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# *HEALTH SERVICE QUALITY VALUES OF PRIMARY CLINIC USING EPARTICIPATION SERVICE QUALITY ASSESSMENT*

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***Abstract***

*The use of technology to manage participation in the quality of health services needs to be carried out to produce relevant, valid and accurate assessments of service quality. Not all Primary Clinics have health service quality standards and quality evaluation data for participation services using information technology (via electronic media). This is crucial for evaluating clinic development, upgrading the status to Main Clinic, and improving the service quality. The methodology used adopts the eParticipation framework with the stages of Areas of Participation (determining the main areas of participation), Category of Tools (determining the categories of ICT support tools), and Technology (determining ICT support technologies). The participation area is limited to Primary Clinic patients who act as participants of 1,308 people. 14 elements with a total of 33 detailed elements are the basic elements for assessing service quality. Application of eParticipation SQA website-based is used to manage and present the results of service quality assessments by Primary Clinic Managers. The highest average service quality assessment is in the answers to Good (62%), the Worse and Poor options are minimized, and the options of Good and Very Good are maximized. The technology required consists of software, hardware, and network devices. The application is supported by Manager and is used easily, quickly, and precisely.*

**Keywords**: *eParticipation, Primary Clinical, Service Quality.*

## 1. INTRODUCTION

Facts and happenings in business develop into challenges and opportunities for organizations working in the service industry[1]. Quality is a multidimensional concept with customer satisfaction as one of the important aspects[2], the concept comes from manufacturing organizations which are equally important to service organizations[3]. Quality is a dynamic situation related to a product, service, people, process, and environment that exceeds expectations or demands[4]. The quality of service can be determined by the consumer and and related experiences[5]. Service quality in organizations is recognized as closely related to customer satisfaction, customer maintenance, customer loyalty, budget and productivity, facility guarantees, and economic presentation[3]. An important step in offering high-quality services is recognizing and meeting needs, expectations[6], and benefits[1][7].

Performance-based service quality and consumer satisfaction are the main antecedents of behavioral intention in the health sector[8]. The healthcare industry has become a highly competitive and rapidly growing industry throughout the world[3]. Patient experience influences persistence in seeking care, adherence to medication regimens, and self-reported health[9]. Improved patient satisfaction and quality services contribute to consumer loyalty in healthcare together [8]. Satisfaction is the main decision-making tool in choosing health services and service quality must meet expectations [3]. Health service quality refers to the degree to which health services increase the likelihood of desired health outcomes and are consistent with professional knowledge [8].

The quality of health services has long received global attention[10] and is growing rapidly[6]. The health sector has witnessed rapid growth by embarking on an ambitious project to become a leading medical center[11]. Service to patients in accordance with their expectations and needs is indispensable for the success of an organization so that it can survive in market competition[2]. Patients assess the Quality of health services based on interpersonal and environmental factors offered to meet patient needs [2]. Safe and quality health services are the main hope and goal of the community, health workers, managers, owners, and regulators[10]. Quality health services are difficult to define, describe, and consider[6]. Quality health services can be improved to continue to offer a full

spectrum of choices and availability of health needs[11], [12]. Clinic managers ensure efficient organization and improve adherence to performance standards in key service areas[13].

The health service faces a lot of pressure from its customers for the quality and timeliness of services[11]. Management and policymakers face decisions that affect the service quality assessment by considering the main factors that influence overall preference[14]. The most important way to improve the quality of health services is to improve service quality and strengthen patient safety [10]. Service quality paves further avenues for clinics to respond to healthcare sector challenges and continuously improve the services offered[15]. Quality service will make the service reuse[13]. Elements of health services assessment that meets clinical requirements have 14 points to be considered relevant, valid, and accurate [5], [16]. Quality services assessment based on health services experienced understood and known by customers (patients). Clinics must have relevant, valid, and reliable service quality assessments[16]. The assessment of clinical health services quality consists of 14 points as shown in Fig. 1.

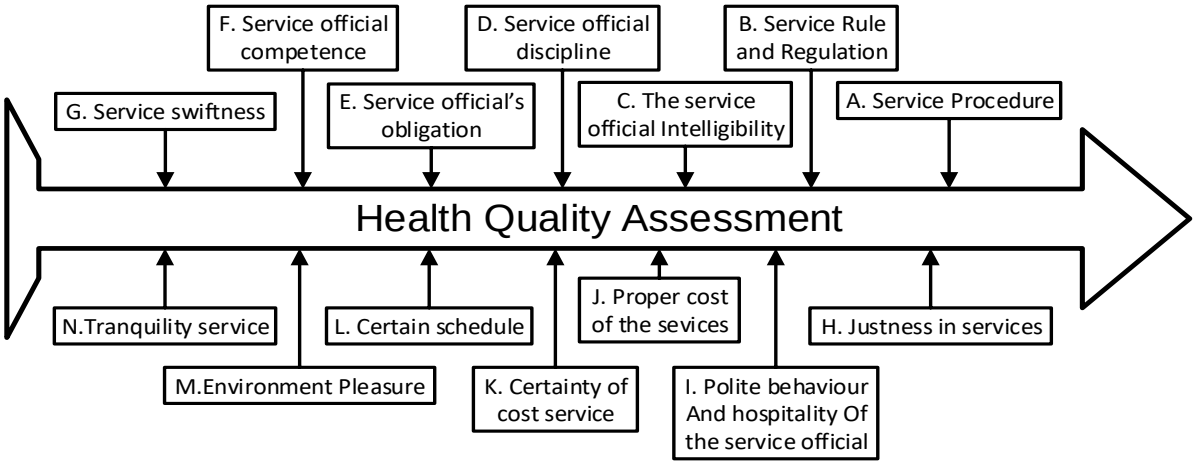


Fig. 1 The Element of Health Quality Assessment

The main function of the clinic will continue to serve health services if the officer can overcome the business challenges[4]. Clinics based on the type of service are divided into two (Main Clinic and Primary Clinic). A primary Clinic is a clinic that provides basic medical services in general and specifically. Main Clinic is a clinic that provides medical and specific services. A clinic must have health human resources, medical equipment, and non-medical equipment following the type of service provided and must meet quality, security, and safety standards based on applicable regulations[17]. Not all clinics have qualified service standards[18].

Health services are measured broadly with a patient perspective[3] measurement scale which has relevant and accurate [5] beneficial implications[2]. Participation is determined from the results of customer assessments of the quality of services provided based on involvement in activities[18] [19]. Participation is a democratic principle derived from political science. The benefit is to achieve goals and take part in collaborative activities in a flat format facilitated by the leader [5].

The main challenge in the health service business is business competition[4]. The level of service provided by a clinic is directly proportional to the level of patient satisfaction. Clinics are public services in the health sector that are inseparable from the development of information technology[20]. The solution can be overcome by evaluating and combining technology in activity services [21]. Efforts to utilize information technology have been carried out and show evidence of its benefits, such as the speed of the service process and the clarity of communication[22]. Information technology can increase efficiency and effectiveness in business processes, managerial decisions, and workgroup collaboration, thereby strengthening the company's competitive position in a changing market[23].

eParticipation is a participation facility for an organization in management and democracy fragments [24] supported by Information and Communication Technology (ICT)[5][25]. Quality information extracted from clusters of data that has resulted from interactive collaborative[26], incremental, and dynamic processes is eParticipation[27]. eParticipation will complement the different service designs. ICT implemented in eParticipation aims to motivate people to take part in policy processes [28], accessible qualitative information, and responsible governance[29][30]. eParticipation as a medium for managing and presenting service quality [5][31]. Various types of eParticipation continue to experience increasing engagement[32][25]. The effect of eParticipation is used to describe and promote democratic[25] values freely [32] such as transparency, collective problem solving, increased security, and rational and effective

discretion[33][34]. eParticipation is significantly influenced by technical factors, social influence, political factors, perceived benefits, and ease of use[30][33]. eParticipation has an impact on accelerating administrative cooperation with stakeholders[31]. eParticipation makes stakeholder interventions more responsive to needs and increases accountability[28]. The offer and availability of participation services for the community need to be expanded, highly useful, and the use of the latest technology[27].

Utilization of technology to manage customer participation in clinical services quality needs to be carried out as an effort to produce relevant, valid, and accurate service quality assessments. One of the Primary Clinics owned by the Collage under the auspices of the Ministry of Transportation in the Republic of Indonesia does not yet have data on evaluating the quality of consumer participation services using information technology (via electronic media). The Primary Clinic has 1,308 regular customers consisting of cadets, lecturers, employees, and the community around the location. This is crucial for evaluating clinic development, upgrading the status to Main Clinic, and improving the service quality. Research on the application of eParticipation to assess the quality of Primary Clinic health services aims to solve problems found in Primary Clinic operations.

## 2. METHODS

The eParticipation Framework is a method adopted to evaluate Primary Clinics regarding the suitability of service quality and participation issues. eParticipation Framework is a combination of ICT and participation which is a field of traditional service participation, not ICT [34]. The tools and technology used to support participation services are ICT, eParticipation involves Primary Clinic participation to assess service quality. The eParticipation Framework has 3 levels (participation area, category of tools, and technology) which are interrelated and mutually supportive[5].

The methodology used includes the steps of Areas of Participation, Categories of Tools, and Technologies. The Areas of Participation step determines the main areas of participation which must cover all areas of traditional participation regardless of ICT support. The Categories of Tools step determines the relevant ICT support in the form of a tool category. The Technologies step determines the relevant ICT support in the form of technology. The use of these tools and technologies in the participation domain will actually constitute what we refer to as eParticipation. An established domain is expected to have a number of applications and tools for each specific area that can identify the components that make up the application and the relevant underlying tools and technologies[35]. The eParticipation framework as shown in fig 2.

Fig. 2

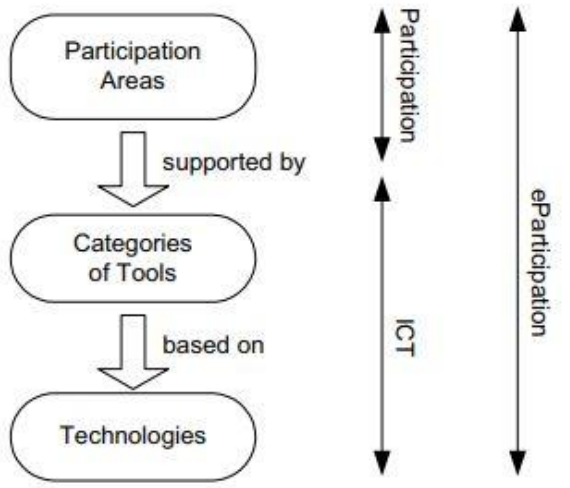


Fig. 2 eParticipation Framework[5]

A participation Area is an area or specific areas that involve the community in the democratic process. Several fundamental aspects are managed for the democratic process such as community assumptions, constituent acceptance values, making public decision assumptions, ensuring action transparency, and providing opportunities for joint formulation in decision-making[34]. Many areas of participation are used by the community, but there are other areas with various descriptions used in other areas [5]. Participation was taken from the assumption that participants (patients) received health services from a primary clinic which is in the same location as the Collage under the auspices of the Ministry of Transportation of the Republic of Indonesia in one of the cities in Central Java Province, Indonesia.

Participation is carried out after the patient receives health services. Patients act as participants in health services quality assessment. The assessment of the quality of health services was developed from the 14 elements of health service assessment (A-N) as shown in Fig. 1. The development of the 14 elements has different cases. The total of cases for service quality assessment is 33 items which are distributed to 14 assessment elements [5]. Case items for assessing the quality of Primary Clinic services can be seen in fig 3.

Each question has 4 possible answers Worse, Poor, Good, and Very Good. The period for taking participation data starts from January to October 2022. Data entry is carried out using a medical record number that must be registered and recorded by the Admin. Participation can only be filled once in the data collection period. The formula for calculating the value of the questionnaire and the element value is as below.

Questionnaire value search formula:

$$V = \frac{A}{P} \text{ X } 100\% \quad (1)$$

Note:
V = Questionnaire Value (Worse, Poor, Good, Very Good)
A = Total of Answers
P = Total of Participants
Element value search formula:

$$E = \frac{Q}{S} \quad (2)$$

Note:
E = Element Value
Q = Total of questionnaire values on the elements
S = Total of Element Details

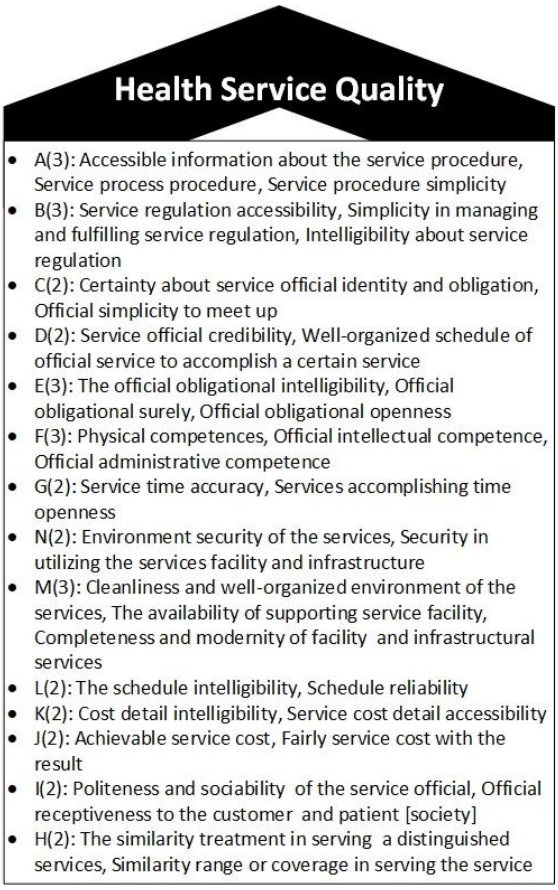

Fig. 3. Health Service Quality Assessment Matrix

A set of software applications, tools, products, and components used by eParticipation projects are Categories of Tools. Weblogs and websites that act as state-of-the-art platforms, argument visualization, and natural language interfaces are just a few examples [5][34]. Categories of Tools uses a web-based application that is created and used as a tool called "eParticipation of SQA". The application is enabled to obtain, manage, and display service quality assessment data from participant participation (patients). The application uses the fulfillment of technology support on technologies.

The technologies used are various technologies as the basis for eParticipation tools and domains[34]. A mix of technologies is used in specific devices to produce innovative approaches according to the needs of participation [5]. The technology applied is website-based technology. Information technology in the form of a website-based application requires software, hardware, and network devices. Using software such as CodeIgniter Framework, Bootstrap, MySql, and Web Browser. Use of hardware such as server computers, personal computers/laptops, or smartphones. The network device used is a network connection using a UTP (Unshielded Twisted Pair) cable or wireless to connect between devices used. The network device used is utilizing an existing local area network (LAN.

## 3. RESULTS

The participation area is limited to primary clinic consumers (patients) acting as participants. The clinic in question is the Primary Clinic which is owned by one of the Service Colleges under the auspices of the Ministry of Transportation of the Republic of Indonesia. The clinic provides health services aimed at students, lecturers, employees, and the general public around the location. Participants in the period from January to October 2022 filled the participation of 1,308 people consisting of 904 cadets, 48 lecturers, 156 employees, and 200 general public. Participant distribution can be seen in fig.4

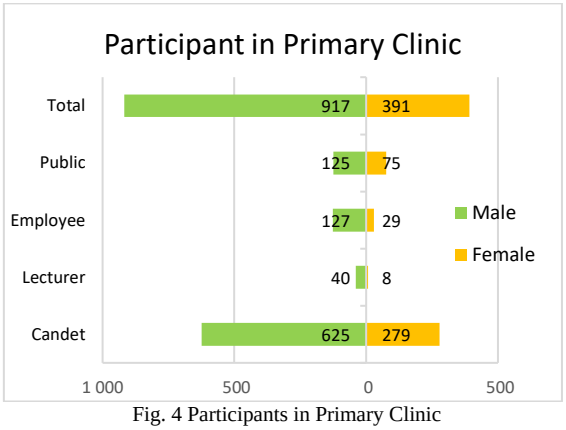

Fig. 4 Participants in Primary Clinic

Categories Tools uses a website-based application in the form of eParticipation SQA. The application built can be operated by 2 actors administrators and participants. Administrators can process logins, questionnaires, results, members, information, settings, quizzes, and logout. Participants can log in, questionnaire, register, and log out. Application management is the responsibility of the Admin. Admin registers based on each patient's medical record data to become a participant in the application. Each participant can only fill in the questionnaire once. Admin can process, manage, and display participation data from participants. These activities can be carried out in the process of questionnaires and results. Illustration of the Application eParticipation SQA business process using the Usecase Diagram in fig 5.

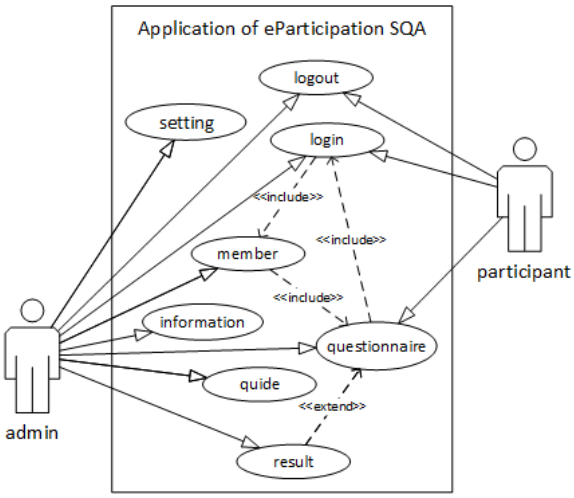


Fig. 5 Usecase Diagram Application of eParticipation SQA

The application is run using the available web browser by accessing the address http://192.168.2.10/epart on the local network within the Primary Clinic network. Operations are carried out by first logging in as shown in fig 6.

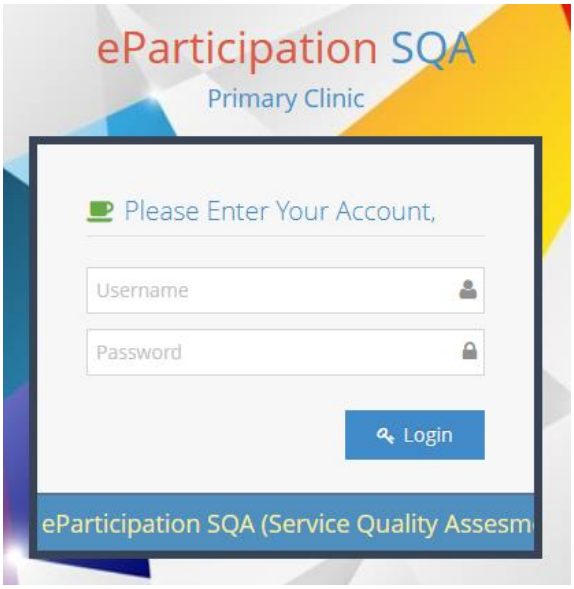


Fig. 6. Login Form


Fig. 7. Main Page

The main page of the application contains the Questi menu for questionnaire operations, Members for operational members who are entitled to fill out questionnaires, Results for operations on questionnaire results, Information for operational information about clinics, Settings for managing applications, and Quide for finding guides. Admin after successfully logging in to the main page will appear as in fig 7.

Each question on the selected service element will represent the quality of service. There are 4 available answer choices (Worse, Poor, Good, and Very Good)[16]. The questionnaire will be saved after the participant has selected answers for all questionnaires and clicked the send button. Service quality assessment results are calculated as in formulas 1 and 2 for each element based on the four groups of answers. eParticipation SQA can input a questionnaire as in fig 8.

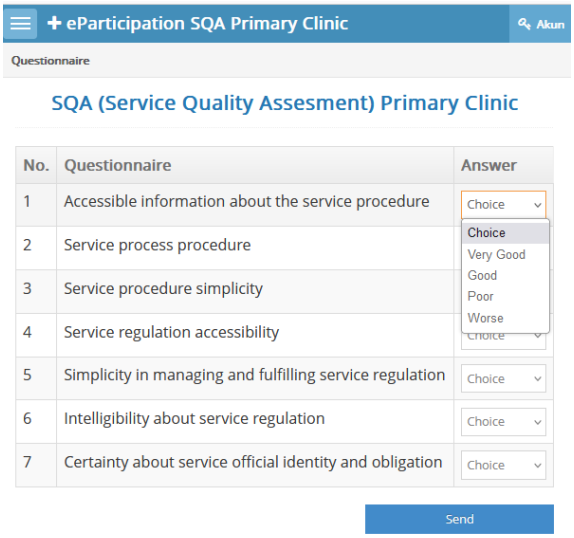


Fig. 8 Questionnaire input

The result display form can be an accumulation of each element or detail elements. Element detail values can be seen by clicking on details on each element line. Results of the assessment of the eParticipation of SQA elements can be seen in fig 9.

14 elements with 33 detailed elements are used for the development of SQA eParticipation with 4 options running well. Calculation accuracy using percentages according to manual calculation. Calculations are done by calculating the detail elements which are then accumulated against the main elements. The percentage of detail elements is calculated based on the total of each type of answer chosen by the participant divided by the total of participants for each detail element as in formula 1. The percentage of elements is calculated by the accumulation of each element's detailed answers to the main elements as in formula 2. The percentage value of answer type from participants is probably higher than the others. This is possible for each element detail or main element. Participation data is

processed using tools in the Categories of Tools. Detailed assessment of elements on eParticipation SQA as in fig 10.

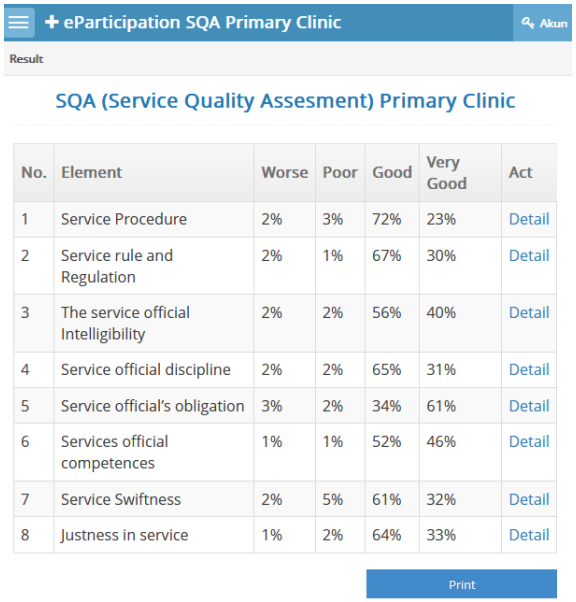


Fig. 9. Result of Element Assessment

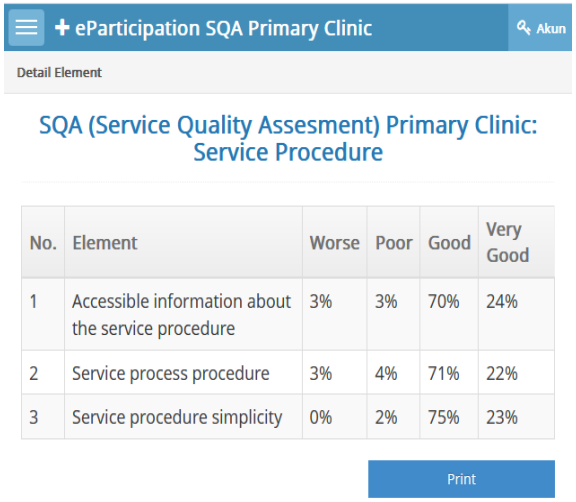


Fig. 10 Result of Element Detail Assessment

The data collected comes from 1,308 participants who assessed 14 elements with 4 possible answers chosen. The average type of answer is Worse (2%), Poor (3%), Good (62%), and Very Good (33%). Worse answer types with the highest percentage of 3% in 3 elements (Service official's obligation (E), Certainty of cost services(K), and Environment pleasure(N)). The highest type of Poor answer of 5% in 2 elements (Service Swiftness (G) and Certainty of service schedule (M)). The highest type of Good answer is 72% (Service Procedure (A)) and 70% (Certainty of cost services (L)). The highest types of Very Good answers were 61% (Service official's obligation (E)) and 46% (Services official competencies (F)). Presentation of participation calculation results using bar graphs, so that it is easy to understand and analyze in reporting to Managers. The presentation is done by the Admin actor on the Result menu, sub-menu Graph, by first determining the desired period. Results of data processing by Application eParticipation SQA in the period January 1, 2022, to October 31, 2022, as in fig 11.

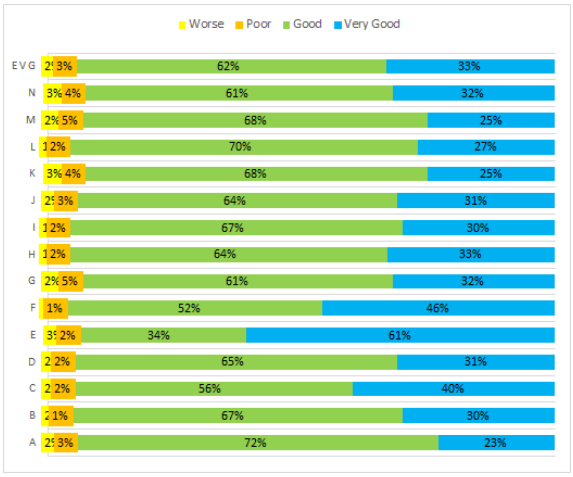


Fig. 11 Graph of Element Assessment Results

The different perspectives, understandings, knowledge, and experiences of Participants allow for different perceptions. Cadets receive health services in the form of Medical Check Up (MCU) at least 2 times a semester at the beginning and end of the semester. Lecturers and employees receive health services in the form of a Medical Check-Up (MCU) at least once a year at the beginning of the year. The general public gets health services according to their needs or based on events such as injuries or accidents. The 14 elements were used as a reference and dissected into detailed elements based on the type of participant's answers. Participants' perceptions are used as a reference to improve service to consumers (patients), thereby increasing the quality of service to achieve excellent service.

Health service quality based on participant ratings is used as a performance measure for Primary Clinics. Primary Clinics can view, review, and evaluate elements that must be improved, so that service quality can be improved. The percentage of Worse and Poor answer types is kept to a minimum, if possible get a 0% percentage for each element. The types of Good and Very Good answers must be maximized, if possible the largest percentage composition is in the Very Good answer types in each element. Improving the service quality in Primary Clinic will be the capital to increase the status of the Primary Clinic to become the Main Clinic. Managers find it easy to develop clinics by taking inventory of problems and needs. Applicable regulations and participation from participants (patients) can explore the problems and needs in Primary Clinic. Participants must fill in the participation on the computer provided according to the registration carried out by the Admin. Participation according to registration can be filled by the patient, the patient's

family, the patient's relative, or the patient's guardian. Diagnosis and prescription will be obtained by the patient after the patient gets health services and fills out the SQA eParticipation.

Technologies play a big role in implementing the e-Participation concept. Technologies used to implement the Application eParticipation SQA is a website-based application. This technology requires several devices such as software, hardware, and network devices. The software consists of the CodeIgniter Framework for building applications, Bootstrap for making application views, MySql for storing data, Notepad++ for application creation editors, and Web Browsers for running applications. The software needed uses Open Source software. This is to reduce financing for application development. The hardware consists of server computers for service providers to client computers and client computers (Admin and Participants). The required Server Computer uses an existing one, so the installation process of the application eParticipation SQA is easier and faster. The personal computer needed also utilizes an existing personal computer and is indeed provided for patient needs, so that patients are easier to use by accessing http://192.168.2.10/epart in the address bar of the Mozilla Firefox web browser. Network devices consist of a wireless network to connect between devices used. The required wireless network device utilizes the wireless network that already exists in the Pratama Clinic environment, namely using a Wi-Fi Hotspot with the SSID (Service Set Identifier) name of the Klinik. Hotspot with Clinic SSID broadcast by UniFi WiFi Access Point with a maximum speed of 150 Mbps with UAP-AC-LR series. The available network devices are sufficient to serve all the needs required by the Primary Clinic.

## 4. DISCUSSION

eParticipation European countries can integrate ICT into administration and related services with the public[31]. ICT support is the main focus in implementing the eParticipation concept. The use of ICT tools in the tool category has contributed greatly to the success of implementing eParticipation. Availability and adequacy of ICT support facilities must be analyzed, prepared, or planned in advance. Error or damage to the ICT support tool will be a threat of failure to implement or use eParticipation. ICT support for the equipment category at the Primary Clinic has limitations, so readiness and adequacy for Eparticipation must be ensured.

Czech Republic's eParticipation is very important because it contributes to the implementation of comfortable use of the latest technology[27]. ICT support from a technological perspective has contributed greatly to the implementation of eParticipation at Primary Clinics. Considerations need to be studied more deeply in choosing the use of technology. Participants at the Primary Clinic are the main consideration, because they are the ones who will actively submit the data in eParticipation. The technology used does not need to be the most up-to-date or sophisticated, but the easiest and most comfortable for participants to choose. The main mission of using ICT support technology is that eParticipation can be accepted and operates optimally.

Attitudes towards participation, the structure and culture of the planning system, and the capacity of staff to involve the community are the main barriers to eParticipation in Iran[28]. The system at the Primary Clinic is the main thing that must be analyzed first, because there will be a change in the current system to a new system using the eParticipation concept. It's not easy to make system changes. eParticipation includes not only internal but also external. Participant becomes the priority for area coverage. Participation areas are the foundation for building eParticipation. The main focus of Participation Areas in Primary Clinics is the patient who acts as a participant. Primary Clinic Perception can be awakened from the Participant. The most appropriate assessment of the quality of health services is taken from the Participant's perception. Participant perceptions are obtained from experiences, events, and knowledge. Determining the right participation areas can overcome the main obstacles in implementing eParticipation.

eParticipation Kuwait can help decision makers to understand the needs and wants of the public[30]. Public services contained in the Primary Clinic in the form of health services. eParticipation can be applied to Primary Clinics to present an analysis of perceptions of the quality of health services. Assessment of the quality of health services can be used as a reference for controlling, evaluating, improving and improving the quality of services. Stakeholders can take steps or policies or decisions regarding the results presented by eParticipation. The quality of health services that can be maintained and improved can be used as material to upgrade the status of the Primary Clinic to become the Main Clinic. eParticipation has an important role in the quality of health services in Primary Clinics.

## 5. CONCLUSION

Participation areas are limited to consumers (patients) of primary clinics who act as participants of 1,308 people in the period from January to October 2022. 14 elements with a total of 33 detailed elements are the basic elements of health services quality assessment in Primary Clinics. The website-based Application of eParticipation SQA is used by Primary Clinic managers to manage and present service quality assessment data. Users of this application are Admin and Participants. The highest average service quality assessment is in the type of Good answer as much as 62%, Very Good as much as 33%, Poor as much as 3%, and Worse as much as 2%. Worse and

Poor answer types must be minimized, but Good and Very Good answer types are maximized for each element. Technologies play a major role in the implementation of eParticipation SQA consisting of software, hardware, and network devices. Device Requirements utilize devices that are already available in Primary Clinic. The results of the assessment become the basis for exploring weaknesses or deficiencies of each element of service provider, service performance, policy-making, and the efforts that must be made. Application of eParticipation SQA in the Primary Clinic can be developed and supported by the Manager. Management and presentation of data using the application are used easily, quickly, and precisely. Further development of health service quality assessment can be carried out using the latest concepts, frameworks, or technologies.

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