

**Application of Knowledge Sharing Features Using the algorithm Boyer-moore  
On Knowledge Management System (KMS)  
(Case Study: Department of Communication and Information  
Government Prabumulih)**

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**Abstract**

*Department of Communication and Information Technology Government Prabumulih is a device which acts as a local government responsible for the fields of transportation, communication and informatics at level Prabumulih. The Department has the tacit and explicit knowledge that has not been optimally managed and documented. Office requires a knowledge management system, as evidenced by knowledge sharing features. System development method used is the 10-step knowledge management roadmap by Amrit Tiwana . While the method of knowledge sharing using the Boyer-Moore algorithm. The results of this study are worth a Knowledge Management System applied to the department. And based on the results of testing the application of knowledge sharing feature using the Boyer-Moore algorithm is very effective.*

*Keywords: Knowledge Management System, Knowledge Sharing, Boyer-Moore Algorithm*

**Introduction**

Department of Communication and Information Technology Government Prabumulih, require management and documentor tacit or explicit knowledge. Problem-solving knowledge categorized in Tacit knowledge, while document-based knowledge categorized as explicit knowledge. During this knowledge in the service as a valuable resource not being managed and documented to the fullest. Knowledge management system is a system for implementing and using the principles of knowledge management in the entire process of creating, transfer and apply knowledge in the organization [1]. The need to manage knowledge to the maximum required to adapt to changes in the competitive environment.

Sharing knowledge or knowledge sharing is a process in knowledge management. Sharing knowledge refers to the preparation of information on the tasks, knows how to collaborate with others to facilitate the people, solving problems, carrying out the policy, or to develop new ideas [2]. It can be concluded that knowledge is a practice exchange and disseminate ideas, experiences and knowledge with others to make sure, that knowledge does not just disappear.

Their employee knowledge sharing features can easily get the desired knowledge, as well as quickly share knowledge with other employees. Features sharing knowledge as a tool to help share knowledge, will be supported by the implementation of the Boyer-Moore algorithm. The use of the Boyer-Moore algorithm will accelerate the search for knowledge, by detecting the search term with the word in the document .pdf extension.

### **Knowledge Management System (KMS)**

Information technology used in KM known as Knowledge Management System (KMS). In general, Knowledge Management System (KMS) is IT that enables organizations to manage knowledge effectively and efficiently [3]. Knowledge There are two types of tacit and explicit knowledge, which can be codified and explicit knowledge is easier to transfer than the tacit difficult to draw or write on paper and thus usually need to be obtained through practical experience in a relevant context. To adequately benefit from the knowledge, organizations need to use sustainable methods or knowledge management system. knowledge management can be considered as the process of creating new knowledge, identification of sources of new knowledge, as well as knowledge elicitation and distribution [4].

### **Knowledge Sharing**

Inspiration people to share their knowledge and experience in the workplace has been gaining attention among researchers to determine how to motivate employees to share knowledge. Implementation of effective knowledge sharing, seen as one of the factors that can influence the behavior of individuals in the sharing of knowledge [6]. Sharing knowledge is the most important segment and challenges of knowledge management [7].

### **Boyer-Moore algorithm**

The most famous matching algorithm on a single pattern is a string matching algorithm Boyer-Moore (BM). Comparing the character of the pattern with the character of the text from right to left using two heuristics referred to as a shift of bad character and good suffix shift [8]. This algorithm uses some cases checking text (input characters to be read) with Pattern (pattern to be filtered). Boyer-Moore algorithm is a string searching algorithm that is looking for by comparing a letter with a letter that is in the sought pattern, and the pattern shifts to the same position with the search text and comparing the word. This method is called character jump. Pattern Matching Algorithm Boyer-Moore is based on two methods: [9]:

#### **1. The Looking-Glass Technique**

The Looking-Glass Technique perform the comparison of a final character in the word *w* with a character in the text of *s*. If the character at the character window will run backwards on the second string and recheck the two characters. Finds A String match the text with the pattern that will be searched by moving or sliding it until the text string is completed.

#### **2. The Character-Jump Technique**

Character-jump Technique perform an action when a comparison between two different characters. There are two actions that depend on the text and the word *w* *s* owned, if *p* is a character in *s* that is being processed is not fit then there are two possibilities for action. Looking for the appropriate character and way of shifting a character last comparison.

### **Systems Development Method**

System development method will be used in this thesis is a 10-step method of knowledge management roadmap drawn up by Amrit Tiwana. 10- step knowledge management roadmap structured into four phases as follows: [10]

1. Evaluation of infrastructure
2. Analysis, design and development of KMS
3. System deployment
4. Evaluation

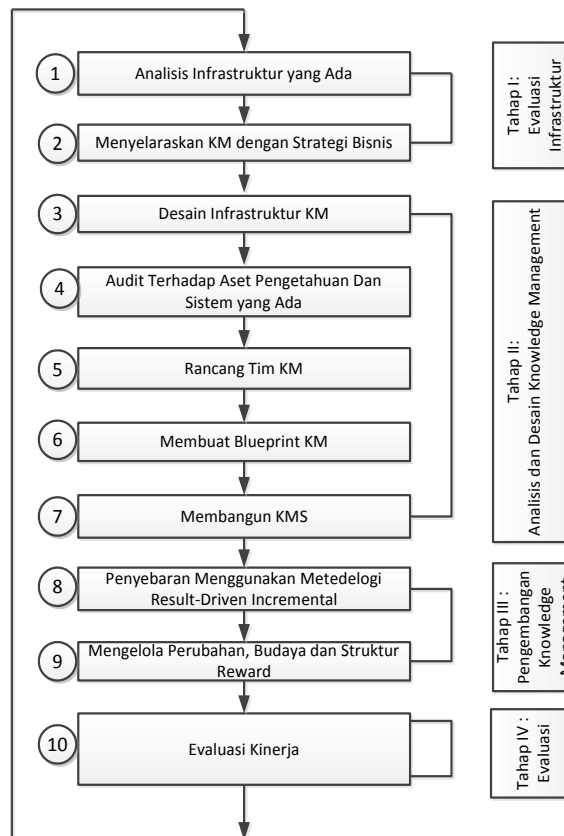


Figure 1. Ten Steps KM roadmap [10]

### Boyer-Moore Algorithm Method

Boyer Moore algorithm is a string searching algorithm that is most effective at this time. Boyer Moore algorithm will store information shift to conduct a search string. The main characteristics of Boyer Moore algorithm is these algorithms perform matching string from right to left. With these characteristics, mismatch occurs when the string comparison will make the movement pattern further jumped to avoid the comparison character string predicted failure [9].

Systematically, the steps undertaken Boyer-Moore algorithm when matching strings are [11]:

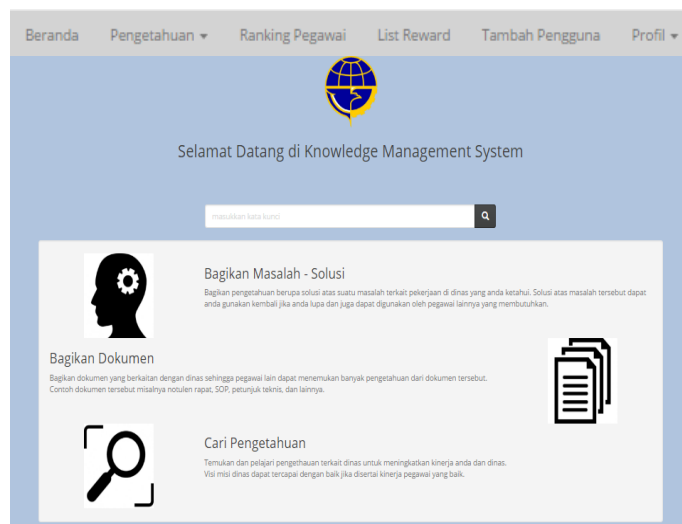
1. Algorithm Boyer-Moore began to match the pattern at the beginning of the text.
2. From right to left, this algorithm will match a character-by-character pattern with the corresponding character in the text, until one of the following conditions are met:
  - a. Characters in the pattern and in the text being compared do not match (mismatch).
  - b. Semua characters in the pattern match. Then the algorithm will inform the invention in this position.

3. The algorithm then shift pattern to maximize the value of good-suffix shift and shift bad-character, then repeat steps 2 through pattern at the end of the text.

### Results and Discussion

Features support knowledge sharing Knowledge Management System Department of Communication and Information. KMS office is built with web-based technology. While knowledge sharing features designed using the Boyer-Moore algorithm, so that the knowledge sharing process runs effectively.

Users are entitled to access the KMS, which consists of secretaries, clerks and office admin. KMS their knowledge at the service can then be documented, managed and distributed optimally to other employees. Types of knowledge are managed within the KMS is problem-solving knowledge categorized as tacit knowledge, as well as document-based knowledge that is categorized as explicit knowledge. The system will provide a special form for documenting problem-solving knowledge and document-based knowledge. Following the results of the design features of knowledge sharing on Knowledge Management System Department of Communication and Information Technology Government Prabumulih. The following pages feature knowledge sharing.



Web-based Knowledge Management System at the Department of Transportation, Communications and Information Technology Government Prabumulih, has passed the test using black box testing techniques. All test cases were carried out, indicated succeed. This indicates that the software meets the requirements of software that has been set in the phase of analysis and design software. While the main features of knowledge sharing algorithm using the Boyer-Moore, testing the keyword input (knowledge is sought) and calculate how long it generated searches. Results of testing the knowledge sharing features, with 20 trials .pdf file extension is:

**Table 1.** Testing Knowledge Sharing Feature

Pattern	Characters Long Time Search	Characters Long Time Search
Keberhasilan	12	7.2728 seconds

Keberhasilan pembangunan	24	7.0497 seconds
Keberhasilan pembangunan disuatu wilayah sangat	47	6.8522 seconds
Keberhasilan pembangunan disuatu wilayah sangat dipengaruhi oleh peran transfortasi sebagai urat nadi kehidupan politik	119	4.7710 seconds

Based on the results of testing knowledge sharing features, it can be concluded that the use of the Boyer-Moore algorithm on knowledge sharing feature is very effective. Proven testing of 20 samples search .pdf file extension, the longer pattern (keyword) is entered, the search time will be faster. So the user will more quickly acquire knowledge and share it with other employees.

## Conclusion

Based on the research and testing of the system, it can be concluded as follows:

1. The Boyer-Moore algorithm can be implemented on Knowledge Management System, especially to support knowledge sharing
2. The Boyer-Moore algorithm to used to support sahring explicit knowledge and document-based knowledge.
3. Use of the Boyer-Moore algorithm on Knowledge Management System is very helpful to support sharing knowledge .

## Reference

- [1] Dimitrijevic, L.R. (2014). "Risk Assessment Of Knowledge Management System". *Online Journal of Applied Knowledge Managemen*. 3(2),114–126
- [2] Pulakos, E. D., & Dorsey, D. W., and Borman, W. C., (2003). "Hiring For Knowledge-Based Competition, Managing Knowledge For Sustained Competitive Advantage". *Designing strategies for effective human resource management*, pp. 155-177.
- [3] Setiawan, Assegaff1, Ab Razak Che Hussin. (2013). "Knowledge Management System as Enabler for Knowledge Management Practices in Virtual Communities". *International Journal of Computer Science Issues*, 10.
- [4] McInerney, C. (2002). Knowledge Management and the Dynamic Nature of Knowledge. *Journal of the American Society for Information Science and Technology*, , Vol. 53, No. 12, pp1009–1018.
- [5] Razak, Abdul Norfadzilah, Faizuniah ,et.al,. (2015). "Theories of Knowledge Sharing Behavior in Business Strategy". *Norfadzilah*,37, 545-553.
- [6] Syed Rahmatullah, S. & Mahmood, K., 2013. "Knowledge-sharing behavior in dairy sector of Pakistan". *Library Philosophy and Practice (ejournal)*, 917. <http://digitalcommons.unl.edu/libphilprac/917>

- [8] Boyer, R.S., & Moore, J. S. (1977). "A fast string searching algorithm". *Communications of the ACM*, 20(10), 762-772.
- [9] Rahmanita, Eza. (2014). "Pencarian String Menggunakan Algoritma Boyer Moore Pada Dokumen". *Jurnal Ilmiah Nero*, 1(1).
- [10] Tiwana, A. (1999). *The knowledge Management Toolkit: practical technique for building a knowledge management system*. London: *Prentice-Hall*, Inc.
- [11] Ramadansyah.(2013). "Perancangan Aplikasi Kamus Bahasa Gayo dengan Menggunakan Metode Boyer-Moore". *Pelita Informatika Budi Darma*. IV(3).