

An investigation of Internet Service Provider selection criteria: A systematic literature review

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ABSTRACT: In today's highly competitive business environment, organizations need to collaborate with strategic partners to provide high quality services at lower cost to maintain their effectiveness and efficiency. Hence, the concept of Supply Chain Management (SCM) emerged to effectively coordinate and manage financial, physical, and information activities within organizations and among all participating external parties. Qualitative and quantitative factors must be considered in SCM to ensure sustainable development. The research investigates the metrics and criteria influencing the process of selecting an Internet service provider (ISP) from 2001 to 2022 to assess the extent to which these factors have met the requirements of current decision-makers. It is appropriate to conduct a literature review in light of the changes in the purchasing process and determine its suitability for choosing an ISP. A comprehensive literature review of 51 articles published during the above period was conducted to ensure coverage of the latest ISP selection criteria. The results indicate a decline in the importance of criteria related to cost and prices and an increase in the importance of criteria such as quality, reliability, and performance, as evidenced by their repeated mention in the literature.

Keywords: Systematic literature review, Internet Service Provider, Qualitative and quantitative criteria, Supply chain management, Supplier selection.

1. INTRODUCTION

Currently, the Internet is considered one of the fundamental pillars for any governmental or private institution to achieve its objectives [1]. With the rapid technological advancements, which lead to short product life cycles and increased competition, it has become imperative for ISP companies to attain and sustain competitive advantages [2, 3]. With numerous companies providing Internet services, various offers can confuse institutions when choosing them [4]. To meet its requirements, the organization must choose a group of high-performing partners [5]. The process of evaluating and comparing offers is a challenging and complex one because it is multi-faceted and involves qualitative and quantitative criteria that must be considered before choosing a service provider [6, 7].

Each procurement process has specific requirements and challenges, depending on the nature of the market. These requirements and decisions must be synthesized among decision-makers in supply chain management, where organizations' capabilities and procedures depend on the decisions of the supply chain [8, 9]. For effective use, researchers and decision-makers in organizations alike must evaluate supplier selection criteria before applying them to the procurement process [10].

In his early study, [6] was the first to propose over twenty metrics and criteria for evaluating suppliers that purchasing managers trade off when making selections. Out of 300 possible respondents, 273 purchasing agents were handed a three-part questionnaire. Among the 23 criteria used to evaluate suppliers, product quality, pricing, delivery, and service were the most frequently employed metrics at the time, respectively.

The agreement among the researchers on the importance of evaluating the criteria for selecting suppliers was the motivation behind this work, as it affects the performance of organizations directly or indirectly. This research aimed to investigate the most important criteria for selecting an Internet service provider and re-evaluate 26 critical criteria for selecting a provider from 2001 to 2022 by conducting a comprehensive literature review. To achieve this goal, the main research question was: What are the critical factors or criteria for selecting a strategic ISP for purchasing organizations globally? The current research results will benefit future Internet and telecommunications service work.

2. Methodology

2.1 Systematic Literature Review (SLR)

This paper reviews the literature on the most frequently used criteria in selecting an ISP based on the review method conducted by [11].

This study will evaluate the 26 ISP selection criteria since the important article by [12] was cited 1138 times until 2022. The aim is to assess whether they meet the requirements of current decision-makers or not. In the aforementioned study, the researchers presented a model for evaluating the criteria for selecting suppliers for the communication system, including operational, technical, cost, and other criteria, in addition to some requirements that experts suggested.

The research boundaries included four databases: Scopus, ScienceDirect, IEEE, and Google Scholar to identify relevant reference studies. Relevant terms were used in the research process, such as “criteria,” “metrics,” and “factors,” and the “OR” operating word was used to link these terms with the operative word “AND” with the field of study, which is “internet service provider selection.” The result of the initial search was 1877 articles. The articles were filtered to obtain articles related to the research topic from 2001 to 2022, and duplicate articles were excluded. The result was 1294 articles. After that, the title of each piece and the abstract were examined, in addition to including studies that contain discussion and the identification of clear criteria for selecting an Internet service provider. The review process was limited to articles written in English only. 320 articles related to the research topic were initially identified. Subsequently, the articles were revised in detail, and the required data was extracted through an Excel worksheet. Only the most relevant 51 articles were selected for examination. Figure 1 shows the process of article selection, research query, and inclusion criteria:

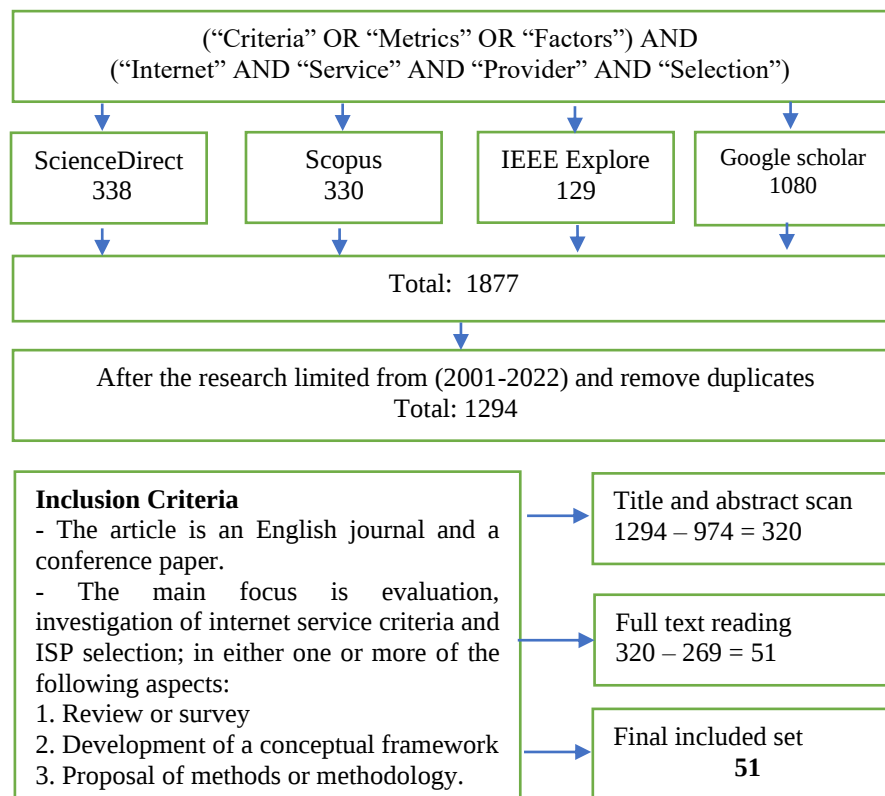


Figure 1. - The process of articles selection, research query and Inclusion criteria

2.2 Internet Service Provider Criteria – an overview

Supplier selection is vital for institutions because the risks posed by suppliers significantly impact institutions' performance [13]. Internet service is a crucial pillar for attaining the objectives stated by corporations [1]. [14] highlights that choosing an Internet service provider is a challenging task because it is affected by several factors. The purchase decision involves multiple quantitative and qualitative factors and criteria, such as safety, reliability, price, quality, etc., which may conflict with each other [15, 16]. According to [17], Internet service providers must innovate and meet the different requirements of customers to be able to maintain the fierce competition in the market.

Early research recognized the most critical factors for selecting a telecom system, categorizing them under three main aspects: financial, technological, and operational [18, 19, 20]. [21] suggested a model to assess the likelihood of customer volatility in an Australian ISP. An online questionnaire was distributed to customers to acquire

model estimation evidence. The most essential consumer volatility criteria were reliability, speed, fees, 24/7 technical support, and value-added assistance. This study seeks to investigate the ISP selection metrics and criteria through a comprehensive literature review.

Many companies have faced a purchasing dilemma in recent years due to supplier selection criteria [22]. This study aims to identify the most critical considerations and criteria for selecting an ISP. According to [23], the quality of service is a key factor significantly affecting consumer happiness in online businesses. The decision to choose a service provider depends on the level of service quality, as claimed by [24]. According to research on factors affecting consumers and sellers [25], quality is a critical factor for companies when selecting suppliers. Therefore, it is critical for companies to establish an evaluation procedure and select the best supplier.

Customers should feel safe when using an Internet service [26]. According to [27, 28], there are many caveats against improper use of customers' personal information. Consumers need to feel safe when using the Internet service, and thus, ensuring security measures should be a top priority [29]. It was discussed in [30] how security criteria and sustainable ISP choices are related.

The ability of an ISP to fulfill its obligations and provide correct information about service provision is known as reliability [29, 28]. According to [32], reliability is one of the criteria customers should consider when choosing an ISP.

There is no doubt that price variables impact customer pricing [33]. As stated by [34], price is the cornerstone of competition between ISPs for customer retention and new customer acquisition. [29] asserts that pricing is a critical factor to consider when selecting an ISP because it affects every market segment and provides customers with more opportunities to compare services and switch to more inexpensive service providers. Previous studies have shown that when selecting a service provider, companies consider price and other factors such as quality of service and responsiveness [35].

According to [31], responsiveness is the ability of employees in a company to provide prompt services to customers. One of the most important indicators of how well a company serves its customers is how quickly they respond to their demands [36]. Consumers' experience level determines the type and amount of information they want while making a purchase. Consequently, prior experience influences preferences, attitudes, behavior, and the formation of intentions [37]. According to [34], customers should be fully aware of the historical experience of ISPs when choosing a brand.

3. Results

Based on the above methodological procedures, some significant results were reached, highlighting that 51 papers related to criteria or measurements for selecting ISPs and telecommunications were identified. Most of the articles used criteria such as quality, reliability, and performance. The top ten frequently repeated criteria are listed in Table 1.

Table 1. - Top 10 Criteria in articles

Criteria	No. of frequent	Rank
Quality of service	38	1
Reliability	38	1
Performance	35	3
Security	23	4
Price	22	5
Expertise	17	6
Connection speed	13	7
Responsiveness	10	8
Stability	8	9
Customer Loyalty	7	10

The following explanatory summary in Table 2 includes fifty-one articles arranged alphabetically and as follows: author name and year of publication, criteria investigated, method, and country:

Table 2. - Articles related to criteria for selecting Internet service providers

Ref.	Author(s) and Year	Criteria/Metrics/Factors	Method	Country
[38]	Abdallah and Adel (2020)	Appearance, Empathy, Reliability, Responsiveness, Assurance, Performance.	AHP and TOPSIS	Egypt
[39]	Ahmed et al. (2018)	Wiliness, Availability, Honesty, Timeliness, Competence.	AHP	Malaysia
[40]	Al-Shehri et al. (2017)	Accuracy: Validity, Feasibility, Robustness, Efficiency, Desirability, Viability.	Survey analysing	United Kingdom
[31]	Alnsour et al. (2014)	Tangibles, Responsiveness, Reliability, Empathy, Assurance, loyalty.	Survey analysing	Jordan
[33]	Amin & Razmi, (2009)	Accessibility, Reliability, Security, Speed, Effective marketing and Promotion, Experience, Financial strength, Management stability, Strategic alliances, Support resource, Monthly fee, Supply variety, Installation fee.	QFD	Iran
[41]	Amindoust et al. (2012)	Economic: Profit, Quality, Delivery, and Service. Environmental: Environmental management system and Environmental competencies. Social: The rights of stakeholders, Work safety and labour health.	FIS	Malaysia
[42]	Belwal and Amireh (2018)	Tangibles, Customer loyalty, Reliability, Responsiveness, Assurance, Empathy.	PLS	Oman
[43]	Chiou (2004)	Connection speed, Email services, Online services, Technical support and consulting, Perceived value, Perceived trust, Future ISP expectancy, Overall satisfaction, Loyal intention.	CFA	Taiwan
[4]	Dheeraj et al. (2018)	Mode of transfer: Cable, Fiber optic, Wireless. Performance: Latency, Jitter. Speed: Download speed, Upload speed. Financial: Data cost, Data offered, Setup cost. Others: Customer reviews, Network strength, Add-ons.	AHP and TOPSIS	India
[44]	Disastra and Millanyani (2013)	Connection Stability, List Price, Coverage, Sales Promotion, Data Quota, Connection Speed, Ease of Activation, Ease of Reload, Customer Service, Features, Advertising, Data Package Variation, Provider's Reputation.	Importance performance analysis	Indonesia
[45]	Durmaz (2022)	Functional service quality, Technical service quality, Brand Experience, Brand Trust, Brand Loyalty.	Survey analysing	Iraq

[46]	Firas and Heshmati (2011)	Technological advancement, Human capital, Economic scenario, Policy factors, Nature of domestic, Law, Status of education and research.	Survey analysing	Iraq
[47]	Garg and Arora (2019)	Customer services, Bandwidth, Package deal, Total cost, Internet speed.	IFSPA	India
[48]	Ghorbani et al. (2014)	Tangibles: Appearance of building and facilities, Appearance of employees, Internal design and layout of a distributor's place, Clarity, Number of employees, Personnel education and training, Geographical location, Communication materials accessibility. Responsiveness: Willingness and commitment to cooperate, Ability to deal with demand fluctuations, Warehousing strength, Ability to serve local market, Ease of getting clear information. Reliability: Ability to deal with complaints from customers, Financial strength, Knowledge about product and its relative market, Amount of exchanging information with customers, Personnel sales experience, Assessment of employees performance. Empathy: Interest of employees in resolving customer's problem, Ability to anticipate changes in customer's tendency, Closeness between manufacturer and distributor. Assurance: Ability to after sale services, Long - term strategic plan, Management and control, Quality assurance system, Expertise and know how availability.	fuzzy ART and AHP-FTOPSIS	Iran
[30]	Hajiheydari et al. (2017)	Web design, Running/reliability, Customer service's, Security/confidentiality.	SEM analysis	Iran
[49]	Janda et al. (2002)	Performance, Access, Security, Sensation, Information.	Survey analysing	USA
[50]	Joudeh and Dandis (2018)	Internet Service, Prices, Employees, Physical Evidence, Customer Satisfaction Internet Service, Employees, Physical Evidence, Customer Satisfaction.	Survey analysing	Jordan
[7]	Kahraman et al. (2007)	Cost criteria: Setup costs, Hosting costs, Design and programming costs, Backup and maintenance costs, Advertising and promotion costs, Personnel staff cost. Benefit criteria: Service guarantee, references and familiarity, Stability, reliability and uptime, Ease of control and use, Security and privacy, Speed, Physical location, Customer service level.	Fuzzy TOPSIS	Turkey
[51]	Keramati and Shapouri (2016)	Profitability, Cost savings, Customer satisfaction, Customer loyalty, Customer perceived value, Customer acquisition, Customer retention, Customer expansion, Organization capital, Human capital, Information capital.	DEMATEL, ANP, TOPSIS	Iran
[29]	Khan (2017)	Cost, Bandwidth, Quality of service, Security, Reliability.	Survey analysing	UAE
[52]	Ladhari (2009)	Tangibles, Reliability, Responsiveness, Communication, Credibility, Security, Competence, Courtesy, Understanding/known customers, Access.	SERVQUAL approach	Canada

[53]	Lafci and Kiliç (2017)	Speed, Quota, Total Cost, Commitment, Side Benefit.	TOPSIS and VIKOR	Turkey
[54]	Lipu et al. (2010)	Service, Bandwidth, Delay, Jitter, Drops.	IntServ and DiffServ	Bangladesh
[55]	Lumempouw et al. (2017)	Speed, Enjoyment, Ease of Use, Usefulness, Price.	AHP	Indonesia
[1]	Mahmood and Manzoor (2021)	Tangible: Modern Equipment, Visually Appealing Facilities, Well-dressed Customer Service Staff, Visually attractive materials. Reliability: Services as per the commitment, Reassuring when problems arise, Services delivered at times promised, Right service at the first time, Accurate records. Responsiveness: Customer service staff makes information obtainable, Customer service staff Prompt Service, Customer service staff willing to help, Customer service staff respond to requests. Assurance: Customer service staff are trustworthy, Customers feel safe in dealings, Customer service staff are polite, Customer service staff has good knowledge of services. Empathy: Provide individualized attention, Operate at convenient hours, Customer service staff provide Personal attention, Best interests of the customer, Understand customer needs.	RIDIT, GRA and TOPSIS	Pakistan
[56]	Moorsel (2001)	Quality of Service, Quality of Experience, Quality of Business, Business to Consumer, Business to Business, Application Service Provider, Management Service Provider, Communications Service Provider, Hosting Service Provider, Service Level, Agreement.	QoBiz evaluation	USA
[57]	Mumuni et al. (2017)	Reliability, Responsiveness, Empathy, Assurance, Tangibles, Satisfaction, Attitude.	SCP and SET theory	Saudi Arabia
[58]	Norton, William. B. (2001)	Subscription cost, System cost, Maintenance cost, Reliability, Performance, Delivery.	Survey analysing	USA
[34]	Ojiaku and Osarenkhoe (2018)	Brand image, Functional quality, Network quality, Past experience, Pricing, Promotion.	Survey analysing	India
[23]	Paramaporn et al. (2014)	Customer Service, Network Quality, Information, Quality, Security, Privacy, Commitment, Value, Trust.	Survey analysing	Thailand
[59]	Prasongko et al. (2015)	Speed, Network Stability, Security, Decision maker.	Fuzzy TOPSIS	Indonesia

[32]	Quach et al. (2016)	Network quality, Customer service, Information, Security, Switching intention, Complaint intention, Repurchase intention.	Survey analysing	Turkish
[60]	Rabinovich and Bailey (2004)	Physical distribution service Price, Order size, Net price, Level of experience, Downstream channel configuration, Availability, Timelines, Reliability.	Survey analysing	USA
[61]	Rachmawati (2020)	Network quality, Customer service, Information quality, Security, Privacy.	Survey analysing	Indonesia
[10]	Ramarao et al. (2011)	Web Accessibility, Speed, Web Hosting, Responsiveness, Security, Extra Services, Reliability, Roaming, Effective Marketing and Promotion, Financial Strength, Management Stability, Technology, Experience, Network Topology, Installation Charges, Monthly charge, Strategic Allowances, Support Resources, Legal Taxes, Network Links.	QFD in Fuzzy TOPSIS	India
[62]	Ramírez and Torres (2005)	Delay, Jitter, Capacity, Available bandwidth, Packet loss, Self-similarity, Packet loss.	SelQoS	Mexico
[15]	Ramkumar and Jenamani (2012)	Technical competence: Integration with other systems, Security infrastructure, Technical and training support, Product functionality. Flexibility of service: Cost, Quality and range of service, Ease of customization. Performance, Market share, Financial stability, Experience in past, products/solutions. Reputation: Value for money, Perceived satisfaction, Word of mouth. Worthiness: Commitment, Credibility, Trust, Reliability Risk: Technology risk, Process risk, Business risk. Vendor base: Cost reduction, Quality of product, Business volume.	ANP	India
[63]	Rao and Indira (2013)	Web Accessibility, Speed, Web Hosting, Responsiveness, Security, Extra Services, Reliability, Roaming, Effective Marketing and Promotion, Financial Strength, Management Stability, Technology, Experience, Network Topology, Installation Charges, Monthly charge, Strategic Allowances, Support Resources, Legal Taxes, Network Links.	TOPSIS	India
[64]	Rashid et al. (2016)	Speed, Price, Quality, Capacity.	Survey analysing	Iraq
[65]	Roman et al. (2013)	Openness, Viability, Reliability, Scalability, Interoperability, Data Management, Security Issues.	Distributed approach	Spain
[14]	Seok Lee (2017)	Firm reputation: Scale, Image Price: Family Discounts, Contract Discounts Access Performance: Speed, Stability. Additional benefits: Cash, Products, Gift Certificates. Support services: Convenience, Promptness, Kindness	AHP	Korea

[66]	Song-zheng et al. (2007)	Strategy, Organization, Cost, risk, Technology.	EVA	China
[16]	Supriya (2020)	Mode of transfer: Cable, Fiber optic, Wireless. Performance: Latency, Jitter. Speed: Download speed, Upload speed. Financial: Data cost, Data offered, Setup cost. Others: Customer reviews, Network strength, Add-ons.	AHP and TOPSIS	India
[67]	Suryanarayana and Sekaran (2006)	Connectivity, Available bandwidth, Latency, Packet Loss, Throughput, Capacity.	IMMM	India
[28]	Thaichon and Jebarajakirthy (2016)	Information quality, Privacy, Value, Commitment, Behavioural loyalty.	Survey analysing	Thailand
[26]	Thaichon et al. (2014)	Network quality, Customer service, Information, Security, Value, Satisfaction, Trust, Commitment.	Survey analysing	Thailand
[68]	Tim et al. (2007)	Quality of Service, Job Cancellation, Dynamic Pricing, Client Classification, Price, Discrimination, Reservation of Resources, Priority on Job Acceptance, Quality of Service.	EERM	Spain
[69]	Toguyéni and Korbaa (2007)	Throughput, Delay, Jitter, Loss and error rates, Security guarantees.	MPLS	France
[70]	Torlak et al. (2021)	Network quality, Information quality, Customer services, Security/privacy, Customer trust, Perceived value, Customer value perceptions, Customer commitment.	VIKOR	Iraq
[71]	Yang et al. (2003)	Responsiveness, Credibility, Ease of use, Reliability, Convenience, Communication, Access, Competence, Courtesy, Personalization, Continuous Improvement, Collaboration, Security/privacy, Aesthetics.	Survey analysing	Canada
[72]	Yen and Gwinner (2003)	Perceived control, Performance, Efficiency, Convenience, Special treatment benefits, Satisfaction, Loyal.	Survey analysing	Taiwan

Table 3 below shows the number of articles published in each country for the 51 articles examined in this review. India comes in the foreground with eight articles on criteria for selecting an Internet service provider, followed by the USA, Iraq, Indonesia, and Iran with four articles each, as follows:

Table 3. - No. of Publication in each Country

Country	No. of publication
India	8
USA	4
Iraq	4
Indonesia	4
Iran	4
Turkey	3
Thailand	3
Malaysia	2
Jordan	2
Taiwan	2
Canada	2
Spain	2
United Kingdom	1
France	1
Egypt	1
UAE	1
Bangladesh	1
Pakistan	1
Saudi Arabia	1
Mexico	1
Korea	1
China	1
Oman	1

Table 4 below lists the number of articles in which the Tam and Tummala study criteria were addressed and is compared with the order reached by the current study to show the recent trend of the important criteria when choosing an Internet/communication service provider. In addition, Table 5 presents the requirements adopted in each article within the 26 criteria explained in the Tam and Tummala study.

Table 4. - Criteria discussed in the articles

Tam and Tummala's study rank	Metrics	No. of Articles	Ranking	Rate
19	Quality of support services	38	1	75%
7	System Reliability/Availability	38	1	75%
10	System performance	35	3	69%
23	System capacity	25	4	49%
8	System security features	23	5	45%
25	Delivery lead time	22	6	43%
1	Unit cost	22	6	43%
17	System redundancy	19	8	37%
16	Problem solving capabilities	17	9	33%
22	Technical expertise	17	9	33%
26	Vendor's reputation	16	11	31%
21	Ease of operations	12	12	24%
2	Operating cost	11	13	22%
4	Cost of support system	11	13	22%
13	Future technology development	11	13	22%
5	Cost of NMS	10	16	20%
18	Interoperability with other system	10	16	20%
3	Capital investment	8	18	16%
15	Technical features/characteristics	8	18	16%
14	Billing flexibility	7	20	14%
6	Maintenance cost	4	21	8%
12	Upgradability on H/W and S/W	4	21	8%
24	Experience in related products	4	21	8%
9	Fault diagnosis capability	3	24	6%
11	Performance monitoring capability	2	25	4%
20	Comply to standards	1	26	2%

Table 5. - ISP selection

Article	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
[38]	x						x			x						x			x				x			x
[39]							x	x		x							x		x						x	x
[31]							x	x		x		x	x			x			x						x	
[40]				x			x	x						x					x			x				x
[33]	x	x	x	x			x	x		x					x		x	x				x	x			
[41]	x	x		x	x	x	x	x											x						x	
[42]							x					x	x			x			x						x	
[43]	x				x		x			x								x	x				x			x
[4]	x	x			x		x			x									x				x			
[44]	x	x		x	x	x				x					x				x				x			x
[45]										x					x				x			x				x
[46]	x	x					x			x			x						x							
[47]		x	x		x														x				x			
[48]			x							x	x		x	x		x	x		x		x	x	x	x		
[30]							x	x	x									x	x							x
[49]							x	x		x											x	x				
[50]	x	x											x	x		x			x		x				x	
[7]	x			x	x	x	x	x		x									x		x		x			
[51]			x		x																	x				
[29]	x						x	x		x									x				x			
[52]							x	x		x								x	x		x	x			x	
[53]	x				x										x								x			
[54]							x			x						x	x						x		x	
[55]	x																x		x		x		x			
[1]							x									x	x		x			x	x		x	x
[56]	x			x			x			x						x			x			x	x		x	
[57]							x			x						x			x	x		x			x	
[34]	x						x			x		x		x					x		x	x				x

Table 5. - ISP selection

Article	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
[26]							x	x					x			x	x		x			x	x	x		
[59]								x		x													x			
[32]							x	x	x	x						x	x		x				x		x	
[60]	x	x					x										x					x				x
[61]							x	x		x					x				x							
[10]	x	x	x	x			x	x		x			x		x		x	x	x			x	x		x	x
[62]							x			x	x					x	x				x		x		x	
[15]			x	x			x	x		x								x	x		x			x	x	x
[63]	x	x	x	x			x	x		x			x		x		x	x	x			x	x		x	x
[64]	x									x									x				x			
[65]							x	x		x			x				x	x								
[14]							x										x		x		x		x		x	x
[66]	x		x	x									x	x												
[16]	x	x			x		x			x									x				x			
[67]							x			x						x	x						x		x	
[28]								x	x								x				x					x
[23]	x						x	x								x	x		x			x	x	x	x	
[68]				x			x			x						x	x		x							
[69]							x	x		x						x			x						x	
[70]							x	x		x					x		x	x	x							x
[58]	x				x	x	x			x															x	
[71]							x	x		x		x	x	x		x		x	x		x	x			x	x
[72]							x			x				x					x							

4. Discussion

From Table 4, the review indicates that the criteria for quality of service and reliability were given the most importance by being repeated in the literature by 38 times, or approximately 75% of the articles published for the period from 2001 to 2022. The performance of the system also received the interest of many articles by 35 times, or approximately 69%. On the other hand, cost criteria did not achieve high importance in the literature for the period mentioned above. It is worth noting from Table 5 that all articles in this study included at least three criteria from the Tam and Tummala study mentioned above. It is interesting that 18 out of 51 studies were discussed between the periods from 2001 to 2011, with a rate of approximately 35%. On the other hand, 33 out of 51 studies were discussed for the period from 2012 to 2022, with a rate of approximately 65%. This indicates that interest in the process of selecting an Internet/telecom service provider has greatly increased in the last ten years.

Table 1 indicates that the quality, performance, and security criteria outweigh the price of internet service. This result is consistent with many studies [24, 32, 61]. According to [32], due to the rapid expansion of technology-enabled services, the focus of service literature has shifted towards issues related to measurement and operation in terms of quality of service. [50] defines the quality of service as the client's evaluation of the service being received by comparing its actual performance with the expected performance. In his study, [61] found that network quality, one dimension of service quality, has an immediate effect on attitude and loyalty. However, although network stability download and upload speed indicate high network quality and have been shown to influence customer loyalty, there was an indirect impact on behavioral loyalty. Performance represents a measure of the quality of service provided to consumers by the provider through two parameters: delay and instability [4].

Prioritizing reliability and addressing security issues faced by internet users is critical. Internet users must also trust the service provider against various threats because technology has become integral to our lives [42]. Inadequate secure connections can undermine the security and resilience of internet access internationally; protecting internet users is a significant concern [29].

Prices are a key factor as well. This parameter has three characteristics: data cost, data delivery, and setup cost. Data cost refers to the monthly cost of data, while setup cost is the installation fee. Additionally, the data provided is the amount of the monthly data allowance [4]. The decision-maker must put risk above price when making a choice based on project risks and costs [47]. According to [55], when businesses offer similar deals, various aspects influence consumer behavior. Factors such as price and connection speed become deciding considerations when choosing a provider, followed by factors like enjoyment and ease of use. Connection speed is one of the most essential criteria for internet service and refers to the data sent and received per second, including download and upload speed [4]. In their survey, [44] concluded that consumers consider factors like ease of activation and reloading necessary, and their performance in these areas is good. On the other hand, consumers consider factors such as stability, speed, and coverage important, but they did not achieve good performance in these aspects. Interestingly, factors like sales promotion and advertising are considered by consumers to be less critical but demonstrated good performance. What consumers considered important but did not perform well were customer service, brand image, and price.

The primary role that previous experience plays in customer loyalty has been identified [34]. Consequently, experience influences attitudes, behavior, and intentions in several ways [37]. Responsiveness is the willingness to assist clients and offer them prompt service [73]. One of the key components of responsiveness is flexibility, which can be shown by quick response times during emergencies or sudden increases in client demand [48]. According to [14], customers who subscribe to high-speed Internet services view Internet access stability as the most crucial factor.

From Table 4, the review indicates that quality of service and reliability were given the most importance by being repeated in the literature 38 times, or approximately 75% of the articles published from 2001 to 2022. The system's performance also received significant interest in many articles, being mentioned 35 times, or approximately 69%. On the other hand, cost criteria did not achieve high importance in the literature for the period mentioned above.

It is worth noting from Table 5 that all articles in this study included at least three criteria from the Tam and Tummala studies mentioned above. Interestingly, 18 out of 51 studies were discussed between 2001 and 2011, with a rate of approximately 35%. In contrast, 33 out of 51 studies were examined from 2012 to 2022, with a rate of approximately 65%. This indicates that interest in selecting an internet or telecom service provider has dramatically increased in the last ten years.

5. Conclusion

A comprehensive systematic literature review regarding ISP selection criteria from 2001 to 2022 was conducted to clarify whether the criteria previously met the needs of current decision-makers. In this study, we reviewed 51 articles related to the field of research by extracting articles from four databases: Scopus, IEEE, ScienceDirect, and Google Scholar—all reviewed articles contained at least three criteria from the Tam and Tummala study criteria. Furthermore, the percentage of articles investigated according to the ISP selection criteria was 65% between 2012 and 2022. This indicates an increase in the importance of studying criteria for selecting an internet service provider in the last ten years.

This study concluded that criteria such as quality, reliability, performance, capacity, and security achieved the attention of most researchers between 2001 and 2022, with percentages of 75%, 75%, 69%, 49%, and 45%, respectively. In contrast, cost criteria such as unit cost, which ranked first in the Tam and Tummala study, fell to the sixth rank in terms of frequency in the literature with a percentage of 43%. This result is likely due to different priorities from the point of view of decision-makers in organizations that are divided into governmental and private. Stakeholders in government institutions may prefer the standard of service quality over price, and so on.

We recommend conducting further literature reviews for future work in selecting suppliers and vendors to meet the criteria of the modern labor market.

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CONFLICT OF INTEREST

The author declares no conflict of interest.

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