Maturity of Employment Data Interoperability in supporting One Employment Data at the Ministry and Regional Government Level

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ABSTRACT

This research aims to determine the level of readiness or maturity of Employment Data Interoperability in supporting One Employment Data at the Ministry and Regional Government Level. Analyzing the maturity level of E-government interoperability across organizations in the Central Government and Regional Government in the Management of One Employment Data, namely: Preparedness, Understanding, Command Style and Ethos. This type of research is a type of mix method between critical discourse analysis. The research results show that the Preparedness indicator with a percentage of NVivo 12 Plus analysis results is 20.00% with the implementation of strengthening the implementation of one employment data policy by coordinating between central and regional employment agencies which aims to unify perceptions between the Ministry of Manpower and the Department in charge of employment regarding data standards, metadata, and employment data reference codes. Understanding with a percentage of 27.00% is well implemented and can provide implementation references and guidelines for central and regional agencies in order to realize the availability of quality, easily accessible and shared Employment Data between central and regional agencies. Command style (24.00%) is committed to building coordination and consolidation to achieve data interoperability. Ethos (27.00%) by carrying out the revitalization of One Employment Data's network and data security devices and hashtags in the data interoperability process which indicates that information related to work, training and the labor market can be better integrated for analysis and decision-making purposes which is more effective.
Keywords: Maturity, Data Interoperability, One Employment Data

ABSTRAK

Penelitian ini bertujuan umtuk mengatahui tingkat kesiapan atau Kematangan Interoperabilitas Data Ketenagakerjaan dalam mendukung Satu Data Ketenagakerjaan Pada Level Kementerian dan Pemerintah Daerah. Menganalisis level kematangan interoperbailitas E-government lintas organisasi pada Pemerintah Pusat dan Pemerintah Daerah dalam Pengelolahan Satu Data Ketengakerjaan yaitu: Preparedness, Understand-

ing, Command Stye and Ethos. Jenis penelitian ini merupakan jenis mix method antara critical discourse analysis. Hasil penelitian menujukkan bahwa pada indikator Preparedness dengan persentase hasil analisis NVivo 12 Plus sebesar 20,00 % dengan pelaksanaan memperkuat implementasi kebijakan satu data ketenagakerjaan dengan melakukan koordinasi antar instansi ketenagakerjaan di pusat dan daerah yang bertujuan untuk menyatukan persepsi antara Kemnaker dengan Dinas yang membidangi ketenagakerjaan terhadap standar data, metadata, dan kode referensi data ketenagakerjaan. Understanding dengan persentase 27,00 % yaitu terimplementasi dengan baik dan dapat memberikan acuan pelaksanaan maupun pedoman bagi instansi pusat dan daerah dalam rangka mewujudkan ketersediaan Data Ketenagakerjaan yang berkualitas, mudah diakses, dan dibagipakaikan antar instansi pusat dan daerah. Command stye (24,00%) berkomitmen untuk membangun koordinasi dan konsolidasi dalam rangka mencapai interoperabilitas data. Ethos (27,00 %) dengan melaksanakan revitalisasi perangkat jaringan dan keamanan data Satu Data Ketenagakerjaan dan hashtag dalam proses interoperabilitas data yang mengindikasikan bahwa informasi yang terkait dengan pekerjaan, pelatihan, dan pasar tenaga kerja dapat diintegrasikan dengan lebih baik untuk keperluan analisis dan pengambilan keputusan yang lebih efektif.
Kata Kunci: Kematangan, Interoperabilitas Data, Satu Data Ketenagakerjaan

INTRODUCTION

Rapid developments in the digital era are changing the paradigm where data becomes an asset for both governments and organizations (Akatkin & Yasinovskaya, 2019). In the employment context, data related to labor, employment, and employment policies play a crucial role in efficient decision making (Barakat & El Beqqali, 2020). Efficiency and effectiveness of employment data management requires a better level of data interoperability readiness (Lu et al., 2010). Data interoperability reflects the ability of different systems and applications to communicate, collaborate, and share data seamlessly and easily (Agarwal et al., 2017). One Employment Data is a concept where all employment data existing in various government agencies is consolidated into a single, integrated database (Kemnaker.go.id, 2021). The purpose of One Employment Data is to increase efficiency and accuracy in making employment decisions, as well as provide comprehensive information for all relevant stakeholders. Data interoperability maturity is a critical factor in supporting the realization of One Employment Data at the ministerial and regional government levels (Kalogirouet al., 2020). This maturity covers various aspects, including adequate technological infrastructure, uniform data standards,

policies that support data exchange, as well as awareness and competence of data managers (Maarif, 2021). A mature level of data interoperability in ministries and local governments can efficiently and effectively collect, integrate, and analyze data from multiple sources (Maarif, 2021). Maturity of employment data interoperability through planning steps, inter-agency collaboration, and investment in adequate technological infrastructure and human resources is very important (Delgado et al., 2020). E-government interoperability by looking at the level of maturity which is measured based on: Preparedness, Understanding, Command Stye and Ethos which can be identified as levels of maturity that describe the ability of organizations to operate with each other, namely: Level 0 – Independent, Level 1 - Ad hoc, Level 2 – Collaborative, Level 3 – Integrated, Level 4 – Unified (Clark et al., 2018). Develop uniform data standards, strengthen technology infrastructure, improve data management competencies, and promote cross-entity collaboration (Pamungkas et al., 2019). Central and regional governments need to work together to develop standards (Margariti et al., 2020). Policies that support secure and private data exchange must be implemented Characteristics of different characteristics between regions and lack of communication between organizations that impact the fulfillment or availability of Employment data (Arnoldus Kristianus, 2023). The increasingly rapid movement of information flows is a challenge to always be alert in responding to requests for information (Stoica & Ghilic-Micu, 2021). Limited implementation of one employment data training as a data processor to one data portal (Kominfo.go.id, 2021). This research aims to explore the readiness or maturity of Employment Data interoperability between the Indonesian Ministry of Manpower and Regional Governments, especially at the Employment Data Center (Pusdatinaker) and Regional Data Administrators consisting of the Central Statistics Agency (BPS), Communication and Informatics Service (Diskominfo), as well as the Regional Development Planning Agency (Bappeda) (Rizlia Khairun Nisa, 2021).

LITERATURE REVIEW

Adequate technological infrastructure is an important factor in achieving data interoperability maturity (Reynders et al., 2018). The existence of strong systems and networks and the appropriate software enables related entities to share and integrate data seamlessly (Patricia, 2021). Adoption of uniform data standards is an important foundation in achieving data interoperability (Khan et al., 2013). This standard ensures consistency and uniformity in the exchange and use of data, enabling accurate and harmonious integration (Pagano et al., 2013).

Interoperability has a more specific meaning in the scope of e-government, namely the ability of e-government systems to collaborate with other e-government systems cross-sectoral (Sta, 2018). Interoperability is essential for public sector digital services that become more transparent, domain agnostic, and interact efficiently across borders using common frameworks, standards, and processes for sharing information, data, and processes (Pamungkas et al., 2019). Interoperability is the ability of ICT systems to communicate, interpret, and exchange data meaningfully (Misuraca et al., 2011).

Interoperability is the ability of government organizations to share and integrate information using common standards (Lu et al., 2010). The European Interoperability Framework (EIF) provides guidelines to Public Administrations to provide interoperable, efficient, and effective public services to citizens and businesses (Zaoui et al., 2019). Comprehensive interoperability helps organizations collaborate flexibly and provide better service quality with system integration and interoperability, producing data that can be processed more informatively according to government needs in various sectors (Barakat & El Beqqali, 2020). The big data interoperability paradigm uses Big Data analytics for better governance by presenting the potential and challenges of big data in public administration related to data collection, analysis, visualization, and decision-making (Mahmoud et al., 2019).

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An organization is a social unit of a group of people who interact with each other according to a specific pattern so that each member has their function and duties as a unit with specific goals and clear boundaries (Ziehe & Helfen, 2021). Organizational interoperability is related to formalizing decision processes and systems (Blanc-Serrier et al., 2018). An interoperable organizational structure can plan, implement, operate, monitor, review, and maintain operations, even when their organizational structures or internal procedures are different; it can help emergency organizations recognize and resolve cross-organizational problems (Piwiñski et al., 2018). Interoperability between organizations is a concept involved in every domain through collaborative e-government: organizations, partners, and users with different capabilities, needs, and technical support (Delgado et al., 2020).

Policies that support data exchange and collaboration between entities are factors that influence the maturity of data interoperability (Krovvidy et al., 1997). This policy should cover the privacy, security, and protection aspects of sensitive data, and provide incentives for entities to share data effectively (Vallecillo et al., 1999). The level of competence of data managers also influences the maturity of employment data interoperability (Penkler & Opencall, 2004). Adequate expertise and understanding in data management is required so that related entities can collect, integrate, and analyze data efficiently (Ispas & Tudorache,2017). Maturity level of cross-organizational E-government interoperability at the Central Government and Regional Governments in the Management of One Employment Data, namely: Preparedness, Understanding, Command Stye and Ethos (Clark et al., 2018). Five levels are identified in the Organizational Interoperability maturity model which describes the ability of organizations to interoperate which are shown in Figure 1.
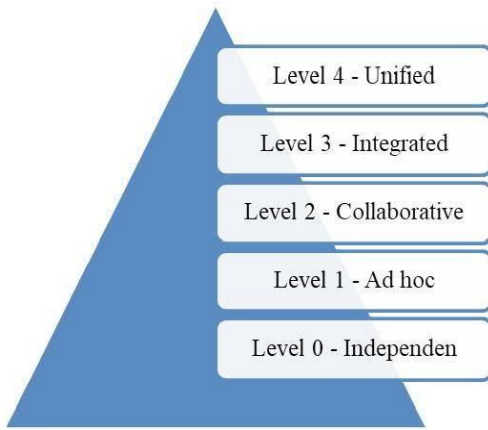
Figure 1. Maturity of Organizational Interoperability
Source: (Clark et al., 2018)

Level 0 – Independent describes interaction between independent organizations that normally work without any interaction other than that provided by personal contact (Van Staden & Mbale, 2012). Level 1 - Ad hoc at the interoperability level there are only very limited organizational frameworks that can support ad hoc arrangements, such as interoperation with State police for specific incidents or with State Emergency Services (Gøtze et al., 2009). Level 2 - Collaborative - is where a recognized framework is in place to support interoperability and common goals are recognized and roles and responsibilities are allocated as part of ongoing responsibilities but the organization is still distinct usually in the form of interoperation between the Army and Logistics organizations, or between units Navy and Army tactics for joint operations (Clark et al., 2018).

Level 3 - Integrated - is a system of shared values and shared goals, shared understanding, and readiness to interoperate such as the US-led coalition headquarters joint task force (Van Staden & Mbale, 2012). Level 4 - Unified - An integrated organization is one in which organizational goals, system values, command structures/styles, and knowledge bases are shared across interoperating systems on an ongoing basis (Clark et al., 2018). At Level 4 - Unified, it is a united level of interoperability

332   between organizations so that at Level 4 - Unified it will build an ideal interoperability framework with derivative results of e-government interoperability across organizations that can increase speed and scalability, reduce difficulties, increase extensibility utility, reliability, flexibility, and agility of the entire e-government platform (El Benany & El Beqqali, 2017). Holistic understanding of national and local employment conditions, enabling stakeholders to make more informed decisions in designing labor policies (Delgado et al., 2020).

RESEARCH METHOD

This research uses a mix method approach between critical discourse analysis (CDA) and NVIVO in a case study of the Indonesian database to examine meta data organization and government readiness for One Indonesian Data based on the Framework (i) interconnection; (ii) data integration; (iii) content and metadata management; (iv) access and presentation of information; and (v) security (Pamungkas et al., 2019). Analyzing the maturity level of cross-organizational E-government interoperability in the Central Government and Regional Governments in the Management of One Employment Data, namely: Preparedness, Understanding, Command Stye and Ethos (Clark et al., 2018). The results of data analysis were assisted by NVivo 12 Plus software. NVIVO software techniques for disseminating research data are invaluable for examining data in the context of qualitative research. Information was obtained from research articles related to the subject. After applying procedures to derive the main ideas, we delved deeper by digging into the information in the results and discussion sections. NVIVO collects and organizes data from various sources, such as government websites, reports, and articles. Data were coded and detailed based on various guidelines. Analysis: the first stage is creating nodes or indicators for analysis, the second stage is classifying and coding the data according to the research indicators, and the coding data is processed with the Crosstab Query feature to calculate

statistics automatically ([Zamawe, 2015](#)). Crosstab Query produces automatic calculations found between all related data and can find words that often appear from findings or display terms discussed using the Word Cloud feature in the form of images, resulting from data synchronization with the research theoretical framework. They are equipped with Vosviwers, a data analysis tool or method to group information into clusters or groups based on specific patterns or similarities. Four main clusters were identified in the analysis using Vosviwers on the investigated dataset. This analysis provides insight into the dataset's structure and patterns of data, allowing for a better understanding of the relationships and unique characteristics between the observed elements.

RESULT AND DISCUSSION

One Employment Data is in the form of a single data portal which will be used as a medium for utilizing employment data by the entire community and all employment partners. All employment data that ends up in the One Employment Data Portal as public data to resolve employment problems and data overlaps that often occur due to the lack of standardization in data collection ([Kemnaker.go.id, 2021](#)). Analysis of cross-organizational E-government interoperability maturity levels at the Central Government and Regional Governments in the Management of One Employment Data, namely: Preparedness, Understanding, Command Stye and Ethos ([Clark et al., 2018](#)). The results of data analysis assisted by the NVivo 12 Plus software analysis tool are processed with the Crosstab Query feature to automatically calculate the statistics shown in Figure 2.
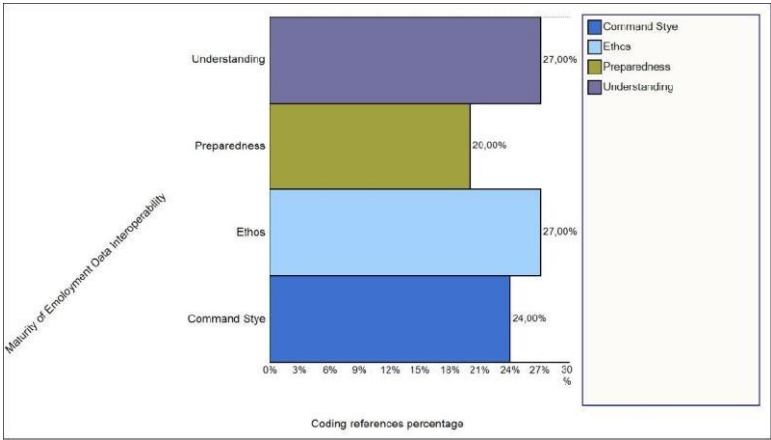
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Figure 2. NVivo 12 Plus Analysis Query Crosstab, 2023

NVivo 12 Plus analysis based on the results of the Crosstab Query shows the percentage of Preparedness 20.00 %, Understanding 27.00 %, Command Stye 24.00 %, and Ethos 27.00 %. Crosstab Query percentage results have meaning in terms of support in terms of readiness or maturity in the data interoperability process which is described in more detail in the following sub-subjects.

THE PREPAREDNESS MATURITY LEVEL OF INTEROPERABILITY ONE EMPLOYMENT DATA

Preparedness describes an organization's readiness to interoperate which consists of doctrine, experience, and training (Lindell & Prater, 2003). Interoperability is considered key to the provision of integrated public services, so the continued development of digital communications systems has led to the restructuring of information systems into cheaper, interconnected and globally accessible entities (Margariti et al., 2020). The National Coordination Meeting has been held as a medium to strengthen cooperation, collaboration and synergy between the Ministry of Manpower and the Manpower Service in realizing employment data governance that meets the principles of One Indonesian Data (Setda Kab.Bandung, 2022). SDK consolida-

tion is expected to further strengthen coordination between SDK administrators at both central and regional levels in realizing One Employment Data.
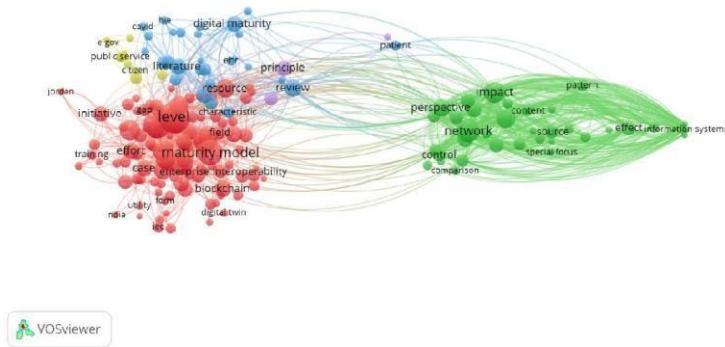

Figure 3. Analysis Vosviwers

The results of Vosviwers' analysis show that there are four main clusters in the observed dataset. The first cluster focuses on concepts such as capability, action, infrastructure, internet, maturity model, new technology and transparency. The second cluster relates to control, decision making, effect, impact, information system, network, and possibility. The third cluster focuses on aspects of digital maturity, digital technology, digital systems, opportunities, while the fourth cluster is related to electronic government (e-government), organizational interoperability. interoperability), public administration, and public service. The Ministry of Manpower (Kemnaker) strengthens the implementation of the one employment data policy by coordinating between central and regional employment agencies with the aim of unifying perceptions between the Ministry of Manpower and the Department in charge of employment regarding data standards, metadata, and reference codes for employment data (Kemnaker.go.id, 2021).

336 UNDERSTANDING ONE EMPLOYMENT DATA MATURITY LEVEL INTEROPERABILITY

Understanding measures, the amount of communication and sharing of knowledge and information within an organization and how that information is used (Mayer, 2009). Implementation of e-government creates a form of interoperability relationship between different services at different levels: national level, state or district government level but the government sector faces many challenges in using e-government services and adapting them to the needs of citizens as data and applications continue. increasing, as well as integration migration challenges and data interoperability (Barakat & El Beqqali, 2020). The Ministry of Manpower continues to strengthen the implementation of the one employment data policy by coordinating between central and regional employment agencies to unify the perceptions of the principle of employment data in Indonesia (Rizlia Khairun Nisa, 2021). Data synergy between the Ministry, Province, and Regency/ City levels through the integration of One Employment Data (disnakerpmptsp, 2021). Data literacy culture dissemination instrument summarized in video form to make it easier for related parties to absorb and share the information conveyed (Niken Suri, 2020).

Figure 4. Operator of one employment data

The organizer of One Employment Data consists of a data supervisor who is the minister who organizes government affairs in the field of Employment (Kemnaker.go.id, 2021). Data producers are work units in central agencies and regional agencies that produce employment data. The central level data guardian is a work unit in the Ministry which has the task of managing Employment data. The regional level data guardian is the Department in charge of communication information and statistics. Each data provider has a duty and collaborates to produce good and quality data (Kominfo, 2020). Employment data producers at both central and regional levels produce employment data which must be submitted to their respective Employment Data Guardians (Kemnaker.go.id, 2021). The One Employment Data Policy is an improvement to government governance in the labor sector to produce employment data that is accurate, up-to-date, integrated, and accountable, as well as easy to access and share between central agencies and regional agencies (Arnoldus Kristianus, 2021). One Employment Data is a single data portal that will be used as a medium for utilizing employment data by the entire community and all employment partners. The One Employment Data Forum involves the Central Government and Regional Governments as a forum for communication and coordination between Employment Data Trustees, Steering Committees, Employment Data Trustees, and Employment Data Producers (Maarif, 2021).

Preparation for the implementation of One Employment Data (OED) starts from assessing employment data governance, compiling data lists, data standards, metadata, collaboration between SPBE and SDK, development of the OED portal, improving the quality of human resources through training, and National OED Consolidation (Lelono, 2021). All efforts are made to the fullest so that the OED policy can be implemented properly and can provide implementation guidelines as well as guidelines for central and regional agencies

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to realize the availability of high-quality, easily accessible, and shared Employment Data between central and regional agencies, encourage openness and transparency of data for use support government policies in the employment sector (Kemnaker.go.id, 2021).

INTEROPERABILITY MATURITY LEVEL COMMAND STYLE ONE EMPLOYMENT DATA

These are attributes that describe organizations management style and command–how decisions are made and how roles and responsibilitie are allocated/delegated (Roberts, 1985). Cross-organizational is a unit that interacts with each other in a certain pattern so that each member of the organization has its own function and duties as a unit that has certain goals (Ziehe & Helfen, 2021). Cross-organizational is concerned with the formalization of decision processes and systems (Blanc-Serrier et al., 2018). Cross-organizational interoperability structures can plan, implement, operate, monitor, review, maintain operations, even in situations where their organizational structures or internal procedures are different, it can help organizations to recognize and resolve cross-organizational problems (Piwiñski et al., 2018). Cross-organizational interoperability is a concept that involves every domain through collaborative e-government: organizations, partners, and users, with different capabilities, needs, and technical support (Delgado et al., 2020).
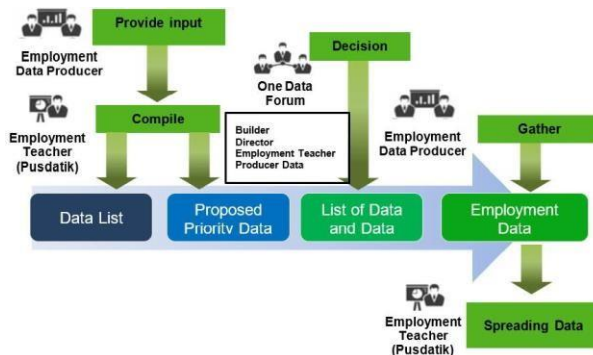

Figure 5. Flow of Management of One Employment Data

Implementation of One Employment Data which includes: Management of one employment data including the Manpower Data Trustee, namely the Minister of Manpower whose duties include: establishing Data Standards, establishing Metadata, establishing Reference Codes, and providing guidance on the implementation of One Employment Data (Bappeda Kaltim, 2022). Data Director is a High Middle Officer in each technical unit in the Ministry who is tasked with coordinating policies related to One Employment Data in their respective echelon I units, coordinating the implementation of One Employment Data in each echelon I unit, and monitoring the evaluation of the implementation of One Data employment (Arnoldus Kristianus, 2021). Central Employment Data Guardian is a work unit in the Ministry that has the task of managing employment data, namely the Center for Employment Data (Pusdatinaker) and Regional Walidata, namely: the Central Statistics Agency (BPS), the Office of Communication and Information (Diskominfo), and the Regional Development Planning Agency (Bappeda) (Kemnaker.go.id, 2021). Central Data Producer is a work unit in Central Agencies and Regional Agencies that produces Employment Data based on authority in accordance with statutory provisions, namely echelon II in the Ministry of Manpower (Kemnaker.go.id, 2021). Regional agencies are provincial regional apparatus and district/city regional apparatus, including regional secretariats, regional services at the Department of Social Affairs, Labor, and Transmigration (Nazrizal, 2020).

> *"The results of an interview with Mr. Zulfiandy from Pusdatik Kemnaker on 21 August 2023 revealed the implementation of data interoperability in the context of the Central and Regional Governments that Pusdatik as the Central Walidata has committed to building coordination and consolidation to achieve data interoperability. He stressed that this approach was carried out by adhering to the four main principles in the ONE DATA INDONESIA concept, namely Data Standards, Meta Data, Reference Codes, and Master Data"*

340   Implementation of processing one employment data in preparing employment data by carrying out coordination and consolidation between the data guardian and the data producer secretariat to avoid duplication of data ([Lelono, 2021](#)). Center for Employment Data and Information Technology (Pusdatik) collaborates with the National Cyber and Crypto Agency (BSSN) to conduct an IT Security Assessment to maintain the security of information systems at the Ministry of Manpower ([Fadhil, 2020](#)). One way is to carry out a Penetration Test (Pen-Test) or a breakthrough test on the application information system owned by the Ministry of Manpower.

ONE EMPLOYMENT DATA INTEROPERABILITY MATURITY ETHOS LEVEL

Relates to the culture and value systems of the organization and the goals and aspirations of the organization. The level of trust in the organization is also included ([Schlesinger, 2017](#)). The launch of the One Employment Data Portal can provide implementation references and guidelines for Central and Regional Agencies in administering employment data governance, encourage openness and transparency of employment data, and further improve the quality and integrity of employment data which supports government policies in the employment sector ([Bappeda Kaltim, 2022](#)). Revitalization of network devices and data security One Employment Data was carried out on May 13, 2023 accompanied by Mr. Sugiarto A.Md and a team from Center for Employment Data and Information Technology in the context of Network Assessment and Employment Information Technology Security at the Central Technical Implementation Unit of the Ministry of Manpower ([Kemnaker.go.id, 2023](#)).

The Central Technical Implementation Unit (UPTP) is an organization that carries out technical operational activities and supporting technical activities ([Syamsir, 2018](#)). Assessment of network and employment information technology security at the Central Technical Implementation Unit with the results of as-

sessments that have been carried out at UPTP as well as recommendations from the Center for Employment Data and Information Technology which assists in developing infrastructure and security at UPTP (Pusdatik.Kemnaker, 2023). Based on the results of the NVivi 12 Plus analysis on the Twitter account @KemanakerRI based on the Hashtag and Twitter Sociogram contained in Figure 5 and Figure 6.
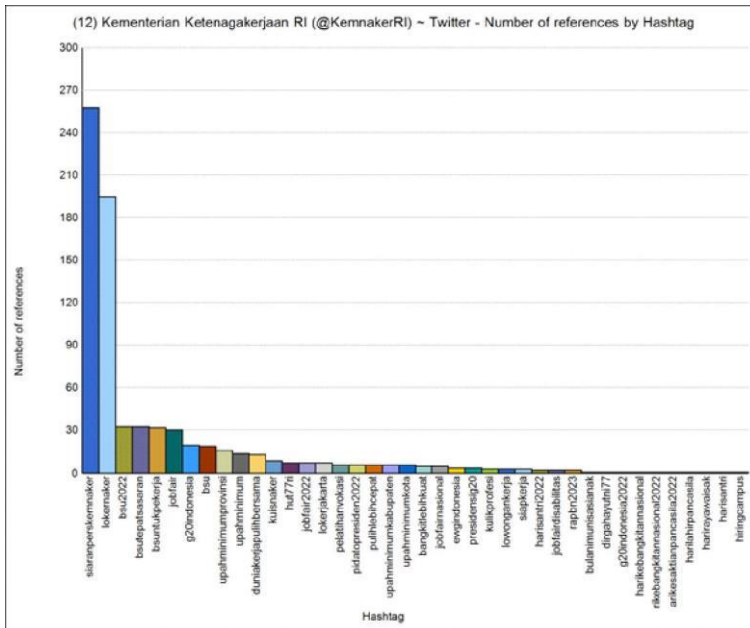

Figure 6. NVivo 12 Plus analysis by Hastag (2023)

The results of the analysis using NVivo 12 Plus by Hastag revealed that there are ten hashtags used in the activities of the official Twitter account @Kemnaker RI. The 10 hashtags are: #siaranperkemanker, #lokernaker, #bsu2022, #bsutepatsasaran, #jobfair, #upahminimumprovinsi, #duniakerjapulihbersama, #vocationaltraining, #ready to work, and #lowongankerja. The use of this hashtag was found to have the potential to support data interoperability processes indicating that information related to employment, training, and the labor market can be better integrated for the purposes of analysis and more effective decision making.
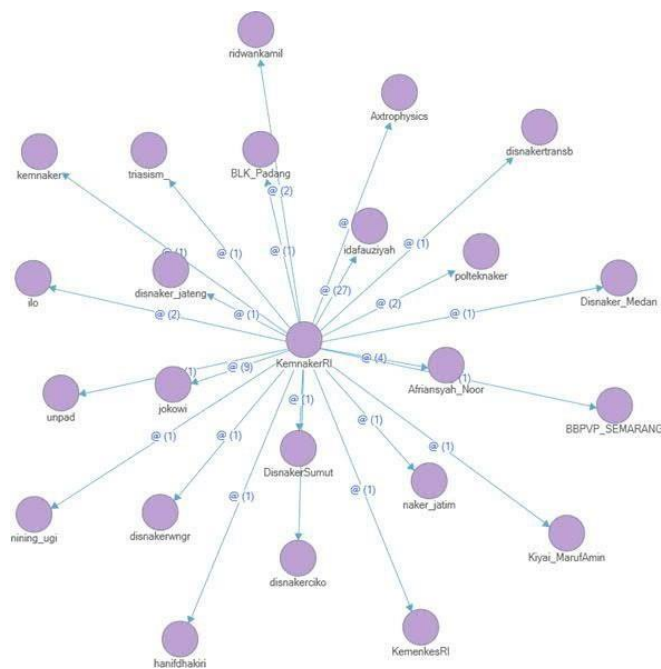
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Figure 7. Analysis of NVivo 12 Plus by Twitter sociogram @Kemnaker RI

The results of analysis by Twitter sociogram are a visual representation of social networks on the Twitter social media platform in analyzing and understanding interactions between Twitter users, relationships, and communication patterns between them. The strong interaction pattern shows that the Indonesian Ministry of Manpower is active in communicating with the Department of Manpower and parties who play an active role in supporting the implementation of data interoperability, namely: Jokowi, North Sumatra Manpower Office, Afriansyah Noor, Ida Fauziah, Central Java Manpower Office, and Central Java Manpower Office. Twitter sociogram analyzes Twitter users connected to each other by mutual influence with similar interest groups, or significant patterns of retweets and mentions. Twitter sociogram identifies users who have many followers (influencers) or who are often mentioned by other users. This can help in designing marketing strategies or deeper understanding of a par-

ticular topic. Twitter Sociogram can monitor the development of a particular issue or campaign on social media by how messages spread and interact with other users on the network.

CONCLUSION

The maturity level of cross-organizational E-government interoperability between the Central Government and Regional Governments in the Management of One Employment Data is based on the identification of four main aspects: Preparedness, Understanding, Command Style, and Ethos. The research results show that the Preparation indicator from the results of the NVivo 12 Plus analysis recorded a percentage of 20.00%. This shows efforts to strengthen the implementation of the One Employment Data policy through coordination between employment agencies at the central and regional levels which aims to unify understanding between the Ministry of Manpower and the Department of Manpower. who is responsible for employment regarding data standards, metadata and employment data reference codes. The Understanding Aspect with a percentage of 27.00%, which indicates that this concept has been implemented effectively in providing guidance for central and regional agencies to create Employment Data that is quality, easy to access, and can be shared between central and regional agencies. Command Style reached a percentage of 24.00%, showing a commitment to building coordination and consolidation to achieve data interoperability. The Ethos aspect with a percentage result of 27.00% which describes the implementation of the revitalization of network devices and data security of One Employment Data, as well as the use of hashtags in the data interoperability process hereby reflects the ability to integrate information related to employment, training, and the labor market, which results in a level of integrated data maturity.

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