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# The E-govqual and Importance Performance Analysis (IPA) Models Analysis: Review a Web Service Quality of E-government

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***Abstract*— The e-government web portal serves as a crucial platform for providing information that can be easily and universally accessed. This serves as an intermediary between the municipal administration and the community, ultimately resulting in improved and streamlined public services. Several variables, including age and proficiency in using the integrated system, provide insights on how to gauge user satisfaction levels of the information system and its current users. The e-govqual and Importance Performance Analysis (IPA) models are accurate indicators of user satisfaction. This article seeks to understand the perception of users of the e-government web portal of the municipal Tanah Datar municipality. It aims to compare the servqual and the IPA model to determine the most suitable method for assessing public perceptions and identifying priority attributes to improve service quality. These two approaches share the same objective, but employ different methodologies. The user's perception of performance is designated as the independent variable (X) using a quantitative approach, while service quality expectations are designated as the dependent variable (Y). This is achieved by combining the Likert scale with five dimensions. This study uses questionnaires to gather data from 275 participants and uses two models, E-govqual and Importance Performance Analysis (IPA), to assess user satisfaction. The findings indicate that it is crucial for the government to respond quickly to user issues, provide feedback on user input, and regularly update the material on the Web portal.**

***Keywords*—Importance; performance; satisfaction; service; E-govqual.**

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## I. INTRODUCTION

The most recent study proposes the e-govqual and the IPA model in conjunction with the Likert scale to classify attributes and determine which service characteristics should be prioritized for improvement or maintenance [1]. E-government is a complex concept that encompasses various dimensions, including user, technology, and channel orientation [2]. Infrastructure and personnel knowledge are the main factors that determine satisfaction with one or two accommodations [3].

The user's anticipation of a specific service is determined by their personal needs, past experiences, and recommendations. The anticipated service may occasionally vary, creating a specific market segment. The gap model was created in 1985 with the aim of providing superior quality service. They detect deficiencies that contribute to an undesirable service experience. Users typically correlated the quality of the service they received with their expectations of the provider [4].

E-govqual uses structured surveys to collect user feedback on their perceptions and experiences with the service [5]. The disparity between expectations and perceptions can arise for every degree of quality [6]. A popular technique for determining customer satisfaction and prioritizing strategic provision based on presumptions is importance performance analysis (IPA) [7], [8].

E-government offers decentralized information management solutions and establishes efficient and transparent digital platforms [9], [10], [11]. Global software developers have created digital technologies to accelerate reforms [12]. In service firms, the importance of innovation and quality is crucial for achieving business excellence and gaining a strong competitive edge [12].

To detect deficiencies that lead to unsatisfactory services, consumers typically compare the service they have received with the service they anticipated [4]. This article offers a different perspective on how social entrepreneurship impacts service delivery and offers suggestions for policy makers who are interested in ensuring the long-term viability of

intermediaries in the digital mainstream [13]. Practitioners aim to integrate the current body of literature, with a specific focus on studies that meet the criteria to evaluate government websites and examine their characteristics, in line with the public's attention to research [14].

This research aims to empirically evaluate the efficacy of the e-government service provided by the Web site of the Tanah Datar municipality. The research substantiated and depicted the disparity in performance and comparison amongst e-govqual, highlighting the significance of assuring their service quality.

This case study presents data on public information [15]. We assessed the connections between particular structures discovered in previous research and their impact on the transparency of information and the appearance of privacy fatigue. This review will involve identifying the precursors of privacy information openness and examining its impact on dimensions of privacy fatigue, such as emotional exhaustion. This section includes validations for the relationships to ensure the accuracy and reliability of the findings of the current study model [16] .

The purpose of this research is to assess the opinions of e-govqual and IPA models within the field of computer science. The findings will be used to determine the feasibility of pursuing a post-graduate degree and studying abroad. This document was meticulously crafted using many sub-applications that were utilized in diverse contexts such as education, culture, social affairs, healthcare, politics, national defense, and law, among others. The territory is divided into different sectors, each of which is exclusively covered by a single form of communication known as e-government. Authentication is not required for certain apps.

Various scholars have synthesized scholarly studies on this trending subject, including journals, papers, and books. To comprehend this contentious issue, one must grasp three fundamental facets: What are the main objectives of the government initiative? What role do government websites play in achieving their objectives? What differentiates government websites from other types of website in terms of their characteristics? Furthermore, we analyze the effectiveness of government websites in terms of their design and operation to establish a framework for formative evaluation.

We propose that government website evaluation should be conducted using a formative and theory-driven approach, rather than relying on summative or conclusion-based methods. This is due to the fact that a government website functions as an ongoing instrument to achieve the objectives of government initiatives, such as e-government [14]. During the data collection process, we evaluated the final version of the instrument's factor structure and scale validity. Specifically, at this point, the measurement items were explicitly verified for their reliability and validity. A significant number of scholars tend to concentrate on the aspects of production and innovation within corporate institutions [14].

According to the Esmailpour study, the dependability and security aspects are categorized in Quadrant I, which is designated as 'keep up the good job', while the convenience aspect is categorized in Quadrant III, which is labeled as 'low priority.' The security component has qualities classified in quadrant I, while one of the three attributes of the dependability component also falls in quadrant I. On the other hand, two of the three characteristics of the convenience component are classified in the third quadrant [17].

TABLE I
COMPARISON OF ESMAILPOUR'S RESEARCH

| No | Previous | Difference |
|---|---|---|
| 1. | Modern Analysis with Two Models | Modern Analysis with Two Models |
| 2. | The conventional significance-performance analysis makes the assumption that the survey items do not interact. | The introduction of the IPA model is something managers truly need. |
| 3. | The multiple determination coefficient considers the interaction of the elements to be under the influence of the other elements. | The e-govqual and IPA models simultaneously consider quality-requirement characteristics. |

Conversely, we designated quadrant A as the primary focus, referred to as 'concentrated here,' while quadrant D was categorized as 'potential excess.' They used clusters 1-4. Simultaneously, this paper employed quadrans. The methodologies used in previous investigations lack sufficient justification. This article was categorized as structured. This demonstrates the degree to which the study diverges from previous research. Our systematic methodologies and narratives enable readers to gain a clearer comprehension of the intended message conveyed in this work. The following is a comparative table (Table II) that presents the research findings:

TABLE II
A CLASSIFY OF QUADRANT

| | Esmail pour | This Paper |
|---|---|---|
| Q1/A | Keep up the good work | Concentrate here |
| Q2/B | Possible Overkill | Keep up the good work |
| Q3/C | Low Priority | Low Priority |
| Q4/D | Concentrate here | Possible Overkill |

We require feedback from users with varying levels of expertise, including beginners, intermediates, and experienced users, to assess their satisfaction. This study aims to identify the elements that impact the adoption of E-government by residents of the Tanah Datar district through a comparative analysis of the E-govqual and IPA models.

The distinction between this article and the previous study is in the objectives and advances that are imperative for the implementation of e-government from the community [18], since the online service is tailored to meet the specific requirements of the community. Researchers' contributions involve elucidating concepts in a manner that instills a desire in others to understand, embrace, and utilize this program, employing the methodology of the research.

The goal of e-government is to improve services for residents, businesses, and other social groups through an information management technique. Consequently, the objective of the study is to create an evaluation. The e-Government service quality model focuses on customer happiness after a thorough review of earlier research on this subject.

## II. Materials and Method

The suggested methodologies could help identify an appropriate and efficient plan to improve public information services. Furthermore, it is worth noting that significant statistical expertise is not necessary for the sake of simplicity [1]. With the advancement of information technology, both academics and industry experts began to prioritize the quality of online services [19], [20], [21]. Early studies focused primarily on the quality of the website of the e-commerce industry, as both e-commerce and e-government were considered part of the information systems field. The literature on information systems gives the predominant information system evaluation paradigm.

We use the findings obtained from the collection of data using the psychological assessment tool. A total of 275 individuals were recruited as participants through Google Forms questionnaires. The validity and reliability of the study were determined using quantitative methods [22]. The total number of participants was 275, with 98 individuals, or 35.6%, identified as male and 177 individuals, or 64.4%, identified as female. Most of the respondents, comprising 164 individuals or 60.1%, defined themselves as civil servants, while 53 individuals or 19.4% classified themselves as honorary and society members according to their occupation.

### *A. Research Ethics*

We acknowledge the need to include ethical considerations in several aspects of the investigation, including the selection of the study topic, the study design, the procedures to obtain consent, the management of data and access to treatment after the completion of these studies [23].

### *B. Variables*

The fundamental elements of a research design are the user's expectations of service quality, denoted by the dependent variable Y, and their perception of performance, represented by the independent variable X. Instead, the classification of service attributes using the Likert scale is the method used in this study to determine which service attributes get priority.

### *C. The Likert Scale*

The Likert scale uses a range of five statements with a scoring scale of 1 to 5, as shown in Table III.

TABLE III
THE LIKERT SCALE

| Performance/ Importance | Score |
|---|---|
| Very dissatisfied/ very unimportant | 1 |
| Unsatisfied/ Unimportant | 2 |
| Satisfied enough/ important enough | 3 |
| Satisfied/ important | 4 |
| Very satisfied/ very important | 5 |

### *D. Research Flow Diagram*

The following procedure for how well this investigation ran is described in Figure 1 [16].

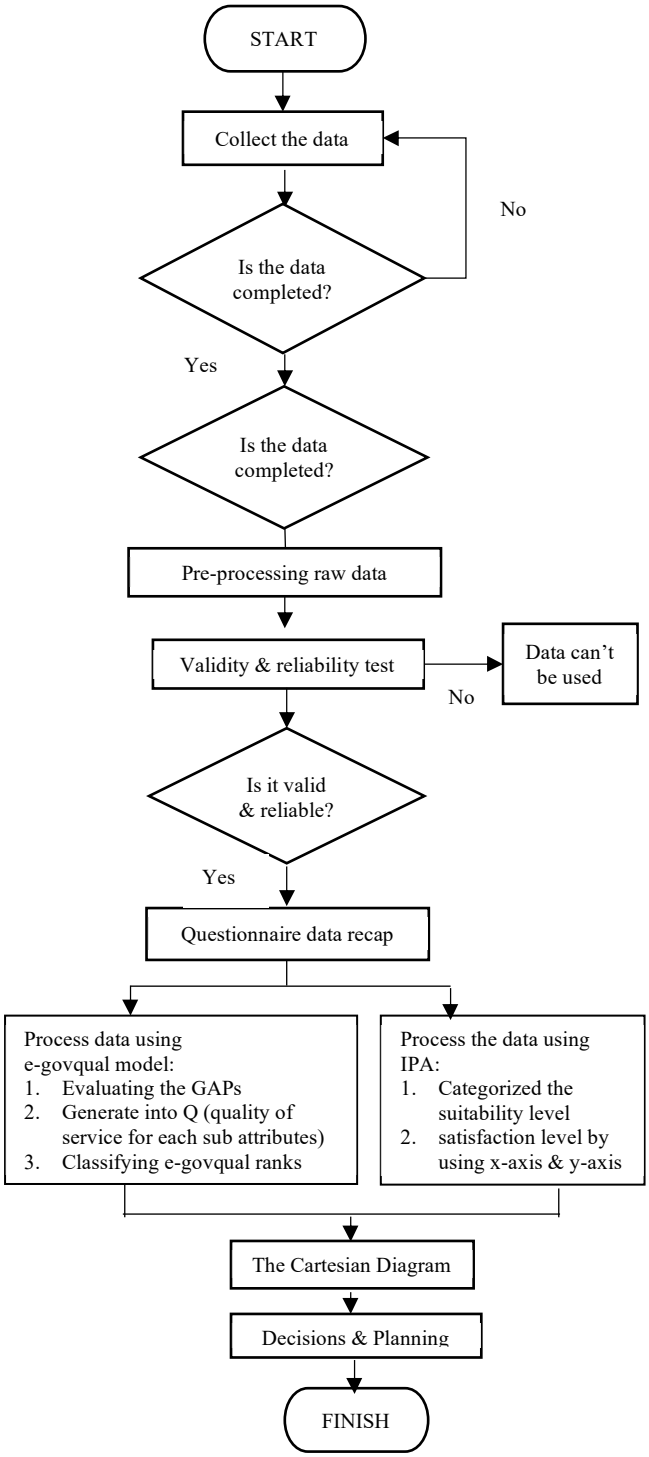


Fig. 1 Research Flow

### *E. The Description of Importance-Performance Attributes*

Each attribute has multiple statements, and there are four main attributes and twenty-one sub-attributes. During a tour of the e-government portal, respondents completed the survey. Table IV contains these sentences.

TABLE IV
THE ATTRIBUTES DESCRIPTION

| Sub-Attributes | Description |
|---|---|
| Reliability | |
| RB1 | Quickly download files or content. |
| RB2 | Users can visit the website from any location. |

| Sub-Attributes | Description |
|---|---|
| RB3 | When using first-time access, users succeed. |
| RB4 | The web service is on time. |
| RB5 | Fast-processing speed that is suitable for users. |
| RB6 | The website is compatible with all browsers. |
| Trust | |
| KP1 | The website asks for a password and a user name. |
| KP2 | Your online username and password are more secure. |
| KP3 | User information is merely required. |
| KP4 | Confidentiality can be maintained for data stored on the internet. |
| Efficiency | |
| EF1 | The users can easily navigate the website's structure. |
| EF2 | Users can effectively aid in their search with the help of the web search engine. |
| EF3 | Users claim that the site map is well-organized. |
| EF4 | Users' needs were already satisfied by the website. |
| EF5 | The information that was available was thorough. |
| EF6 | The website contains current information. |
| EF7 | The form's instructions are adequate for filling it out. |
| Citizen. S | |
| CS1 | Users' problems are addressed with interest by the city government. |
| CS2 | The city government responds promptly to problem submissions. |
| CS3 | The municipal administration is qualified to respond to inquiries from users. |
| CS4 | The city government instills confidence and trust in its users. |

## III. Results and Discussions

The third section of this paper comprises the findings and subsequent analyses. This subsection contains comprehensive tables and figures. This study expands the research carried out by previous authors [24]. Before formulating a conclusion, it is vital to present the primary components which encompass descriptive statistics, the credibility and dependability of the findings, and the methodology employed to attain the results through the analysis of the e-govqual and IPA model expounded in this study.

### A. Respondents Profile

Gender, age, and occupation were considered when interpreting the descriptive data analysis.

*1) Gender:* The respondents were divided into two genders: male and female. Table V displays the gender profile of respondents following the distribution of the questionnaires and the recruitment of 275 respondents.

TABLE V
GENDER

| Gender | Frequency | % |
|---|---|---|
| Male | 98 | 64,4 |
| Femle | 177 | 35,6 |
| Total | 275 | 100 |

*2) Age:* The age range of 35 to 64 years is 161 people. Data on the total number of respondents are shown in Figure 2.

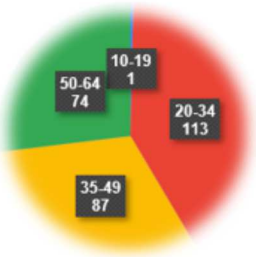


Fig. 2 The Respondents' Age

*3) Occupations:* The majority of respondents—164 individuals, or 60.1%—are civil servants, according to the respondent's occupational level. In Figure 3, the diagram is displayed.

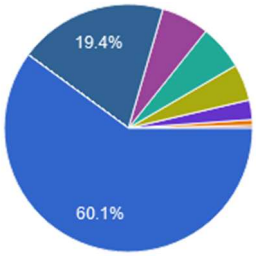


Fig. 3 The Occupation Percentages

### B. Validity and Reliability

The Pearson correlation coefficient has been used to analyze the concurrent validity [25]. Degrees of freedom (df) equal to n-2 are tested for validity by comparing the r-value with the r-table. Every assertion is true for each of the 21 sub-attributes. Decisions about reliability are primarily based on the following criteria.

- The Cronbach alpha value is> 0.6, and the questionnaire instrument is reliable (reliable).
- Cronbach's alpha value < 0.6, the questionnaire instrument is unreliable.

The consistency of significance and performance in Table VI is demonstrated by the sentences that follow.

TABLE VI
CRONBACH'S ALPHA OF RELIABILITY TEST

| | Cronbach's Alpha | N of Items |
|---|---|---|
| Performance | .984 | 21 |
| Importance | .973 | 21 |

The table indicates that the r-alpha exceeded the r-alpha standard table's 0.6, which is designated as "reliable," by reaching 0.984 for performance and 0.973 for importance.

### C. Model Implementation

Both models assess the influence of four factors, reliability, trust, efficiency, and citizen support, on perceptions of service quality. The e-govqual process involves three steps: assessing the gap, establishing a quality value, and determining the ranks. The IPA begins by measuring the levels of conformance and user satisfaction by intercepting the x- and y-axes. Indicators serve as an initial reference to create tools that can be completed in the form of statements or questions [26].

*1) E-govqual*: The steps of e-govqual consist of the GAP value or quality of each attribute and e-govqual Ranks. Generally, the results of the e-govqual analysis of each attribute could be summarized using its average. The results are given in Table VII.

TABLE VII
GAP VALUE AND QUALITY OF THE SERVICE

| Attributes | P | I | GAP | Q = P/I |
|---|---|---|---|---|
| Reliability | 3,55 | 4,31 | -0,77 | 0,822091 |
| Trust | 3,57 | 4,31 | -0,75 | 0,827012 |
| Efficiency | 3,46 | 4,35 | -0,88 | 0,796869 |
| Citizen Support | 3,09 | 4,21 | -1,12 | 0,734183 |

Based on the table above, Q>1 means that service quality is labeled 'good'. We can conclude that the Qi value of all attributes is less than 0, and then their assumed quality of services has been labeled 'good enough.' Using these questionnaires, sub attributes could contribute significantly to the ranking of web portal services, as identified in Table VIII [27].

TABLE VIII
E-GOVQUAL RANKS

| Sub-Attributes | Rank | Value |
|---|---|---|
| CS2 | 1 | -1,25 |
| CS1 | 2 | -1,19 |
| CS3 | 3 | -1,03 |
| CS4 | 4 | -1,00 |
| EF6 | 5 | -1,00 |
| EF5 | 6 | -0,94 |
| EF4 | 7 | -0,92 |
| EF3 | 8 | -0,89 |
| RB2 | 9 | -0,88 |
| EF1 | 10 | -0,83 |
| EF7 | 11 | -0,83 |
| RB5 | 12 | -0,80 |
| KP4 | 13 | -0,80 |
| KP2 | 14 | -0,78 |
| EF2 | 15 | -0,78 |
| RB4 | 16 | -0,77 |
| RB3 | 17 | -0,73 |
| RB1 | 18 | -0,73 |
| KP3 | 19 | -0,73 |
| RB6 | 20 | -0,69 |
| KP1 | 21 | -0,68 |

*2) Importance Performance Analysis (IPA)*: Significance Conducting performance analysis by examining online evaluations can provide decision-makers and managers with a handy way to measure customer satisfaction. This information can then be used to develop service improvement strategies, taking into account different time periods [28]. Traditional importance-performance analysis operates under the assumption that there are no interactions between the survey elements [17].

By multiplying the user's expectation scale by 100 percent and using the company's rating scale, the conformity level determines suitability. The attributes for each performance item and the expected importance are used to describe each level. From 25 percent to 43,75 percent, 43,75 percent to 65,5 percent, 65,5 percent to 81,25 percent, and 81,25 percent to 100 percent are the final scores of the attributes, as indicated by a continuum line. The relevance of each attribute is delineated in Table IX along with its conformance level for each performance item.

TABLE IX
GAP VALUE AND QUALITY OF THE SERVICE

| | x 1 | x 2 | x 3 | x 4 | x 5 | Score |
|---|---|---|---|---|---|---|
| **Performance** | | | | | | |
| | VD | D | SE | S | VS | |
| RB | 37 | 191 | 617 | 445 | 360 | 1650, |
| X1 | | | | | | 5850 |
| Trust | 17 | 109 | 423 | 334 | 217 | 1100 |
| X2 | | | | | | 3925 |
| Eff | 54 | 268 | 730 | 476 | 397 | 1925 |
| X3 | | | | | | 6669 |
| CS | 142 | 217 | 339 | 203 | 199 | 1100 |
| X4 | | | | | | 3400 |
| **Importance** | | | | | | |
| | **VU** | **U** | **IE** | **I** | **VI** | |
| RB | 15 | 43 | 221 | 503 | 868 | 1650 |
| Y1 | | | | | | 7116 |
| Trust | 12 | 29 | 146 | 327 | 586 | 1100 |
| Y2 | | | | | | 4746 |
| Eff | 10 | 52 | 283 | 494 | 1086 | 1925 |
| Y3 | | | | | | 8369 |
| CS | 16 | 49 | 171 | 316 | 548 | 1100 |
| Y4 | | | | | | 4361 |
| **Tki** | | | | | | |
| Tki1 | | P1/I1 | | Very high | | 82,2% |
| Tki2 | | P2/I2 | | Very high | | 82,7% |
| Tki3 | | P3/I3 | | High | | 79,6% |
| Tki4 | | P4/I4 | | High | | 73,4% |
| Tki Total | | | | Σxi/Σyi | | |
| Average | | Σxi | | Σyi | | |
| | | 945 | | 1184 | | 80% |

The findings of the appropriateness assessment indicate that the aspect with the most notable score is citizen support, which has an average of 80% and falls under the "high" category. This suggests that consumers are fairly content with how well e-government services work. The user's level of contentment with the estimated value, as shown by abstract satisfaction, suggests that it is difficult to comprehend and compare [29]. Research approaches the perception of the user. The x- and y-axis intercept satisfaction level is shown here.

$$\bar{\bar{x}} = \frac{\Sigma_{i=1}^{n} \bar{x}_i}{k} \quad (1)$$

$$\frac{72,16}{21}$$

$$\bar{\bar{x}} = 3,44$$

$$\bar{\bar{Y}} = \frac{\Sigma_{i=1}^{n} \bar{Y}_i}{k} \quad (2)$$

$$\frac{90,41}{21}$$

$$\bar{\bar{Y}} = 4.31$$

The above results show that the intersection on the x-axis is 3,44, and the y-axis is 4,31. The Cartesian diagram will use points on the x- and y-axes.

*D. The Cartesian Diagram*

For every attribute, the matrix plots the pairs of importance and performance. Degree of performance is indicated by the vertical axis, while importance is represented by the horizontal axis. Refer to Table X.

TABLE X
THE AVERAGE AND INTERCEPT

| Sub-Attributes | AVG (P) | AVG (I) |
|---|---|---|
| RB1 | 3.52 | 4.25 |
| RB2 | 3.54 | 4.42 |
| RB3 | 3.55 | 4.28 |
| RB4 | 3.51 | 4.28 |
| RB5 | 3.54 | 4.35 |
| RB6 | 3.61 | 4.30 |
| KP1 | 3.52 | 4.20 |
| KP2 | 3.58 | 4.36 |
| KP3 | 3.57 | 4.30 |
| KP4 | 3.60 | 4.40 |
| EF1 | 3.51 | 4.33 |
| EF2 | 3.48 | 4.27 |
| EF3 | 3.50 | 4.39 |
| EF4 | 3.45 | 4.37 |
| EF5 | 3.45 | 4.39 |
| EF6 | 3.42 | 4.42 |
| EF7 | 3.44 | 4.27 |
| CS1 | 3.13 | 4.32 |
| CS2 | 3.10 | 4.35 |
| CS3 | 3.07 | 4.10 |
| CS4 | 3.07 | 4.07 |
| MEAN | 3.44 | 4.31 |

| Performance | |
|---|---|
| X | Y |
| 3.44 | 4 |
| 3.44 | 4.5 |

| Importance | |
|---|---|
| X | Y |
| 3 | 4.31 |
| 3.7 | 4.31 |

At 4 points 31, the average total importance and performance are both 3,44. The following sentences are found in Figure 4:

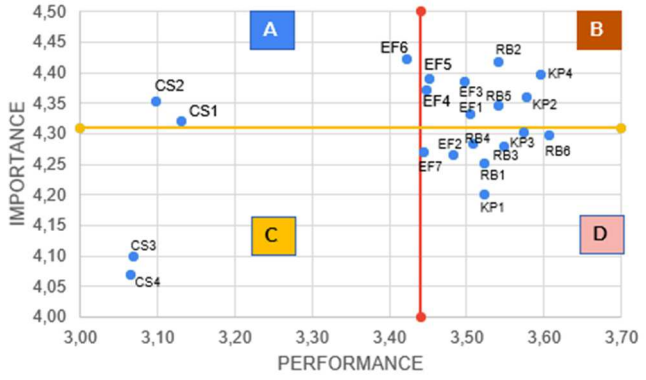


Fig. 4 The Cartesian Diagram

Quadrant A indicates that the government should respond promptly to overcome user problems, give feedback on user input, and regularly update the Web portal's information.

### *E. The Strength and the Weakness using the Models*

Elements that are not interpreted in the e-govqual model can be identified in the IPA model, and elements that are not represented in the IPA model can be located in the e-govqual model. The subsequent section provides an overview of the benefits and drawbacks associated with the e-govqual technique and importance-performance analysis (IPA).

- The e-govqual model
  - Advantages:
    - ✓ Shows the GAP attributes.
    - ✓ The procedure is more straightforward than the importance performance analysis (IPA).
    - ✓ The conclusions could easily be explained.
    - ✓ There are not too many formulas because they only show the quality of service.
    - ✓ Simple classification by data classification.
  - Disadvantages:
    - × This model does not contain as much information as the Important Performance Analysis (IPA) model.
    - × It would not directly determine which dimensions should be improved on services.
- Importance Performance Analysis (IPA) Model
  - Advantages:
    - ✓ It is easy to see which attributes need to be improved or reduced to maintain user satisfaction.
    - ✓ Relatively complex to identify.
    - ✓ Structured data.
    - ✓ Detailed results.
    - ✓ Minimization of errors.
  - Disadvantages:
    - × Complicated calculations.
    - × The formulas are wide and require accuracy.
    - × Highly detailed work.

TABEL XI
COMPARISON OF RESEARCH RESULTS

| **Result** | **Vedat Asipi, Benjamin Durakovic, [30]** |
|---|---|
| It is possible to find things in IPA that are not interpreted in e-Govqual and in the e-Govqual model that are not represented in IPA. In addition to taking into account user perception and expectations for every service attribute, the e-govqual and IPA models also take into account the characteristics of the quality requirements. | Within the nations on the list, there are variations between the two business models. But the dependent and independent variables in both models are related to one another. The dependent variable is employment in the second model, and education in the first.. |

## IV. CONCLUSION

All elements of the table have a correlation coefficient greater than 0.118 for a sample size of 275 respondents. All statements were classified as valid. The alpha coefficient for service performance is 0.984, while the alpha coefficient for service importance is 0.973. The value exceeded the usual r Alpha table 0.6, which classified all attributes as reliable. Both models assess how perceptions of service quality are influenced by four attributes: reliability, trust, efficiency, and citizen support. Elements that are not interpreted in the e-govqual model may be identified in the IPA model, and elements that are not represented in the IPA model may be located in the e-govqual model.

The e-govqual and IPA models simultaneously take into account the characteristics of quality requirements, as well as

the perception and expectations of consumers for each attribute of the service. This article compares the servqual and IPA models to assess the most suitable and efficient technique, public perceptions, and prioritized variables to improve service quality. The objective is to understand the user's perception of the e-government website of the Tanah Datar municipality. The level of user satisfaction is assessed using two models, E-govqual and Importance Performance Analysis (IPA), based on data obtained from 275 participants via questionnaires in this study. The findings indicated that prompt government action is necessary to resolve the issue.

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