

# Analysis of Irrigation System Performance Based on Application of *Elektronik Pengelolaan Aset dan Kinerja Sistem Irigasi (ePAKSI)* In Kembang Irrigation Area in Majalengka District

Ipa Hafsiah Yakin\*

Sebelas April University, Sumedang, Indonesia

Correspondence; ipahafsiah@stie11april-sumedang.ac.id

Article history: received September 10, 2023; revised September 10 30, 2023; accepted November 02, 2023

This article is licensed under a Creative Commons Attribution 4.0 International License



## ABSTRACT

Food security is one of the achievement targets both at the national and regional levels. The performance of the irrigation system is an integration of 5 pillars which include infrastructure, water, management, management institutions, and human resources. To determine the performance of the irrigation system, an instrument needed to assess the performance of an irrigation system. Kembang Irrigation Area located in Sukahaji District, Majalengka Regency. The lack of optimal performance of the irrigation system of the Kembang Irrigation Area can be seen from its planting productivity. The research method used is a qualitative method. Researchers conducted several methods to collect research data on the performance of the Kembang Irrigation Area, irrigation system through several data collection techniques, namely through observation using the ePAKSI application, interviews, and documentation. The conclusion of this study that Kembang Irrigation Area has an overall irrigation system performance index of 43.19% (scale 0 – 100%). Based on regulation, the irrigation system performance index < 55% it has poor performance, needs immediate handling. It can overcome problems in Kembang Irrigation Area through various efforts, Rehabilitation and Development of the Irrigation System, proposing the needs of Water Resources employee, preparation of the Irrigation Manual Book, implementation of training regularly.

**Keywords:** Kembang Irrigation, System ePAKSI, Irrigation Analysis, Irrigation Performance

## INTRODUCTION

Food security as one of the achievement targets both at the national and regional levels has been set by the President of the Republic of Indonesia through the Nawacita Program since 2014. Agricultural productivity will be optimal if supported by a good irrigation system. According to the Minister of PUPR Republic of Indonesia Regulation Number 12/PRT/M/2015 concerning Exploitation and Maintenance of Irrigation System, irrigation systems include irrigation infrastructure, irrigation water, irrigation management, irrigation management institutions, and human resources. To realize a reliable irrigation system, all indicators must be available and function properly. To determine the performance of an irrigation system, an instrument is needed to assess the performance of an irrigation system. The purpose of irrigation system performance evaluation activities is to serve as a reference for the Central Government, Provincial Regional Governments, and Regency/City Regional Governments in carrying out irrigation system performance evaluation activities. The aim is to determine the condition of the performance of the irrigation system. The Ministry of PUPR has created a system to measure the performance of the irrigation system through a system called *Elektronik Pengelolaan dan Kinerja Sistem Irigasi (ePAKSI)* (Directorate General of Water Resources; Role of PAKSI in Rehabilitation Activities; 2021).

Kembang Irrigation Area is the object in this research. The Kembang Irrigation Area is in the working area of the Majalengka Water Resources of Technical Implementation Unit, including the administrative area of Sukahaji District, Majalengka Regency. The agricultural area served by Kembang Irrigation Area has 54 ha which covers the administrative area of Candrajaya Village and Tenjolayar Village. The lack of performance of the Kembang irrigation system can be seen from the human resource factor and from the plantation productivity. An evaluation is needed in

the form of assessing the performance of the Kembang irrigation system to obtain value data from the various components in the irrigation system performance assessment through the ePAKSI application.

### Core Problem

1. What is the performance index of the irrigation system based on *Elektronik Pengelolaan Aset dan Kinerja Sistem Irigasi* (ePAKSI) application in the Kembang Irrigation Area in Majalengka Regency?
2. What factors impede Kembang irrigation system performance in the Majalengka Regency?
3. What is the solution to overcome the performance constraints of the Kembang irrigation system in the Majalengka Regency?

### Research Purposes

1. To determine the performance index of the irrigation system based on *Elektronik Pengelolaan Aset dan Kinerja Sistem Irigasi* (ePAKSI) application in the Kembang Irrigation Area in Majalengka Regency.
2. To determine the factors that impede Kembang irrigation system performance in the Majalengka Regency.
3. To determine the solution to overcome the performance constraints of the Kembang irrigation system in the Majalengka Regency.

## METHOD

The research method used in this study is a qualitative method. According to Albi Anggito & Johan Setiawan, (2018: 8), qualitative research methods are collecting data in a natural setting with the aim of interpreting phenomena that occur where the researcher is the key instrument. Qualitative methods used to obtain in-depth data, data that contains meaning. Meaning is actual data, definite data which is a value behind the visible data. Therefore, qualitative research does not emphasize generalization but rather emphasizes meaning. Generalization in qualitative research is called transferability. Data collection techniques in this research used several methods namely interviews, field observations and documentation studies. For data collection techniques using the field observation method, researchers used Application instrument of *Elektronik Pengelolaan Aset dan Kinerja Sistem Irigasi* (ePAKSI) which is Android-based for field surveyors and web-based for operators. There are 6 (six) parameters that are monitored and evaluated in assessing irrigation system performance, namely: 1) Physical Infrastructure, 2) Planting Productivity, 3. Supporting Facilities, 4) Personnel Organization, 5) Documentation, 6) Water User Farmers Association (GP3A/IP3A).

**Table 1.** Number of students based early mathematical ability

PAM	Experiments	Control
High	11	12
Medium	53	44
Low	9	10
Total	73	66

Tables should be typewritten separately from the main text and preferably in an appropriate font size to fit each table on a separate page. Each table must be numbered with Arabic numerals (e.g., Table 1, Table 2) and include a title. Place footnotes to tables below the table body and indicate them with superscript lowercase letters (a, b, c, etc.), not symbols. Do not use vertical rulings in the tables. Each column in a table must have a heading, and abbreviations, when necessary, should be defined in the footnotes.

## RESULTS AND DISCUSSION

### Results

**Table 2.** Kembang Irrigation Area of Irrigation System Performance Index for 2022 assessment

Nu.	Indicators	Existing (%)	Max (%)	Min (%)	Optimum (%)
1.	Physical Infrastructure	12,90	45	25	35
2.	Crop Productivity	12,31	15	10	12.5
3.	Supporting Facilities	4,70	10	5	7.5
4.	Personnel Organization	6,14	15	7.5	10
5.	Documentation	1,50	5	2.5	5
6.	Water User Farmers Association	5,64	10	5	7.5
<b>Total</b>		<b>43,19</b>	<b>100</b>	<b>55</b>	<b>77.5</b>

(Source: Website ePAKSI; [http://103.211.51.198/pelaporan/iksi\\_gabungan.php](http://103.211.51.198/pelaporan/iksi_gabungan.php)).

### Discussion

Based on the theory of PUPR Ministerial Regulation No. 12/PRT/M/2015 concerning Exploitation and Maintenance of Irrigation Networks, Appendix 1, page 27, the Kembang Irrigation Area in the 2022 assessment year has a Bad Irrigation System Performance Category and Needs Immediate Treatment.

While based on the results of the researcher's field observations on the physical infrastructure (buildings and irrigation channels) in the main irrigation system of the Kembang Irrigation Region, it can be said that the condition of the physical infrastructure requires immediate constructional treatment, namely the implementation of irrigation network/system rehabilitation activities.

As for the results of the ground survey observations on the physical infrastructure (buildings and irrigation canals) in the tertiary irrigation system of the Kembang Irrigation Region, it can be stated that the condition of the physical infrastructure of some tertiary canals requires immediate construction treatment, namely irrigation canal development activities. It is necessary because 1 (one) tertiary irrigation channel, namely tertiary channel Bk.11, has been lost by farmer's activities. The reason for the closure of several tertiary irrigation canals in the Kembang Irrigation Area has caused by the motivation to expand agricultural areas. It causes the flow of water distribution to agricultural areas to become much more obstructed because water flows not through tertiary channels but from area to area.

When the researchers conducted field observations, the planting season in the Kembang Irrigation Area was in progress on the 2nd Planting Season. The conditions of agricultural areas in the 2nd Planting Season in D.I. Based on direct observations of researchers, the agricultural areas are not all planted with rice, but some areas planted with secondary crops (cayenne pepper, spring onions, sweet potatoes, cassava). It happens because if the farmers planted rice, farmers are worried about water availability. In some areas planted with rice, hoses are used to drain the water, and in several other rice fields they are not planted due to the low water availability in the irrigation system.

## CONCLUSION

Based on the problem formulation and discussion in the previous section, the researcher can conclude several things as follows:

1. The results of the 2022/2023 Kembang Irrigation Area irrigation system performance assessment based on the ePAKSI application obtained a final combined score for the performance of Kembang irrigation system amounted to 43.19 % on scale of 0-100 %. Based on the theory of PUPR Ministerial Regulation No. 12/PRT/M/2015 concerning Exploitation and Maintenance of Irrigation Networks, Appendix 1, page 27, the Kembang Irrigation Area in the 2022/2023 assessment year has a Bad Irrigation System Performance Category and Needs Immediate Treatment.

2. The factors that significantly hamper the performance of the Kembang irrigation system and their solutions based on the results of this research are as follows:
  - a. The physical infrastructure of the Kembang Irrigation Area has a low performance value, namely 12.90% (scale 0 – 45%). The fact that the conditions in the field has moderately damaged to building assets and irrigation channels both in the main irrigation system (primary and secondary) or tertiar. The solutions are it is necessary to handle construction through rehabilitation activities and the development of irrigation systems, including main buildings, accessories, irrigation channels, and water gates;
  - b. Crop productivity in the Kembang Irrigation Area is still not optimal. It has been proven by the ePAKSI assessment of 12.31% (scale 0 – 15%). The results of interviews with informants as well as from document Blank 11-O Recapitulation of Planting Realization per Regency in 2022, also show the same thing, namely the planting productivity of D.I. Flowers in the 2nd Planting Season in 2022 was 74.07% and in the 3rd Planting Season in 2022 were 40.74%. The solutions are efforts are needed apart from handling construction, rehabilitation activities, and developing irrigation systems, also through building reservoirs and drilled wells to overcome water shortages in the 2nd and 3rd Planting Seasons or in the dry season.
  - c. Supporting Facilities are in poor condition in terms of the volume of materials and in terms of the number of equipment. The solutions are It is necessary to increase the volume of materials as well as update and increase the number of equipment to optimize the implementation of irrigation network management;
  - d. Personnel organization at Kembang Area Irrigation is in a condition where there is a shortage of 1 (one) Channel Worker employee and the lack of education and technical training for Irrigation or Water Resources for employees. The solutions are it is necessary to procure 1 (one) employee for the Channel Worker (PS) position. Implementation of routine and continuous technical education and training is also necessary to maintain and improve the technical competence of employees, especially those managing operations and maintenance of irrigation or water resources;
  - e. Documentation, the absence of an Irrigation Area Book/Kembang Irrigation Area Manual, the Kembang Irrigation Network Scheme documents, and Building Scheme documents not being displayed at the walls of the UPTD SDA Majalengka Office. The solutions is, it is necessary to prepare/manufacture an Irrigation Area Book, a Kembang Irrigation Area Manual Book. This document needs to be compiled to facilitate the implementation of irrigation network management, especially the operation and maintenance activities of the Kembang irrigation system;
  - f. The Association of Water User Farmers of Kembang Irrigation Area does not have an official organization, which does not yet have a Notarial Deed regarding the establishment of the farmer's organization and does not have an organizational structure, work plan, or others. The solutions are, it is necessary to establish an official P3A organization that has legal documents such as a Notarial Deed, organizational structure, and work plan so that it can be included in P3A empowerment activities such as the Labor Intensive Programs, and the Acceleration of Improvement of Irrigation Water Use Program from the Ministry of Public Works and Public Housing of the Republic of Indonesia.

## ACKNOWLEDGEMENTS

The author wishes to express their heartfelt thanks to the research collaborators, with particular acknowledgment to Sebelas April Sumedang University, Indonesia, for their invaluable contributions to the finalization of this article. It is anticipated that this research will provide significant value to the readers.

## REFERENCES

- Albi Anggito & Johan Setiawa, (2018). *Metodologi Penelitian Kualitatif*. Sukabumi: CV Jejak.
- Amirullah, Budiyo Haris. (2019). *Pengantar Manajemen*. Yogyakarta: Graha Ilmu.
- Angger Anggia Destamara; *Buku Saku Panduan Penggunaan ePAKSI*; 2021.
- Arikunto. (2019). *Prosedur Penelitian*. Jakarta: Rineka Cipta.
- Bintoro, Daryanto. (2022). *Manajemen Penilaian Kinerja Karyawan*. Cetakan 1. Yogyakarta: Gava Media.
- Busro, Muhammad. (2018). *Teori-Teori Manajemen Sumber Daya Manusia*. Jakarta: Prenadameidia Group.

- Elbandiansyah (2019). *Manajemen Sumber Daya Manusia*. Cetakan Kesatu. Malang: IRDH.
- Hakim. (2020). *Manajemen Sumber Daya Manusia*. Bandung: Erlangga.
- Indah Puji Hartatik (2014). *Buku Praktis Mengembangkan SDM*. Yogyakarta: Laksana.
- Ipa Hafsiyah Yakin, (2017). *Metodologi Penelitian*. <https://mfr.osf.io/render?url=https://osf.io/7qvy4/?direct%26mode=render%26action=download%26mode=render>
- Kasmir. (2019). *Analisis Laporan Keuangan*. Edisi Revisi. Jakarta: PT. Raja Grafindo Persada.
- Larasati. (2020). *Manajemen Sumber Daya Manusia*. Yogyakarta: Deepublish.
- Mangkunegara, Anwar Prabu. (2019). *Manajemen Sumber Daya Manusia Perusahaan*. Bandung: Remaja Rosdakarya.
- Marwansyah, (2016). *Manajemen Sumber Daya Manusia*. Edisi Dua. Cetakan keempat. Bandung: Alfabeta, CV.
- Moleong. J. Lexy (2018). *Metodologi penelitian kualitatif*. Edisi Revisi; Cetakan ketiga puluh delapan, Juli 2018 Bandung: PT. Remaja Rosdakarya, 2018.
- Panjaitan (2017). *Pengaruh Lingkungan Kerja Terhadap Produktivitas Kerja*. *Jurnal Manajemen* Vol 3. No. 2, p. 1-5.
- Schermerhorn (2018). *Management 6th Asia-Pacific Edition Custom F/Out (black and white)*.
- Simamora. (2020). *Manajemen Sumber daya Manusia*. Jakarta: Prenada Media Group.
- Sugiyono (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta, CV.
- (2018). *Metode Penelitian Kombinasi (Mixed Methods)*. Bandung: CV. Alfabeta.
- (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Sumual (2017). *Manajemen Sumber Daya Manusia*. Surabaya: CV. RA De Rozarie.
- Sutrisno. (2017). *Manajemen Sumber Daya Manusia*. Jakarta: Kencana.
- (2019). *Manajemen Sumber Daya Manusia*. Cetak ke-Sebelas. Prananda Media Group, Jakarta.
- (2020). *Statistik*. Yogyakarta: Pustaka Pelajar.
- Tarjo. (2019). *Metode Penelitian*. Yogyakarta: Deepublish.
- Terry, George&Lelie W.Rue. (2018). *Dasar-Dasar Manajemen*, Penerjemah G.A. Ticoalu. Jakarta: PT. Bumi Aksara.
- T.H. Handoko. (2022). *Manajemen Personalialia dan Sumber Daya Manusia*. BPFE-Yogyakarta.
- Undang-Undang Nomor 17 Tahun 2019 tentang Sumber Daya Air.
- Peraturan Pemerintah RI Nomor 6 Tahun 2000 tentang Irigasi.
- Peraturan Menteri PU Nomor: 32/PRT/M/2007 tentang Pedoman Operasi Pemeliharaan Jaringan Irigasi.
- Peraturan Menteri PUPR RI Nomor: 12/PR/M/2015 tentang Eksploitasi dan Pemeliharaan Jaringan Irigasi.
- Peraturan Menteri PUPR Nomor: 23/PRT/M/2015 tentang Pengelolaan Aset Irigasi.
- Peraturan Menteri PUPR Nomor: 30/PRT/M/2015 tentang Pengembangan dan Pengelolaan Sistem Irigasi.
- Peraturan Menteri PUPR Nomor: 35/PRT/M/2016 Tahun 2016 tentang Cetak Biru Teknologi Informasi dan Komunikasi di Kementerian Pekerjaan Umum dan Perumahan Rakyat.
- Peraturan Daerah Kabupaten Majalengka Nomor 4 Tahun 2020 tentang Perubahan RPJMD Kabupaten Majalengka Tahun 2018 – 2023.
- Downloaded from:  
 Website: <https://peraturan.bpk.go.id/Home/Details/159876/permen-pupr-no-23prtm2015-tahun-2015>, diakses pada tanggal 2 Mei 2023.  
 Website: <https://peraturan.bpk.go.id/Home/Details/229009/perda-kab-majalengka-no-4-tahun-2022>, diakses pada tanggal 30 Juni 2023.
- Deni Wahyu Eka Wijaya & Diah Ayu Septi Fauji. (2021). *Determinan Kinerja Karyawan Pada Dinas Pemberdayaan Masyarakat dan Desa Kabupaten Nganjuk*. Universitas Nusantara PGRI Kediri.
- Gunarta (2021). *Haruskah Komponen Cadangan Sumber Daya Manusia Berimplikasi Pada Wajib Militer?*, *Jurnal Perencanaan Pembangunan*. Ed No.1. Badan Perencanaan Pembangunan Nasional. Jakarta.
- Luturmas Join Rachel. (2017). *Pengaruh Budaya Kerja dan Kepuasan Kerja Terhadap Produktivitas Kerja Karyawan AJB Bumiputera 1912 Cabang Ambon*. *Jurnal Penelitian Manajemen Terapan (PENATARAN)* Vol. 2 No. 2 (2017) hlm. 153-163. [https://scholar.google.co.id/citations?view\\_op=view\\_citation&hl=en&user=-M\\_fVgMAAAAJ&citation\\_for\\_view=-M\\_fVgMAAAAJ:2osOgNQ5qMEC](https://scholar.google.co.id/citations?view_op=view_citation&hl=en&user=-M_fVgMAAAAJ&citation_for_view=-M_fVgMAAAAJ:2osOgNQ5qMEC).