Jurnal Teknik Industri: Jurnal Hasil Penelitian dan Karya Ilmiah dalam Bidang Teknik Industri

Vol. 10, No. 1, 2024

Analysis Of Service Quality In Early Child Care Services Businesses Using Servqual And Quality Function Deployment

Muhammad Rengga Arya Pratama[1], Hidayat[2], Yanuar Pandu Negoro[3]
[1.2]Industrial Engineering, Muhammadiyah University of Gresik
Jl. Sumatra 101 GKB Randu Agung, Gresik, 28293
Email: renggapratama048@gmail.com, hidayat@umg.ac.id, yanuar.pandu@umg.ac.id

ABSTRACT

This research aims to analyse the quality of childcare services by considering local wisdom and traditional games and conducting a case study at OMAH BOCAH. The SERVQUAL method measures parents' perceptions of the quality of services provided. In contrast, the QFD method is used to design childcare programs that align with parents' needs and expectations, taking into account local wisdom and environmental values. Uniqueness of traditional games. This research uses a qualitative approach with data collection techniques through observation, interview, and documentation studies. The collected data was then analysed using qualitative analysis methods to identify key factors of service quality implemented at OMAH BOCAH. Furthermore, the QFD method designs a higher quality and sustainable childcare program by integrating local wisdom and traditional games. The results of this research will provide a deeper understanding of how local wisdom and traditional games can improve the quality of childcare services. Thus, this research can provide useful recommendations for other childcare service providers to integrate aspects of local wisdom and the uniqueness of traditional games to improve the quality of their services.

Keywords: local wisdom, traditional games, Servqual method, QFD

Introduction

One of the important challenges childcare services face is managing quality educational institutions. Currently, childcare service managers are attempting to improve the quality of education based on company management.[1]. Childcare services are very important for many working parents. Childcare services influence parental satisfaction and impact children's growth, development, and well-being. In games and culture, local wisdom can be an important part of society in providing care and education to future generations.[2].

Childcare services are very important for many working parents. Childcare services not only affect parental satisfaction but also impact children's development and well-being.[3].In the context of games and culture, local wisdom can be an important part of society in providing care and education to future generations. They can learn the meaning and values contained in traditional games and the cultural heritage of local wisdom. The benefits for children are that children feel connected to their cultural roots and learn to appreciate traditions and history. Playing traditional games can also help develop children's social skills, cognitive skills and creativity. Parents can also feel deep satisfaction seeing their children grow and develop in an environment rich in local wisdom culture. Research conducted by Firdaus and Indrianto in Indonesia explored parents' perceptions of the quality of childcare services using the Servqual method. The research results show that reliability and guarantee are the factors that influence parental satisfaction most.[4]. Meanwhile, Ardiyanto and Arifin's research in Indonesia applied the QFD method to design better childcare programs. They identify the primary needs of parents and relate them to the features a parenting program should provide.[5].

OMAH BOCAH's approach with other Child Care Centers that do not integrate similar cultures in a comparative analysis to highlight its unique benefits can be seen in the following table.

Table 1. Comparative Analysis

Analysis Aspects	OMAH BOCAH approach	Other Treatment Centers
Emotional Relationship with the Environment	Utilise local culture and the surrounding environment to build emotional relationships with children.	Less able to utilise the surrounding environment to build deep human emotional connections with children
Understanding Children's Cultural Needs	Use knowledge of local culture and traditional play better to understand children's needs in their cultural context.	Without similar cultural integration, understanding children's needs in their context may lack depth.
Local Community Empowerment	Strengthen the involvement of parents and local communities in children's education, creating strong support networks and strengthening community ties.	Without the same focus on cultural integration, efforts to build strong relationships with local communities may be diminished.
Meaningful learning	Integrating local culture into learning will create a better and more relevant learning experience for children.	Without similar cultural integration, learning experiences may have less direct connection to children's daily lives.

In Gresik Regency, there are already several Childcare centres (TPA). There are around nine childcare services spread across Gresik Regency. Early childhood care that is appropriate and comfortable for children is the most important thing and must be considered carefully.[6]. Caregiver standards and place standards are also factors that parents consider when choosing a Childcare Centre.[7]. There is a childcare service institution called OMAH BOCAH; this institution was founded based on concerns or complaints from the local community, the majority of whom work in the industry. Our child care is based on traditional games and local wisdom, integrating activities that promote cultural heritage, such as introducing children to traditional games, local stories, and art activities that explore their creativity while fostering a love of local cultural heritage that spans time. Scheduled play. This daycare service is located in the Kedamean sub-district area, which has complete facilities, comfortable buildings, a green and pollution-free environment, clean toilets, traditional games and local wisdom culture. Apart from good facilities, it is supported by certified caregivers and qualified staff and has a guaranteed security system. The party responsible for child care services is the owner or manager, staff, and teaching staff, who also play an important role in running local wisdom-based child care services, ensuring that children's learning experiences are integrated with cultural values. Local. One potential obstacle in running local wisdom-based child care services is aligning traditional practices with modern safety standards and regulations. Another potential obstacle is balancing respecting local wisdom and meeting the demands of more modern technological and educational developments.

Research Methods

The type of research carried out emphasises a quantitative approach. The reason for using this method is to provide an overview of existing symptoms or phenomena that occur at OMAH BOCAH and their relationship to the quality of services offered by OMAH BOCAH. OMAH BOCAH Child Care Center to improve services from the perspective of the child's parents. The object of this research is parents who entrust their children to the OMAH BOCAH daycare.

Servqual measures the quality of services provided to children and their parents. This includes evaluating various aspects of the service, such as the reliability of child care, staff responsibility for the needs of children and parents, trust and certainty in providing child care, empathy for children's needs, and the physical quality of care facilities.[8].

This research aims to determine the value of service quality at the OMAH BOCAH Child Care Centre, which is the object of research. The main objective of this research is to identify the attributes that consumers consider important. Between customer expectations and perceptions, it can increase children's interest in the attributes of child care services, which are the object of research; apart from that, it is also to find out the priority of service quality procedures that are by parents' wishes. As in the QFD development matrix with stages, (1) consumer desires lead to technical parameters, (2) technical parameters lead to process requirements, and (3) process requirements lead to quality parameters.[9].

In this study, data for measurement was obtained from questionnaires distributed to parents. Meanwhile, the data includes technical preparation, direction of development of technical responses, correlation between technical respondents, data on organisational difficulty levels, process characteristics, targets, correlation of service attributes, and technical responses in preparing the House of Quality level.[10]. Obtained from interviews with OMAH BOCAH administrators, research objects, and organisational documents.

Previous research used the integration of Servqual and QFD at the SMKN 6 Malang City school, where the results showed that the function of this integration was to clarify plans for making improvements. This integration was carried out by utilising the perception and expectation gaps in room I of the House of Quality and the results of the Servqual measurements used in room II.[11].

Another research conducted used the integration of Servqual and QFD in the STIKOM Surabaya Undergraduate Information Systems Study Program, where the final result of this research was a strategy design for improving educational services in the STIKOM Surabaya Information Systems Undergraduate study program, namely computer maintenance, computer repair damaged areas, providing education and training for lecturers and employees as well as increasing bandwidth.[12].

A questionnaire is a research tool used to collect data from respondents through written questions.[13] It is a form of questionnaire containing questions to understand respondents' opinions, perceptions, attitudes, or behaviour regarding a particular topic. Questionnaires can be used in various fields, such as scientific research, consumer surveys, evaluation services, or feedback collection. The main aim of a questionnaire is to collect data that can be explained and interpreted to better understand the subject under study.[14]. This test tests whether two sets of categorical data are related. This is useful if you want to check whether two categorical variables are independent or related to each other.[15].
[16]Data processing methods in this data research include:

1. Test data adequacy
   The data adequacy test aims to ensure that the data collected is sufficient or vice versa.
2. Test validity
   The validity test aims to ensure the accuracy of an instrument in a study.
3. Reliability test
   Reliability testing aims to ensure the suitability of the measuring instrument and whether the measuring instrument used is reliable and still suitable if the measurement is carried out repeatedly.
4. Test server quality
   The Servqual test aims to determine the level of service quality on customer satisfaction

Results and Discussion

The variables in this research consist of the performance variable of the OMAH BOCAH TPA caregivers/user perception (P) and the variable hope/expectation of user satisfaction (E). The P variable is based on the performance of OMAH BOCAH TPA caregivers in serving its users in five Servqual dimensions. The Servqual method divides service quality into five dimensions: direct evidence (P1), reliability (P2), and responsiveness. /P3), assurance (assurance/P4) and empathy (empathy/P5). Meanwhile, variable E is based on user expectations or expectations of satisfaction with the services provided by the OMAH BOCAH child care centre in five Servqual dimensions, namely Tangibles (E1), Reliability (E2), Responsiveness (E3), Assurance (E4). And empathy (E5).

Cost-Benefit Analysis

1. Estimated Implementation

a) Costs Staff Training Costs = to train staff in implementing changes (X).
b) Equipment and Material Costs = to purchase additional equipment or materials needed (Y).
c) Additional Overhead Costs = additional related and management costs that may arise due to changes (Z).

$$\mathbf{X+Y+Z = Total\ Implementation\ Costs} \quad (1)$$

2. Expected Benefits

a) Increasing children's involvement in learning and activities is estimated to be a 10% increase in new registrations yearly, with an average childcare cost of IDR. 500 thousand per month.
b) The development of a sense of pride in local culture is estimated to increase by 15% in child retention each year.

c) Increased creativity and social skills are estimated to support a 5% increase in monthly childcare rates.
d) Increased parental satisfaction is estimated to be a 20% increase in positive recommendations and awards from parents each year.

Total Financial Benefit = (10% of the number of children) x (Rp. 500 thousand x 12 months) + (15% of the number of children) x (Rp. 500 thousand x 12 months + 5% x (Rp. 500 x 12 months) + 20% x (Rp. 500 x12 Months)

Servqual Method

[17]The Servqual model assumes consumers compare performance on relevant attributes with ideal standards for each service attribute. If performance meets or exceeds standards, the overall perception of service quality will be positive and vice versa. In other words, this model analyses the gap between two main variables: expected service and perceived service. [18]SERVQUAL is important in understanding how customers assess service quality, especially in customer and service-provider relationships.[19]SERVQUAL is a model used to measure customer perceptions of service quality by comparing customer expectations and their experience of the services received.

Servqual Score = Perception Score-Expectation Score (2)

In principle, data obtained through the Servqual instrument can be used to calculate service quality gap scores at various levels in detail: a). item by item analysis, for example P1-H1, P2-H2 and so on, b). Dimension by dimension analysis, for example (P1+P2+P3+P4/4)-(H1+H2+H3+H4/4), where P1 to P4 and H1 to H4 reflect four questions of perception and expectations related to a particular dimension, e). Calculation of one measure of service quality or Servqual gap, namely (P1+P2+P3+…+P22/22)-(H1+H2+H3+…+H22/22)[20].

House of Quality

Quality Function Deployment (QFD) is a structured method used in the product planning and development to build consumer specifications and desires, such as systematic evaluation and the ability of products or services to meet consumer needs and desires.[21]. Quality Function Deployment (QFD) is a systematic approach to designing new products or services that considers customers' wants and needs.[22]. Quality Function Deployment (QFD) is a method that systematically links customer needs with product or service attributes.[23].

[24], [25] Several matrices are used, one of which is the House of Quality because its shape resembles a house. These include 1) Voice of Customer (A), namely a list of customer wishes obtained from a qualitative survey, and 2) Planning Matrix (B), which is quantitative data that shows the importance of Voice of Customer and the level of customer satisfaction. Perceptions and expectations, 3) Technical Response (C) or called The Hows, its function is to answer the Voice of the Customer (The What), which is developed in the company's technical language so that it becomes a need that can be measured and implemented, 4) Relationship (D), is an assessment of the strength of correlation of each element with the technical response in The Hows (A).

[24]The steps in creating a House of Quality HoQ Matrix level 1 Customer Requirements to Technical Requirements are as follows:

1. Identify the voice of the customer
2. Create a customer information matrix
3. Create a technical requirements matrix
4. Calculate the technical response weight value
5. Determine the direction of development
6. Determination of technical correlation
7. Determine targets

Technical correlation is a technical correlation that assesses the relationship between technical responses, which is called the relationship and interdependence between certain technical responses.[26].

Factors Affecting Customer Satisfaction

Based on the interviews and observations, it can be seen what attributes of childcare services are needed by TPA OMAH BOCAH customers. [27]This identification is based on five components of service quality, namely: 1) Tangibles, 2) Reliability, 3) Responsiveness, 4) Assurance, and 5) Empathy, The following is a description of each service attribute:

1. **Reliability**
   a) Easy and fast child care registration procedure
   b) The process of picking up and sending children on time.

c) Children are well cared for and cared for by childcare staff, including feeding, playtime, and other basic care.
d) Care staff demonstrate consistency in providing quality care to each child

2. Assurance

a) Good communication is established between care staff and children and parents
b) Care staff provide playing and learning education according to the proportion of children
c) Care staff are fair to all students

3. Empathy

a) Care staff show individual attention to each child
Pay special attention to their needs and wants.
b) Care staff respond to children's needs and desires quickly and attentively
Provide support and assistance as needed
c) Care staff provide emotional support to children who may have difficulty being separated from their parents
Calms them and gives them a sense of security
d) Care staff demonstrate the ability to understand children's feelings and needs and empathise with their situation.
e) Care staff listen attentively and respond with kindness and understanding, creating strong, trusting relationships

4. Responsiveness

a) Employees are complicated in administrative matters
b) Friendly employees serving parents and children

5. Tangible

a) Care staff and employees have a neat appearance
b) Facilitate tools to support children's activities, such as toys, books, learning equipment, and traditional games
c) There is an informative school information system (website).
d) Cleanliness and orderliness of facilities, including play areas, sleeping areas, and dining areas
e) The availability of attractive open or outdoor spaces, such as playgrounds and fish ponds, allows children to play and be physically active.

Determination of Minimum Sample Size

Several tests will be carried out to measure service quality and customer satisfaction using the Servqual method. The test is as follows:

Test data adequacy

[28]Determining the sample size uses the following Slovin formula to determine the minimum sample $n\frac{N}{(1+Ne^2)}$ (3)

Qualification :
n = Sample size
N = Population (35)
E = Standard Error (5%)

The level of allowance for inaccuracies due to errors that can still be tolerated is 5% so that the required number of samples is obtained as follows:

$$n\frac{35}{(1+35(0.05)^2))} = 32.407$$

So by knowing the Slovin formula above, the minimum number of respondents can be obtained as follows:

$$n = \frac{35}{(1+35(0.05)^2))}$$

n = 32 respondents

So, the minimum number of samples required for this research is 32.

Table 2. GAP Value

Dimensions	No.	Statement	Performance	Expectation	GAP
Reliability	1	Easy and fast childcare registration procedure	3.74	3.57	0.17
	2	Timely pick-up and delivery process for children.	3.65	3.45	0.2
	3	Children are well cared for and cared for by childcare staff, including feeding, playtime, and other basic care.	3.77	3.54	0.23
	4	Care staff demonstrate consistency in providing quality care to each child.	3.57	3.51	0.06
Assurance	1	Good communication is fostered between care staff and children and parents	3.62	3.42	0.2
	2	Care staff provide playing and learning education according to the proportion of children	3.65	3.48	0.17
	3	Care staff are fair to all students	3.57	3.34	0.23
Empathy	1	Care staff show individual attention to each child	3.74	3.54	0.2
	2	Care staff respond to children's needs and wishes quickly and attentively	3.65	3.42	0.23
	3	Care staff provide emotional support to the child	3.65	3.62	0.03
	4	Care staff demonstrate the ability to understand children's feelings and needs.	3.65	3.45	0.2
	5	The care staff listened attentively	3.6	3.4	0.2
Responsiveness	1	Employees are skilled in administrative matters	3.62	3.54	0.08
	2	Friendly employees serve parents and children	3.71	3.45	0.26
Tangible	1	Care staff and employees have a neat appearance	3.74	3.57	0.17
	2	Facilitate tools to support children's activities, such as toys, books, learning equipment, and traditional games	3.57	3.51	0.06
	3	There is an informative TPA information system (website).	3.77	3.42	0.35
	4	Cleanliness and orderliness of facilities, including play areas, sleeping areas, and dining areas	3.65	3.37	0.28
	5	Availability of attractive outdoor space	3.62	3.37	0.25

Based on the GAP calculation above, it can be seen that all statements do not have a negative GAP value, meaning that the services provided to parents are greater than parents' expectations. The biggest gap is in the Tangible dimension, with a value of 1.11, and the smallest gap is shown in the Responsiveness dimension, with a value of 0.34. The biggest gap is in the attributes. There is an informative TPA information system (website) with a value of 0.35. The smallest gap is in the attributes. Care staff provide emotional support to the child, 0.03.

House of Quality (HOQ) Level 1

In preparing House of Quality (HOQ) Level 1, we will use data related to customer needs, namely service attributes and technical responses from the management and staff of the OMAH BOCAH

Child Care Center. It is necessary to adjust the importance level (Adjusted Importance) of service attributes before being integrated into the House of Quality, so it is necessary to calculate the adjusted importance value of these service attributes.[29]. House of Quality (HOQ) level 1 in OMAH BOCAH Childcare service research is the first step in identifying the relationship between customer (parent) needs and a childcare centre's service characteristics.

If a customer needs to represent the voice of the customer, then service characteristics represent the voice of OMAH BOCAH. Based on the customer needs above, the OMAH BOCAH, Child Care Centre, translates them into service characteristics that provide an overview of the service characteristics that will be developed to meet customer needs. The characteristics of the OMAH BOCAH Child Care Services and Teaching and Learning Process services are as follows:

1. Customer Needs (Parents):
    a) Child safety
    b) Availability of adequate facilities
    c) Quality of education and child development
    d) Availability of trained and experienced staff
2. Service Characteristics:
    a) Security:
        1) Strict supervision by staff
        2) A safe and secure physical environment
    b) Facilities:
        1) Safe and comfortable play space
        2) Education and development:
        3) Educational programs that are appropriate to the child's development
        4) Activities that stimulate the development of children's creativity
3. Staff:
    a) Routine training in handling children
    b) Childcare experience
    c) Relationship Between Customer Needs and Service Characteristics:
    d) Child safety is related to staff supervision and safe environmental conditions.
    e) adequate facilities related to safe play spaces and available health facilities.
    f) The quality of education and children's growth and development is related to educational programs and activities that stimulate children's growth and development.
    g) Availability of trained and experienced staff with regular training and experience caring for children.

HOQ level 1 helps identify parents' needs and expectations for OMAH BOCAH child care services and directs planning to design services that suit these needs. From HOQ level 1, further analysis can be carried out to develop follow-up plans to improve the quality of Childcare services.

Level 1 HOQ Analysis

From the results of preparing the HOQ, priority steps were obtained to improve service quality using the Servqual method, which was then integrated into the House of Quality. The level of importance of each attribute with the smallest value is customer needs; that is, with this method, priority attention is sharpened towards attributes that have a big influence on customer satisfaction.

Targets and Directions for Improving Technical Response

Directions for improvement are grouped into three groups, namely: 1) Rising, meaning the higher the value that can be achieved, the better it will be; 2) Fixed, meaning the target is good; 3) Down, meaning the lower the value, the better it will be. So, the direction of improving the technical response is to determine which direction each technical response should go towards its target value. This research shows as many as four technical responses with a fixed direction of improvement and ten others with an increasing technical direction.

Conclusion

Conclusions obtained Based on the gap calculation above, it can be seen that all statements do not have a negative GAP value, meaning that the services provided to parents are greater than parents'

expectations. The biggest gap is in the Tangible dimension, with a value of 1.11, and the smallest gap is in the Responsiveness dimension, with a value of 0.34. The biggest gap is in the attributes. There is an informative TPA information system (website) with a value of 0.35. The smallest gap is in the attributes. Care staff provide emotional support to the child, 0.03.

References

[1] D.Rizkita, "Pelayanan Pengasuhan Anak Selama Masa Pandemi Covid-19 Di Taman Penitipan Anak," *J. Pendidik. UNIGA*, vol. 16, no. 2, 2022.

[2] L. S.Nugroho, "Teori Dramaturgi Dalam Komunikasi Guru Di Yayasan Penitipan Anak Berkebutuhan Khusus," *J. Din. Sos. Budaya*, vol. 25, no. 2, 2023.

[3] E.Rambung, H. T. H.Silitonga, M.Rahadiyanti, D. K.Wardhani, G. B. Y.Messakh, andI. S. F.Nggebu, "Edukasi Pencegahan Penyakit Menular Dan Pemantauan Tumbuh Kembang Anak Di Tempat Penitipan Anak Pada Staf Griya Anak Surabaya," *INTEGRITAS J. Pengabdi.*, vol. 4, no. 1, 2020, doi: 10.36841/integritas.v4i1.522.

[4] W. T.Astuti, N.Purnamasari, andL.Nurhayati, "Penerapan Stimuli toilet training oleh Ibu pada Anak Usia Toddler di Kelompok Bermain dan Tempat Penitipan Anak," *J. Keperawatan Karya Bhakti*, vol. 8, no. 1, 2022, doi: 10.56186/jkkb.100.

[5] N. P. D.Witari, A. E.Pratiwi, andN. K. T.Sumadewi, "Pemberdayaan tempat penitipan anak (TPA) dalam pengelolaan penyakit menular serta skrining tumbuh kembang anak di TPA Puri Rare Kota Denpasar," *J. Sewaka Bhakti*, 2021.

[6] M.Syafar, S.Halijah, andR.Rahman, "Perancangan Aplikasi Penitipan Anak Berbasis Android Di Kecamatan Somba Opu," *J. INSYPRO …*, 2022.

[7] R.Rukiyah, T.Suningsih, M.Rantina, E.Rahmayanti, andM.Aurel Saptaria, "Pengembangan E-Modul berbasis Problem Solving Materi Perawatan Batita pada Layanan Taman Penitipan Anak," *Murhum J. Pendidik. Anak Usia Dini*, vol. 4, no. 2, 2023, doi: 10.37985/murhum.v4i2.370.

[8] A.Jonkisz, P.Karniej, andD.Krasowska, "The Servqual Method as an Assessment Tool of the Quality of Medical Services in Selected Asian Countries," *International Journal of Environmental Research and Public Health*, vol. 19, no. 13. 2022. doi: 10.3390/ijerph19137831.

[9] Belida Rahmanulia, Arni Solekha, Shafira Dyah Hapsari, andAri Zaqi Al Faritsy, "Perencanaan Dan Pengembangan Produk Pouch Bag Menggunakan Metode QFD," *J. Teknol. dan Manaj. Ind. Terap.*, vol. 2, no. 3, 2023, doi: 10.55826/tmit.v2i3.119.

[10] A.Agarwal andR.Ojha, "Prioritising the determinants of Industry-4.0 for implementation in MSME in the post-pandemic period – a quality function deployment analysis," *TQM J.*, vol. 35, no. 8, 2023, doi: 10.1108/TQM-06-2022-0204.

[11] Y. P.Negoro, F. D.Yanti, andF. A.Sholikah, "Peningkatan Kualitas Pelayanan Sekolah Menengah Atas (SMA) Sejahtera Surabaya Dengan Pendekatan Service Quality (SERVQUAL) Dan Quality Function Deployment (QFD)," *Matrik J. Manaj. dan Tek. Ind. Produksi*, vol. 22, no. 2, 2022, doi: 10.30587/matrik.v22i2.3501.

[12] S. S.Sirait andF.Thalib, "Analisis Kualitas Layanan Inaportnet Dikantor Otoritas Pelabuhan Utama Tanjung Priok Dengan Metode SERVQUAL DAN QFD," *J. Ilm. Ekon. Bisnis*, vol. 25, no. 1, 2020, doi: 10.35760/eb.2020.v25i1.2409.

[13] F. A.Sanjaya, R.Ambarwati, andD.Lesmanawati, "Pengaruh Social Media Marketing Dan Citra Merek Terhadap Keputusan Pembelian Yang Dimediasi Electronic Word Of Mouth (Studi Kasus: Konsumen Kedai 'Ikhtiar' Banjarbaru)," *J. Ris. Inspirasi Manaj. dan Kewirausahaan*, vol. 6, no. 2, 2022, doi: 10.35130/jrimk.v6i2.354.

[14] M. D.Aryono, S.Riyadi, andS.Priyawan, "Penilaian Kinerja Perusahaan Jasa Kontruksi PT. Ganesha Praptama Karya Berdasarkan Pendekatan Metode Balance Scorecard," *J. EKUIVALENSI*, vol. 8, no. 1, 2022, doi: 10.51158/ekuivalensi.v8i1.634.

[15] S.Alfarisyi andD.Andesta, "Analisis Perbaikan Servqual Menggunakan Metode IPA dan CSI di J&T Express Gresik," *SITEKIN J. Sains, Teknol. dan Ind.*, vol. 19, no. 2, 2022.

[16] A.Deharja, F.Putri, andL. O. N.Ikawangi, "Analisis kepuasan pasien BPJS rawat jalan dengan metode Servqual, CSI, dan IPA di klinik dr. M. Suherman," *J. Kesehat.*, vol. 5, no. 2, 2019, doi: 10.25047/j-kes.v5i2.25.

[17] S.Wibowo andN.Muflihah, "Analisis Kualitas Pelayanan Terhadap Kepuasan Pelanggan Menggunakan Metode Servqual Di Sanjaya Fitnes Jombang," *J. Penelit. Bid. Inov. Pengelolaan Ind.*, vol. 1, no. 2, pp. 61–68, 2022, doi: 10.33752/invantri.v1i2.2324.

[18] Sari Rahmah, Lestari Nugrahini, andIvans Panduwiguna, "Analisis Tingkat Kepuasan Pasien Pada Pelayanan Kefarmasian Puskesmas Petir," *J. Farm. KRYONAUT*, vol. 3, no. 1, 2024, doi: 10.59969/jfk.v3i1.36.

[19] M.Salma, W.Dewi, S.Nabila, S. G.Hilaly, F. I.Komputer, andK.Layanan, "Analisis Kepuasan Pengguna terhadap Kualitas Layanan Portal Layanan," *J. Teknol. Dan Sist. Inf.*, vol. 4, no. 2, 2023.

[20] M. S. W.Dewi, S.Nabila, andS. G.Hilaly, "Analisis Kepuasan Pengguna terhadap Kualitas Layanan Portal Layanan Mahasiswa (POLAM) Menggunakan Metode Servqual," *J. Teknol. DAN Sist. Inf.*, vol. Vol. 4, No, 2023.

[21] H. R.Putera, Z. F.Ikatrinasari, H. H.Purba, andH.Hernadewita, "Usulan Perbaikan Pelayanan Pendidikan Menggunakan Metode QFD dengan Pendekatan Variabel SERVQUAL," *JISI J. Integr. Sist. Ind.*, vol. 9, no. 2, 2022, doi: 10.24853/jisi.9.2.123-131.

[22] D.Siwiec, A.Pacana, andA.Gazda, "A New QFD-CE Method for Considering the Concept of Sustainable Development and Circular Economy," *Energies*, vol. 16, no. 5, 2023, doi: 10.3390/en16052474.

[23] A. M.Muslimin, D.Luqyana, A. M.Muhamad, andC.Nur Rosyidi, "Application of Quality Function Deployment (QFD) in Die Redesign to Lowering Rework of Stamping Parts," *Int. J. Ind. Eng. Manag.*, vol. 14, no. 3, 2023, doi: 10.24867/IJIEM-2023-3-337.

[24] N. A. M.Asri, A. M. A.Hamid, Norhashimahshaffiar, N. A.Sukindar, S. I.Syedshaharuddin, andF. S.Hassan, "Application Of House Of Quality In The Conceptual Design Of Batik Wax Extruder And Printer," *IIUM Eng. J.*, vol. 23, no. 1, 2022, doi: 10.31436/IIUMEJ.V23I1.1842.

[25] B.Rahmanulia, A.Solekha, S. D.Hapsari, and..., "Perencanaan Dan Pengembangan Produk Pouch Bag Menggunakan Metode QFD:(Studi Kasus: Bank Sampah Gemah Ripah Bantul)," *J. Teknol. dan ...*, 2023, [Online]. Available: http://jurnal-tmit.com/index.php/home/article/view/119

[26] S.Park, X.Lehto, andM.Lehto, "Self-service technology kiosk design for restaurants: An QFD application," *Int. J. Hosp. Manag.*, vol. 92, 2021, doi: 10.1016/j.ijhm.2020.102757.

[27] Sambodo Rio Sasongko, "Faktor-Faktor Kepuasan Pelanggan Dan Loyalitas Pelanggan (Literature Review Manajemen Pemasaran)," *J. Ilmu Manaj. Terap.*, vol. 3, no. 1, 2021, doi: 10.31933/jimt.v3i1.707.

[28] A. F.Hadining, "Analisis Kepuasan Pelanggan Abc Laundry Dengan Menggunakan Metode Service Quality, Importance Performance Analysis (IPA) Dan Customer Satisfaction Index (CSI)," *J@ti Undip J. Tek. Ind.*, vol. 15, no. 1, 2020, doi: 10.14710/jati.15.1.1-10.

[29] Y.Luo, M.Ni, andF.Zhang, "A design model of FBS based on interval-valued Pythagorean fuzzy sets," *Adv. Eng. Informatics*, vol. 56, 2023, doi: 10.1016/j.aei.2023.101957.