A Systematic Literature Review on Importance Performance Analysis (IPA): Use of Technology in Assessing Customer Satisfaction Level

1st Ismail Shaikh
Goa Business School,
Goa University
Goa, India
ismailrafikshaikh@gmail.com

2nd Jick Castanha
Goa Business School,
Goa University,
Goa, India
jickcas@gmail.com

3rd Indrawati
School of Economics and Business,
Telkom University,
Bandung, Indonesia
indrawati@telkomuniversity.ac.id

4th Carmelita D'Mello
St. Xavier's College,
Goa, India
litadmello@gmail.com

5th Subhash K.B. Pillai
Goa Business School,
Goa University
Goa, India
subhash@unigoa.ac.in

Abstract— Success of any business (manufacturing or services) depends on higher level of customer satisfaction, which determines the very existence of the business entity in the present globalized business world. There are many ways of assessing the level of customer satisfaction, but the most frequently used technique is the Importance Performance Analysis (IPA). The study employed the Systematic Literature Review (SLR) method and used the PRISMA approach to identify and select research papers published during the period 1987 to 2022. Using the Web of Science (WOS), 587 research papers were identified and a comprehensive and detailed review resulted in 397 relevant research papers for the study. Result reveals that advent of technology revolution during the last few decades paved the way for applying IPA in different field of studies in different forms and styles, but the original IPA remains the most sought-after technique among the scholars. The main areas where IPA is applied are Tourism and Hospitality, Business & Economics, Healthcare, Sustainability, Education and also Transport. Most of the studies used non-random sample compared to few studies on random sampling method. The prominent region where such studies conducted is Asia Pacific (majority from Taiwan), followed by Europe (majority from Spain), North America (majority from USA), Middle East (majority from Turkey) and Latin America (majority from Mexico). Result also provided interesting facts about how many studies resulted in higher level of customer satisfaction, the most sought-after journal, the most cited research paper and also the top authors applied IPA in their research works. This study seeks to provide deeper insights to researchers with accumulated knowledge and contribute towards development in this research field. Further research may try to combine research papers from Scopus data base to have more clarity about applicability and significance of IPA in assessing level of customer satisfaction in future.

Keywords— *Importance Performance Analysis, IPA, Systematic Literature Review, Content Analysis, Customer Satisfaction*

I. Introduction

The Importance Performance Analysis (IPA) approach is used to assess the relative importance and performance of various parts or aspects in a system. It is extensively used in marketing, customer satisfaction, and quality management to identify and prioritize essential areas for improvement. The consumer acceptance for a marketing program can be effectively evaluated using IPA [1]. IPA normally entails grading the significance and performance of each aspect and then placing the test results on a matrix to discover areas where performance is poor in comparison to importance. The traditional IPA was developed to prioritize improvement [2], and identifying areas to which marketing resources should be allocated [3]. It can be very helpful for theme park managers, [4] to identify existing issues with visitor experiences and then prioritize measures to improve. Management using IPA can effectively identify what problems exist, and why [5]. Destination managers can become proactive in destination planning [6]. Right from entertainment industry [7] to banks, customer's satisfaction rate can be analyzed and improved [8], facility managers can use it [9] to allocate resources to create better experiences in buildings and policy makers can effectively analyses the social-ecological nexus and improve environment and human well-being [10]. However, Instances where needs of visitors are secondary to organization and resource concerns, the inconvenience caused to the visitors should be addressed [11] through education/ interpretation or through alternative opportunities. The reason for IPA's acceptability can be due the fact that it enables businesses to figure out attributes that are currently underperforming and concentrate their resources on crucial areas. Businesses using IPA can set priorities based on factual data rather than guesswork. IPA techniques has been employed in various industries, in order to access the satisfaction level of customers but there is absence of in-depth study to show the relevance of IPA and its acceptance worldwide. Hence, the present study tries to fill the gap by performing systematic

literature review on IPA which will help the researchers and academicians.

II. IPA Matrices

A. Original Matrix

The concept of IPA was first introduced in 1977 by Martilla & James, [1]. They explained the concept with a case of an automobile dealership service department and tested importance and performance of related attributes to explain how this tool can be an efficient method to measure consumer satisfaction. The IPA matrix originally consists of 4 quadrants i.e., *A. Concentrate Here* (Area which needs immediate corrective action), *B. Keep up with the good work* (Area where respondents are satisfied and demands consistent efforts), *C. Low priority* (Customers don't give any importance nor is there high effort needed to improve satisfaction), *D. Possible overkill* (Customers don't prioritize the elements but the services providers or the organization is putting higher efforts to provide higher satisfaction which is never needed).

B. Modified Matrix

a. Diagonal Matrix

The Hawes and Hawes [12], in their paper, through a case study of health care marketing, proposed the use of a 45-degree diagonal line which split the original four Quadrants matrix into just two regions, namely, region above the diagonal line and region below the diagonal line. The region above the diagonal line is marked as "*Market Opportunities*," and represents the focal points for resource allocation and marketing decision-making as the respondents are currently not completely satisfied with attributes which are lying in the aforesaid region. The area below the diagonal line is termed as "*Satisfied Needs*" indicating consistent efforts and no additional resources are required to increase the level of satisfaction. The innovation [12] can improve organizational effectiveness and better medical care by the providers of health care services for its patients.

b. Combined Matrix

In 2007, Abalo, et. al [13] combined the diagonal line model in the four quadrants model with the help of a case study of patients in primary health care centers for the purpose of the evaluation of service performance. Here the regions below the diagonal line are further divided into "*Low Priority*", "*Keep Up the Work*", and "*Possible Overkill*" and the Attributes located above the diagonal line are in the "Concentrate Here" region. Any attribute located above the diagonal line, fall in "*Concentrate Here*" region, and is considered as a signal for improvement in efforts and resource allocation. Any attribute located below the diagonal line and located in Quadrant IV lie in "Possible Overkill." Quadrant III are for attributes in "Low Priority" regions, and attributes located in Quadrant I are in the "Keep Up the Work" region. The implications of attributes falling in the four quadrant is same as of the original four quadrant model. The improvement Considers respondent's perceptions of the importance [13] of the individual attributes.

Numerous changes and innovations have been made to the basic framework during the last 45 years, and many novel ways and concepts have been introduced to this day. The objective of this study is not to evaluate all other developments, but rather to delve into the studies to examine how and in what ways this IPA approach is solely applied to analyze the importance (expectations) and performance (experiences) of different attributes in various instances and areas. This paper adopts a bibliometric approach to present a more in-depth scrutiny of the IPA research conducted during last 37 years and attempts to provide answers to the questions "what, when, where, how, and by whom" in the context of IPA used for assessing the level of customer satisfaction. This study can be differentiated from others because it contains a comprehensive and detailed summary of all those studies conducted in IPA so far, with a glance at numerous variables to give us a pretty decent overview of its current state.

III. Research Methodology

The study applied the bibliometric approach in order to derive logically acceptable conclusions from all available data and provide a complete summary based on multiple aspects. This approach helps in identifying various parameters like the areas in which the study applied, the different sampling techniques employed, the trend of incorporating IPA over the timeline and many more. The Web of Science database was utilized to identify available publications using IPA for assessing level of customer satisfaction, as it is the largest global database for articles. Web of Science is a platform where we can obtain significant number of publications across many fields, and it is widely and frequently utilized for the data accumulation, analysis and interpretation for identifying future research scope [14]. 'Importance Performance Analysis' keyword was used to search the articles and in the filtered search section, we specified term in the 'Title' OR in 'Abstract' OR in 'Authors Keywords'. When the search was conducted on July 27th, 2022, the WOS database displayed 585 publications. The publications were then subjected to a screening process to determine if they could be included in our subsequent study. Because the goal was to analyze the papers which were based of pure Importance Performance analysis, papers which had a purpose other than that were excluded. Papers which introduced the concept of IPA e.g., Martilla and James (1977), were not considered for the study.

The study applied PRISMA approach for filtering the relevant papers for the study (refer Fig. 1). Out of the total 585 papers identified, 222 papers were excluded which consisted of 4 papers which were off topic or not related to IPA, 190 papers were papers which dealt with IPA but were not performing an analysis of Importance and performance and 28 papers were inaccessible. After excluding 222 papers we were left with 363 papers extracted from the WOS database and 34 additional papers gathered from other sources. The total number of papers considered to be included for the review were 397.
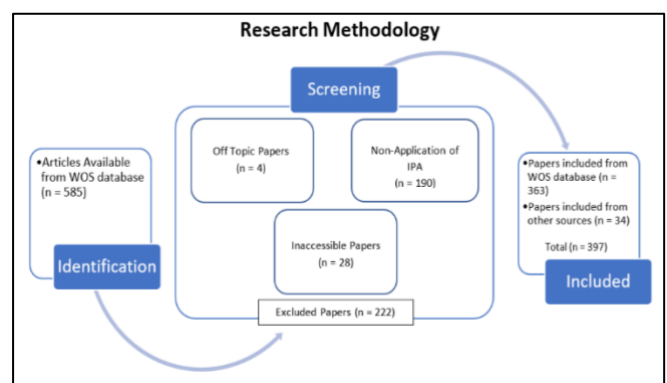

Fig. 1. PRISMA Approach

IV. RESULT AND FINDINGS

The results and findings of this study are presented in three different sections, namely, demographic characteristics, methodological trends and research areas and satisfaction level.

A. Demographic Characteristics

a. Year-wise papers published on IPA during 1987-2022

A year-by-year distribution of publications in IPA is shown in Fig. 2 during the period 1987 to 2022. A paper published in Visitor Behaviour by [11] was the first to apply IPA. Only 6 papers were found in the period 1987-2002 that applied IPA. Over the years, total publications increased by 12 from 2003 to 2007. In 2018 - 2012, the number of papers relating to IPA applications increased by 50 papers. There has been a rapid increase in publications since then. According to the latest year's interval between 2018 and 2022, 212 papers were published under this topic. This shows that the IPA application has gained acceptance because of an increased need to understand the gap between the expectation and satisfaction of the target audience.
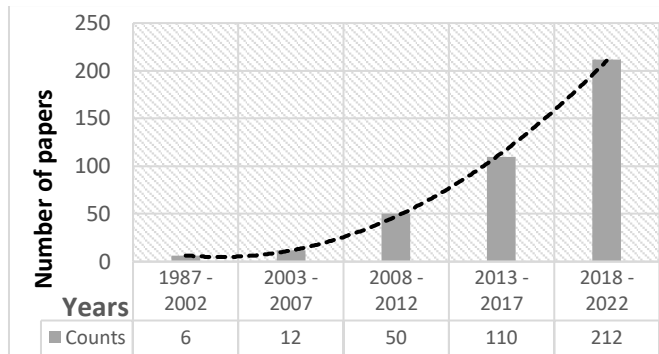

Fig. 2. Number of Papers on IPA Published during 1987-2022

b. Country/Region wise publication on IPA.

Fig. 3 displays the number publications under IPA on a country-by-country basis. Specific colors are assigned to countries having a certain number publication range. Countries displayed in blue have 41 to 75 published papers in IPA. The ones in green have a publication count ranging from 11 to 40. Countries having 5 to 10 papers in IPA are highlighted in orange and countries which had a publication range of 1 to 4, are shown in yellow. When it comes to overall publications and regions, Asia Pacific has ranked first with 265 publications in applying IPA model. While the Europe region is having 84 publications and North America region has 50 publications in this filed. Moreover, Middle East and Africa regions has 23 publications, while Latin America region has 7 papers published in this area. Taiwan is leading country with 73 publications followed by United states of America with 43 papers.
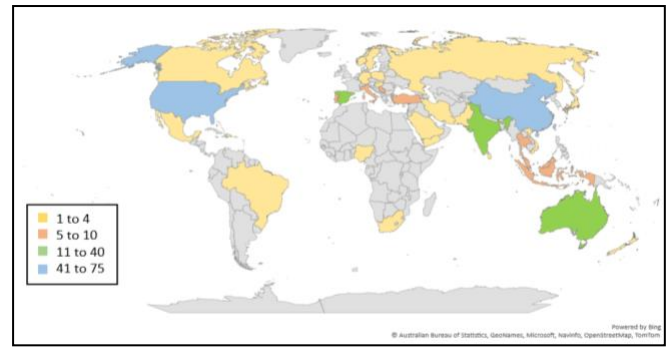

Fig. 3. Geographical Spread of Research Works on IPA

c. Top Five Journals

The selected articles of IPA models are published across 194 journals. However, Table I shows the top five journals along with its publishers. The results indicate that Sustainability published by MDPI that had by far the highest number of articles (35) and one of its papers authored by [15] used IPA to investigate the critical risk factors associated with prefabricated buildings in China which found many risk factors that required attention like improper decomposition system and low level of factory management as some to be named from. Tourism Management by Elsevier had 24 publications. There were 14 publications in the International Journal of Disaster Risk Reduction under IPA. With 13 and 9 publications, respectively, International Journal of Health Planning and Management and Asia Pacific Journal of Tourism Research come next. Broadly speaking, Elsevier has a significantly larger number of articles on the topic of IPA than in any other publishers, followed by MDPI being the second highest in terms of publications.

TABLE I.   LIST OF JOURNALS WITH HIGHEST IPA PUBLICATIONS

Journal	#	Publishers
Sustainability	35	MDPI
Tourism Management	24	Elsevier
International Journal of Disaster Risk Reduction	14	Elsevier
International Journal of Health Planning and Management	13	Wiley
Asia Pacific Journal of Tourism Research	9	Routledge

Source: Authors own compilation

d. Top Five Cited Articles

The total citation of all the research was carried out to find out the most influential study on IPA, and the top 5 most referenced publications are represented in the Table II. Publication by Enright & Newton [16] received about 544 citations, becoming the most cited paper in studies applying IPA. It was followed by Chu & Choi [5] and Liu & Jang [17], which were ranked second and third on the list with 379 and 271 citations, respectively. Only one article was cited more than 500 times, and they were all published between 2000 and 2009. It can be noted that majority of the papers having highest citation were published by Elsevier, which can be a signal that Elsevier has the highest popularity and is seen as the benchmark for referring to scholarly works amongst the researchers.

TABLE II. MOST CITED ARTICLES ON IPA

Article	Times cited	Authors
Tourism Destination Competitiveness: A quantitative approach	544	Enright, MJ; Newton, J
An importance-performance analysis of hotel selection factors in the Hong Kong hotel industry: A comparison of business and leisure travellers	379	Chu, RKS; Choi, T
Perceptions of Chinese restaurants in the US: What affects customer satisfaction and behavioral intentions?	271	Liu, YH; Jang, S
Application of importance-performance model in tour guides' performance: evidence from mainland Chinese outbound visitors in Hong Kong	251	Zhang, HQ; Chow, I
Importance-performance analysis revisited: The role of the factor structure of customer satisfaction	215	Matzler, K; Sauerwein, E; Heischmidt, KA

Source: Authors own compilation

e. Top Ten Leading Institutions

The Table III lists the top 10 institutions in terms of the number of publications. Zhejiang University has had the most publications under applying IPA, with 16 publications. One of their papers [18] studied the Impact of COVID-19 on Tourist Satisfaction with Bed and breakfast tourism industry, which said that tourists were more concerned with the natural and safe experience associated with B&Bs after COVID-19. With 15 papers, Hong Kong Polytechnic University is the second highest in terms of publication. Six out of Ten institutions have ten or more than ten papers. The remaining four institutions had papers published ranging between 7 to 8.

TABLE III. LEADING INSTITUTIONS

Institution	#
Zhejiang University, China	16
Hong Kong Polytech University, Hong Kong	15
Chung Ang University, China	12
Natl Taiwan University, PRC Taiwan	12
University Minnesota, USA	11
University Hosp Leuven, China	10
Changhua University of Education, China	8
Nankai University, China	8
University Georgia, USA	8
Kyung Hee University, China	7

Source: Authors own compilation

f. Top ten prolific Authors

Table IV shows the top ten prolific authors based on their publications. With 6 papers, Vanhaecht, K was the most productive author in the field of IPA. One of the authors papers [19] used importance-performance analysis as an approach for prioritization of interventions by linking guidelines adherence rates to expert consensus rates for the in-hospital management of COPD (Chronic Obstructive Pulmonary Disease) exacerbation and found that the COPD exacerbations are largely under-treated. Six authors have 5 publications and three authors have 4 publications using IPA.

TABLE IV. MOST PROLIFIC AUTHORS

Authors	#
Kris Vanhaecht	6
Bynum Boley	5
Ljubica Knežević Cvelbar	5
Jick Castanha	5
Massimiliano Panella	5
Walter Sermeus	5
Subhash Kizhakanveatil Bhaskaran Pillai	5
Tahir Albayrak	4
Ivana Blešić	4
Luk Bruyneel	4

Source: Authors own compilation

B. Methodological Trends

a. Survey Methods

Fig. 4 provides overview of the survey methodologies employed in the earlier research works. The majority studies (260) employed offline survey to collect responses from their sample audience, the paper by [20] conducted offline interviews to assess the quality of fitness centers using IPA. The second most commonly used approach was an online survey adopted in 132 publications, one of it was to study about the Stress, Satisfaction, and Competency of Hospital Pharmacy Preceptors [21]. Only a few articles amounting to 4 papers, used a combination of offline and online survey methods.
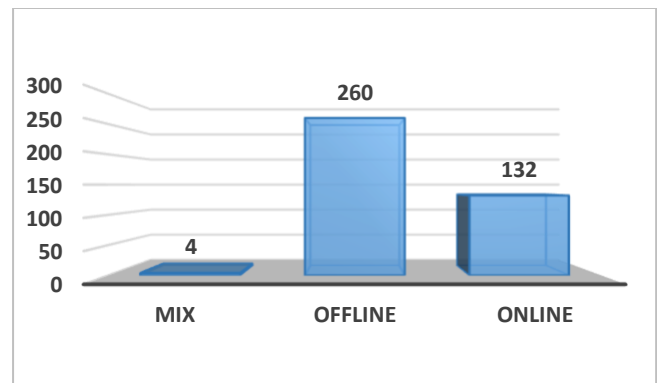

Fig. 4. Methods used for Data Collection

b. Types of IPA

Fig. 5 illustrates the number of papers that used the original, modified, or both IPA's. We might very well deduce from the figure that 312 papers employed the original or traditional IPA framework. 71 papers employed modified IPA in their study. Modified IPA denotes the use of IPA other than the typical four quadrant matrix, i.e., Diagonal, IPGA, and Combined. In their studies, 12 publications used both the original and modified IPA matrix.
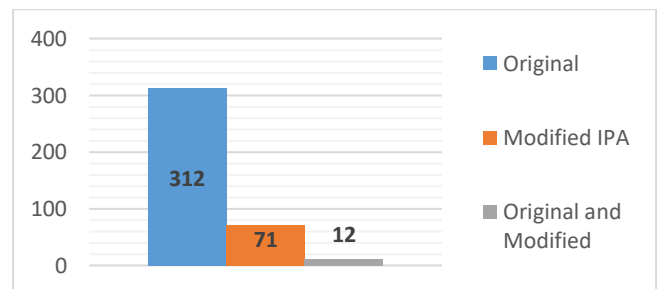

Fig. 5. Types of IPA

c. Types of Likert's Scales

The type of scale used to assess respondents' importance and performance levels are shown in Fig. 6. The Likert's scale is used in surveys to collect and gather the level of satisfaction in a rating format. The 5-point Likert scale was the most often used scale among all studies, with around 270 publications using the same in their survey. In terms of choice, 7- and 10-point Likert scales came in second and third place respectively. Other scales, such as the 4, 9, and 6-point Likert scale, were used in less than ten publications.
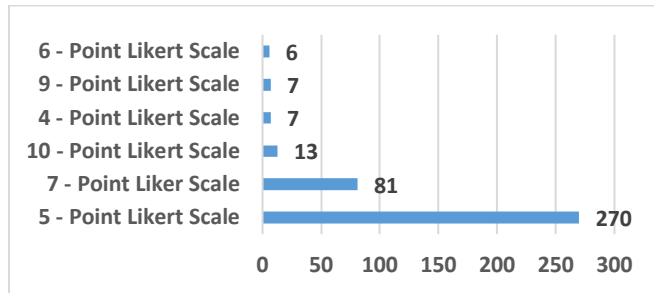

Fig. 6. Types of Likerts Scales

d. Sampling Techniques

Table V depicts the sampling techniques in two major categories, namely, Non-probability sampling and Probability sampling. It was found that convenience sampling is being frequently used for data collection by the researchers, whereas in terms of probability sampling, simple random sampling is being used. Moreover, majority of the studies used non-probability sampling techniques as it becomes easy for researchers to collect the required data based on their convenience.

TABLE V. SAMPLING TECHNIQUES

Sampling Technique	Specific Sampling Technique	#
Non - Probability sampling	Convenience Sampling	240
	Purposive Sampling	41
	Quota Sampling	8
	Snowball Sampling	5
	Voluntary Sampling	2
	Total	**296**
Probability sampling	Simple Random Sampling	66
	Stratified random sampling	16
	Systematic Sampling	12
	Cluster Sampling	4
	Quasi - Random Sampling	1
	Total	**99**

Source: Authors own compilation

e. Sample Size Distribution

Information from Table VI represents a distribution of sample sizes and the frequencies of papers. A majority of 135 papers followed sample size ranging from 201 to 400, followed by the range up to 200 was adopted in 128 papers and results to be the second most preferred sample size range. There are relatively fewer papers in the higher ranges of sample sizes, with the least number of papers preferring a sample size in the range of 801 to 1000. The paper by [22] analysed the Bidirectional Performance of Hotel Attributes by studying 1,090,341 online reviews.

TABLE VI. SAMPLE SIZE

Sample Size	Number of Papers
0-200	128
201-400	135
401 – 600	64
601 – 800	27
801 – 1000	11
More than 1000	43

Source: Authors own compilation

C. Research Areas and Satisfaction Level

Table VII shows the study areas, how many papers stated whether the respondents were satisfied or unsatisfied, and the total number of studies completed on those research areas. There were ten distinct study areas discovered. 'Tourism and hospitality' had the highest amount of research done, with 145 publications. The next study areas with a larger number of studies with a count of 50 or more were 'Business & Economics' and 'Health Care'. Out of the ten research areas, five topics included publications ranging from 10 to 40. 'Architecture and telecommunications' were the areas with less than 10 studies, with telecommunications having the least number of works.

'Tourism and Hospitality' include publications that focus on Tourism, Hospitality, and Recreation, including sporting events. 'Business and Marketing' papers include topics such as business, manufacturing, e-commerce, logistics, and corporate governance. 'Health Care' papers address themes such as nursing, pharmaceuticals, and health insurance. 'Sustainability' encompassed subjects such as environmental conservation and biodiversity. 'Education' comprised research targeted towards educational institutions. 'Transport' papers included public transportation such as buses, airlines, railways, and rental car services. Government and Public Administration concepts were addressed in 'Public Administration'. 'Technology' included publications on technology and computer science. As the name implies, 'Architecture and Construction' dealt with studies on architecture and construction. 'Telecommunication' publications studied about media and telecommunication.

TABLE VII. RESEARCH AREAS AND SATISFACTION LEVEL

Research Area	Satisfied	Not Satisfied	Mixed	Not Available	Total
Tourism and Hospitality	100	41	3	1	145
Business & Economics	38	16	-	1	55
Health care	31	17	1	1	50
Sustainability	24	14	-	-	38
Education	24	10	-	-	34
Transport	17	12	-	-	29
Public Administration	11	8	-	-	19
Technology	7	5	-	-	12
Architecture and Construction	7	1	-	-	8
Telecommunication	3	3	-	-	6

Source: Authors own compilation

The conclusion concerning satisfaction was reached after considering the two Quadrants, namely, "Keep up the good work" and "Concentrate here". The IPA matrix that showed the majority of attributes in the "Keep up the good work" the quadrant was deemed satisfied, whereas papers that showed a

greater number of attributes in the "Concentrate here" quadrant of the matrix were deemed dissatisfied. Concerning the degree of satisfaction, In the area of 'Tourism & Hospitality', 100 studies found that the respondents were satisfied, whereas 41 publications concluded that the respondents were not satisfied. 1 study lacked clarity about satisfaction, while 3 studies had a matrix that yielded a mixed response and could not be classified as satisfied or dissatisfied. Papers in the 'Business and Marketing' area, 38 articles stated satisfied, 16 papers dissatisfaction, and 1 paper provided no information on the degree of satisfaction. In studies done in the area of 'Healthcare', 31 publications indicated respondents' satisfaction, 17 represented dissatisfactions, 1 paper with no information on the subject, and 1 study with a mixed reaction. On a larger level, in every area the number of publications demonstrating respondent satisfaction is higher than publications showing dissatisfaction.

V. Discussion And Conclusion

The IPA has seen tremendous development in recent times and will increase the effectiveness and consistency of directing resources and efforts toward consumer satisfaction. IPA could be used to devise a strategy that assist firms in identifying their customers' expectations, evaluating if they are satisfied, and identifying the services and product features that need to be focused on and enhanced in order to keep their customers fully satisfied. The objective of this study is to provide a systematic review of literature by employing a bibliometric analysis. In this work, we incorporated bibliometric analysis to examine 397 publications focusing on IPA area from various perspectives. The research investigated a wide range of topics using bibliometric indicators, such as publication patterns, leading journals, institutions, and regions with the highest publications.

Since 1987, the number of publications in the IPA area has gradually increased, with the maximum number of articles occurring between 2018 and 2022. The journal Sustainability published the most IPA papers, followed by Tourism Management. On a broader scale, Elsevier is the leading publisher with majority publications. It is also worth noting that the most citations garnered for an IPA article are 544. Convenience sampling was commonly adopted sampling techniques Taiwan is where IPA applied more on a country level, while Asia Pacific is the top region. Zhejiang University is the most influential university in the IPA research in general. The most productive author is Vanhaecht, K, who is followed by Boley, BB in terms of highest papers published.

VI. Implications And Limitations Of The Study

The present systematic literature review suggested that there is future scope to understand the customer satisfaction level in the areas such as technology, telecommunication, architecture and construction by utilizing the original and modified IPA matrix. There is always a need for new treatments and approaches to improve patient outcomes in the field of health care. With the ongoing COVID-19 pandemic, there is also a great need for research into infectious disease prevention and treatment. Technology is another area with a lot of room for research because new technologies are constantly emerging and changing the way we live and work. This research could aid in the development of new technologies, the improvement of existing ones, and the consideration of the social and ethical implications of technological advancements.

The study inherits few limitations, firstly, the database selected for the article selection was the Web of Science, whereas other database such as Scopus was not taken into consideration. Future researchers can consider other databases, which will provide more insight. Secondly, due to selection and filtrations criteria, there are possibilities that some articles were omitted. Thus, future researchers can always streamline the filtration criteria and try to include more articles in the study which will provide greater insight.

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