceptions of Factors (LPF-LSQ) Scale

Factor & Code	Item Wording	Loading
INTERNAL FACTORS		
Library Staff (LS)		
LS1	Library staff shows a welcoming attitude to the users.	0.667
LS2	Library staff is committed to providing the best possible services to the users.	0.743
LS3	Library staff is competent enough to cater to the information needs of users.	0.695
LS4	Library staff is ready to solve users' problems.	0.759
LS5	Library staff is aware of users' needs.	0.662
Physical Environment (PE)		
PE1	The environment of the library is conducive for reading.	0.770
PE2	The library has ample seating capacity.	0.762
PE3	The furniture and floor plan of the library are well designed.	0.791
PE4	The library is clean and tidy.	0.782
PE5	The library has appropriate lighting and ventilation.	0.833
PE6	Diverse reading areas are available in the library.	0.678
Library Leadership (LL)		
LL1	Library leadership has a clear vision for the library.	0.703
LL2	Library leadership motivates staff to achieve goals.	0.787
LL3	Library leadership supports library staff.	0.783
LL4	Library leadership is concerned about the development of	0.717

Factor & Code	Item Wording	Loading
	the library.	
LL5	Library leadership involves staff in decision-making.	0.695
LL6	Library leadership encourages open communication.	0.727
External Factors		
Gov. Funding & Policies (GFP)		
GFP1	The government provides special funding to develop university libraries.	0.810
GFP2	The government provides access to information resources for university libraries.	0.702
GFP3	The government gives a special tax waiver on library resources acquisition.	0.729
GFP4	The government provides special funding for infrastructure development.	0.629
Users' Demand (UD)		
UD1	Library users are very keen on library services.	0.664
UD2	Library users are aware of library services.	0.754
UD3	Library users ask for innovative services.	0.584
UD4	Library users demand the provision of timely services.	0.615
UD5	Library users submit their complaints frequently.	0.727
Global Trends (GT)		
GT1	The library has embraced new technologies like ICT.	0.730
GT2	The library has shifted its focus from print to digital.	0.646
GT4	The library uses social media for providing services.	0.733

Factor & Code	Item Wording	Loading
GT5	The library has a user-centric services approach.	0.762
Library Location (LOC)		
LOC1	The library is located in a central place in the university.	0.712
LOC2	The library is accessible to all users.	0.729
LOC3	It is easy to enter the library.	0.658
LOC4	The library building is located in a silent zone.	0.765

Note: All factor loadings are standardized and significant at p < .001.

This finalized LPF-LSQ scale provides researchers and practitioners with a robust, validated tool to diagnostically assess the core internal and external factors that librarians perceive as critical drivers of service quality in academic libraries.

Discussion

The primary objective of this study was to develop and validate a robust, psychometrically sound scale to measure librarians' perceptions of the factors influencing Library Service Quality (LSQ). The rigorous multi-stage process resulted in the Librarians' Perceptions of Factors (LPF-LSQ) scale, a 34-item instrument comprising seven distinct factors. This discussion interprets the significance of this outcome, aligns the findings with existing literature, outlines the scale's contributions, and explores its practical utility.

Synthesis and Interpretation of the Factor Structure

The emergence of the seven-factor structure through both EFA and its subsequent confirmation via CFA provides strong empirical support for the conceptual framework derived from the literature. The factors neatly align with the internal-external environment dichotomy common in organizational theory (Duncan, 1972; Stueart & Moran, 2012). The three internal factors (Library Staff, Physical Environment, Leadership) represent the core, controllable elements of library management. The four external factors (Government Funding & Policies, Users' Demand, Global Trends, Location) represent the broader, often less controllable, contextual forces that impinge upon library operations.

The high factor loadings and excellent reliability scores for all constructs indicate that librarians conceptualize these factors as coherent and distinct domains of influence. For instance, items related to empathy, competence, and problem-solving (LS1-LS5) loaded strongly on the Library Staff factor, reinforcing the established literature that positions staff attitude and expertise as the frontline of service quality perception (Bitner, 1990; Oden & Owolabi, 2021). Similarly, the clear loading of items related to space, furniture, and ambient conditions (PE1-PE6) onto the Physical Environment factor validates the work of scholars who argue that the library as a "place" is a critical component of its service offering, affecting both user satisfaction and staff productivity (Ramlall, 2003; Badmus & Ogunlana, 2020).

Theoretical and Methodological Contribution

The most significant contribution of this study is addressing a critical gap in the library assessment toolkit. While instruments like LibQUAL+® (Cook, Heath, & Thompson, 2003) and SERVQUAL

(Parasuraman et al., 1988) effectively capture the "voice of the customer," the LPF-LSQ scale provides the missing "voice of the practitioner." This dual-perspective approach is essential for a holistic understanding of LSQ. As Miller (2008) implied, knowing a service gap exists (via LibQUAL+®) is only half the solution; understanding the managerial and environmental causes of that gap (via LPF-LSQ) is what enables effective strategic intervention.

Methodologically, this study adhered to the highest standards of scale development (DeVellis, 2016; Hinkin, 1998). The use of Lawshe's CVR provided a quantitative, rigorous method for content validation, moving beyond anecdotal expert opinion. The sequential use of EFA on one sample followed by CFA on the same sample to confirm the structure is a recognized best practice that ensures the stability and validity of the resulting factors (Hair et al., 2010; Worthington & Whittaker, 2006). The excellent fit indices from the CFA confirm that the model is a good representation of the underlying data structure across a diverse sample of librarians.

Practical Implications and Utility

The LPF-LSQ scale is not merely a research tool; it is a practical diagnostic instrument for library management and leadership. Its applications are multifold:

- **Internal Auditing and Strategic Planning:** Library directors can administer this scale to their staff to conduct a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) based on empirical data. Low scores on "Library Leadership" or "Global Trends" would indicate a need for management training or technology strategy development, respectively.
- **Advocacy and Resource Allocation:** Quantifiable data on librarians' perceptions of Government Funding and Policies (GFP) provides powerful evidence for advocacy campaigns directed at university administrations or national bodies like the HEC. It translates subjective grievances into objective data that can support budget requests and policy change proposals (Khan & Bhatti, 2016).
- **Benchmarking:** The scale allows for comparisons between libraries within a system, a region, or across different countries to identify best practices and common challenges. This moves library assessment beyond comparing user satisfaction scores to comparing the perceived drivers of those scores.
- **Longitudinal Assessment:** Libraries can use the LPF-LSQ scale to track changes in staff perceptions over time, effectively measuring the impact of new initiatives, leadership changes, or policy shifts on the internal and external environment.

Conclusion of the Discussion

In conclusion, the development and validation of the LPF-LSQ scale mark a significant advancement in the field of library assessment. By providing a validated mechanism to capture librarians' diagnostic perceptions, this scale complements existing user-centric tools and offers a more complete, nuanced picture of the ecosystem in which library service quality is produced. It bridges a critical gap between identifying service quality problems and understanding their root causes, thereby empowering library leaders to make more informed, evidence-based decisions that can enhance service delivery and demonstrate value in an increasingly complex academic landscape.

Limitations and Future Research

While this study followed a rigorous methodology, several limitations must be acknowledged, and these present valuable avenues for future research.

Limitations

- **Geographical and Contextual Specificity:** The primary data collection for the validation studies (EFA and CFA) was conducted within Pakistan. Although the initial item generation was based on international literature, the specific economic, cultural, and higher education policy context of Pakistan may influence the generalizability of the factor structure. The salience of the Government Funding and Policies (GFP) factor, for instance, is particularly acute in developing countries with centralized higher education commissions.
- **Sample Characteristics for Validation:** The sample, while robust in size (n=309 for EFA/CFA), was one of convenience. Although it included librarians from various universities, it was not a nationally representative random sample, which may introduce some unknown sampling bias.
- **Cross-Sectional Design:** The study collected data at a single point in time. This cross-sectional design captures perceptions statically and cannot account for how these perceptions might evolve in response to internal changes (e.g., new library leadership) or external shocks (e.g., a global pandemic, major shifts in national education policy).

Future Research Directions

The limitations above, coupled with the introduction of this new scale, open several productive paths for future scholarly inquiry:

1. **Cross-Cultural Validation:** The most immediate research direction is to validate the LPF-LSQ scale in different cultural and national contexts. Replicating this study in other developing nations (e.g., in Africa or Southeast Asia) and, importantly, in developed Western countries would test the stability of the seven-factor model. This would determine if "Government Funding" remains a distinct factor or is subsumed into broader administrative support in contexts with different funding models.
2. **Criterion-Related Validity Studies:** Future research should establish criterion-related validity by correlating LPF-LSQ scores with established outcome measures. For example, do poorer perceptions on the "Library Staff" or "Physical Environment" factors actually predict lower LibQUAL+® scores from users in the same libraries? Establishing this predictive link would powerfully demonstrate the scale's real-world diagnostic utility.
3. **Longitudinal Applications:** Researchers should employ the LPF-LSQ scale in longitudinal studies. Administering the scale before and after a major intervention (e.g., a library renovation, a new strategic plan, a significant technology implementation) would measure its sensitivity to change and provide insights into the cause-and-effect relationships between management actions and staff perceptions.
4. **Qualitative Integration:** A logical next step is to use the quantitative results from the LPF-LSQ scale to inform qualitative, in-depth case studies. For instance, libraries that score unusually high or low on a specific factor could be selected for interviews and focus groups with their staff to explore the nuanced reasons behind those scores, providing rich contextual data that the scale alone cannot.
5. **Expansion of Nomological Network:** Research could explore how librarians' perceptions on the LPF-LSQ scale relate to other critical organizational variables, such as job satisfaction, organizational commitment, or turnover intentions. This would integrate the scale into a broader theoretical network of library management studies.

Conclusion

This study successfully addressed a significant gap in the library assessment literature by developing and validating a novel instrument: the Librarians' Perceptions of Factors influencing Library Service Quality

(LPF-LSQ) scale. Through a rigorous, multi-stage process encompassing expert review (Lawshe's CVR), pilot testing, Exploratory Factor Analysis, and Confirmatory Factor Analysis, the research culminated in a psychometrically robust 34-item scale measuring seven distinct factors: three internal (Library Staff, Physical Environment, Leadership) and four external (Government Funding & Policies, Users' Demand, Global Trends, Location).

The LPF-LSQ scale provides the crucial "voice of the practitioner," a diagnostic perspective that has been missing alongside the dominant "voice of the customer" captured by tools like LibQUAL+®. It empowers library administrators and researchers to move beyond simply identifying service quality shortfalls to understanding their root causes within the library's operational and strategic environment. By offering a validated means to audit internal capabilities and external pressures, this scale serves as a powerful tool for evidence-based strategic planning, targeted advocacy, and proactive management.

Ultimately, the LPF-LSQ scale represents more than just a new questionnaire; it signifies a step toward a more holistic and nuanced ecosystem of library assessment. It acknowledges that excellent service quality is not spontaneously generated but is the product of a complex interplay between dedicated staff, effective leadership, adequate resources, and adaptive strategies within a challenging external landscape. By equipping the profession with a tool to measure these underlying dynamics, this research contributes to the ongoing mission of enhancing the value, impact, and sustainability of academic libraries worldwide.

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