

ERDQ: A Real-time Framework for Increasing Quality of Customer Whit Data Mining Mechanisms

Arash Ghorbannia Delavar, Behrouz Noori Lahrood, Mohsen Nejadkheirallah, and Mehdi Zekriyapanah Gashti

Abstract—In this paper a real-time framework for increasing quality of customer whit Data mining mechanisms will provide. EDRQ a framework that is simultaneously using the effective parameters can increase system performance, helping it to a series of phases. Within the proposed process is that we can then create a specific process that our system performances, which are independent phases, be used simultaneously in this framework. EDRQ Real-Time framework capabilities than previous frameworks provides optimal. In this context help for some parameters we can create conditions similar to the space environment, compatibility with concurrency environment and do better. Working within the framework of the proposed uses of the streams that can make choosing streams simultaneously increase the speed and quality of service it to improve the previous framework. For quality service to customers is an important parameter to help the system efficiency significantly increased. Real-Time methods, and ultimately improve the quality of customer satisfaction levels and percent increase in customer response to achieve high transaction systems with complexity when we created very little. This framework can accurately evaluate competence to function in the algorithm used to create the framework and conditions more favorable to demonstrate the system.

Keywords—ERDQ; Data Mining; Real time; ERPASD

I. INTRODUCTION

In 2000 years, conditions improved in quality as the essential component systems have been established, but to shape the quality of infrastructure must provide hardware and software and the hardware and software infrastructure can be associated with conditions. The problem is that we can increase the concurrency and transaction system for high quality we have. For this individual parameters should be assessed effectively. We can do this when we create timing and synchronization between tasks use some relationships to merge exist phases to close them together and monitoring action take places between phases. Synchronization is a new technique that should be used on practical software to create the balance in organizational structure to increase customer satisfaction levels [1,2].

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To further enhance the market competitiveness of enterprises, the structure technical and function of ERP system must adapt to the characteristics of the E-commerce times, with the support of internet technology, realize the organic integration of enterprise, partners and customers based on the same Ecommerce platform[3,4].

Information technology is an attempt to integrate combined methods for providing a suitable solution that increases customer satisfaction level is. In order to we have replaced integrated distributed systems with the integrated central systems to increase confident and dependability.

Numerous and comprehensive reviews on the proposed framework and models were used to present new framework. That using these techniques and methods we can solve problems related to repetitive processes using concurrency in the implementation of data mining technique and resolve problems related to it desirable. Within this framework we have proposed Apriori algorithm that at the first Apriori based algorithm was explained[5].

II. THE BASE APRIORI ALGORITHM

Data mining is a technology of multi-interdisciplinary research field, which combines the latest research results in database technology, artificial intelligence, machine learning, statistics, knowledge engineering, information retrieval, high-performance computing , data visualization technology and so on. Association rule mining is one of the most important data mining problems[7]. The purpose of association rule mining is the discovery of association relationship among a set of items. The mining of association rule include two subproblems(1)finding all frequent itemsets that appear more often than a minimum support threshold, and(2)generate association rules using these frequent itemsets[8].

The first subproblem plays an important role in association rules mining. Once frequently set generated from the database, strong association rules can be directly generated. The core algorithm as follows[9,10]:

Apriori algorithm called two sub-processes which are Apriori-gen() and subset(), Apriori-gen() process produces a candidate, then use the Apriori property (all non-empty subsets of frequent item sets must also be frequent) to delete those candidates of the non-frequent subsets. Apriori property: All nonempty subsets of a frequent itemset must also be frequent. A two-step process is used to find the frequent itemsets: join and prune actions.

a) *The join step*

To find Lk a set of candidate k-itemsets is generated by joining Lk-1 with itself. This set of candidates is denoted Ck.

b) *The prune step*

The members of Ck may or may not be frequent, but all of the frequent k-itemsets are included in Ck.

A scan of the database to determine the count of each candidate in Ck. [2]

These important algorithms were not only used in basic association rules mining, but also in other data mining fields[10, 11].

III. PROPOSED PHASE OF ERDQ FRAMEWORK

This framework based on ERPASD integrated system that it is system with layer methodology increase security in the proposed framework. Proposed framework consists of three phases that it was shown in Fig. 1.

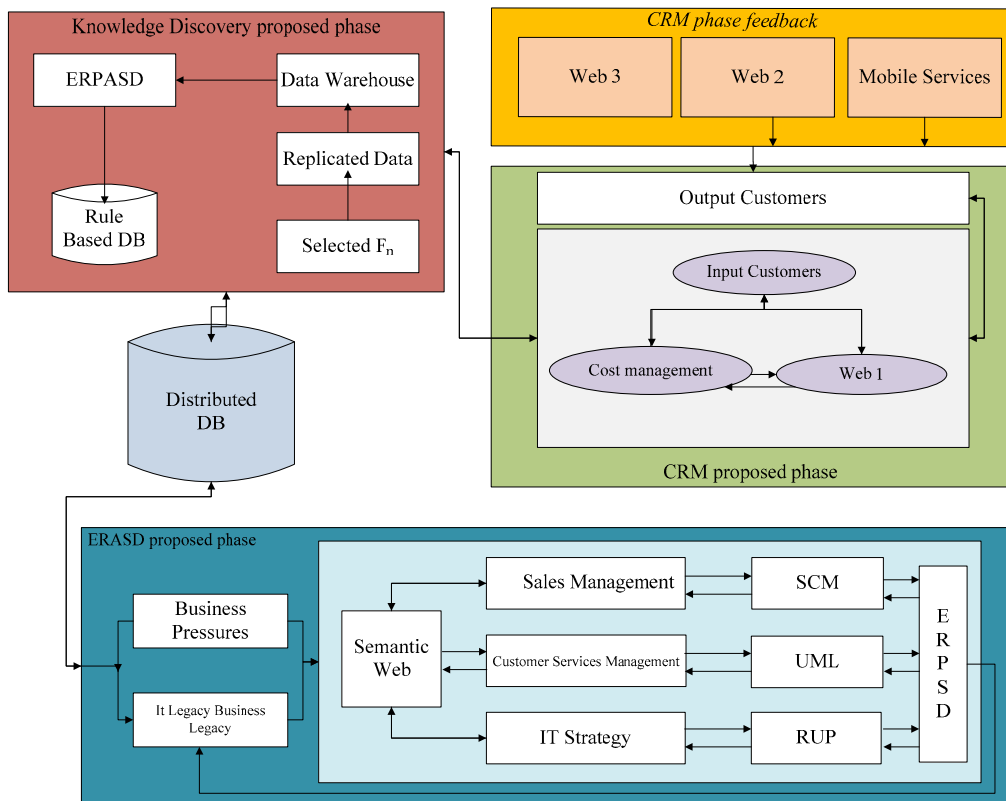


Figure 1. ERDQ proposed framework

A. *CRM proposed phase*

1) Output Customers

Output customers are the users that results receive related to the proposed framework and algorithms considering methodology and access level to information according to the types of anticipated services. Proposed framework and new techniques led to significant results in improving customer satisfaction level and cause synchronization in results reception[2].

2) Input Customers

Input customers are users which are using the resources directly by algorithm and proposed framework and they have independent features and same indicators toward ERP. Input customers need methodology and framework for having faster access to information and having more satisfaction which lead to improvement of dependability.

3) Cost Management

Cost is important in organizations management and the cost decreasing is a method of open managements that this method in distributed integrated system this distribution is associated with a technique that sweep Confirmation is done by using feedbacks of proposed CRM phases as virtual. If

we manage the organization costs in buying and selling with input customers and output customers we will face costs reducing. So the total cost reduces.

4) Web1

Web sites in an integrated system are essential tools of the organization. According to the Web sites design and input and output users using will be achieved visible reduction in communication costs and the average waiting time is reduced among users and user satisfaction levels are increased [12].

A.1. *CRM phase feedback:*

a) Web2

In this case, users are used as digital life or electronic citizens (e-citizen). In digital life users do all works including: buying, selling and other works virtually that how build and kind it are used by NFC and RFID tags.

b) Web3

Using techniques of artificial intelligence and expert and decider systems provides a facility to guide customers towards the desired product. Using this technique, the decision of the customer will be directed largely toward the server.

c) Mobile-based services

Mobile is a available and common tool for customers t that they can in the shortest time easily be associated with the processing resources. This work is done by IPs static. In other words we can exchange information for customers and the organization of origin environment to destination by having the IP for each of the users.

B. ERPASD proposed phase

1) Sales Management

It is one of the important entities in CRM as a fixed entity that is used for all designed CRM because it is a base in order to enter in other phase. Without this entity we can't have comparison between other entities [10].

2) Customer Services Managemen

Usually, after secure integrated systems are updated and placed in implemented system, they are in environmental condition that it has effects on this integrated system. For avoiding these effects we can present novel algorithm to put them in to the new framework which lead to updated software according to this algorithm [10].

3) Business Pressures

This part of the systems involves with pressures like globalization, information technology and competition. For example, the rapid changes in market, changes in customers' requirements and so on are examples for commercial problems. Older systems and the problems mentioned above affects the implementation process [1,2].

4) IT Strategy:

This is the available IT infrastructure, which can affect the functions and operations of an organization and it can have an important role in effectiveness of an organization. For example, software applications affect the operations of a company. It is important because of factors like cost, size and complexity.

5) SCM

CSM logic is very simple but it is being done handy and it makes it very time consumable. Also it is being executed by cooperation of large computer software's. SCM is an effective technique for managing available resources but it ignores other distributed resources because it is a central approach for managing the resources [1,2].

C. Knowledge Discovery proposed phase

Menstruation phase is required to obtain the data and rules in the database and processing resources that we create scheduling for synchronization and reduce waiting time and time complexity by using the proposed algorithm in processing resources.

1) Selected F_n

Selected F_n is repeated collection largest to merge its subsidiary for performing the proposed algorithm.

2) Replicate Data

Repeated data in distributed databases increase search time. when you want to remove or reduce repeated data by appropriate method you should at first detect repeated data with the appropriate technical because it isn't used in menstruation time.

3) Data Warehouse

Review of Data Mining mechanism needs a dynamic space that the information in its stored with algorithm

changes and access Speed is also desirable.

4) ERPASD

Proposed new algorithm can help us to improve Menstruation time of data in integrated distributed database by data mining mechanism and concurrency in processing.

IV. ERPASD NEW PROPOSED ALGORITHM

Proposed new algorithm can help us to improve Menstruation time of data in integrated distributed database by data mining mechanism and concurrency in processing. ERPASD flowchart and algorithm is as follows.Listen

- 1) Start
- 2) Select F_n (Frequent itemsets of Maximum Cardinality)
- 3) Select $K = \text{minimum cardinality}$, $N = \text{maximum cardinality}$
- 4) Generate propose candidate whit function Apriori_gen
- 5) Generate all Subset of propose candidate
- 6) Search all priori subset
- 7) Check all Subset and select itemset whit maximum count and minimum support
- 8) End

The flowchart of new proposed ERPASD algorithm present in figure 2.

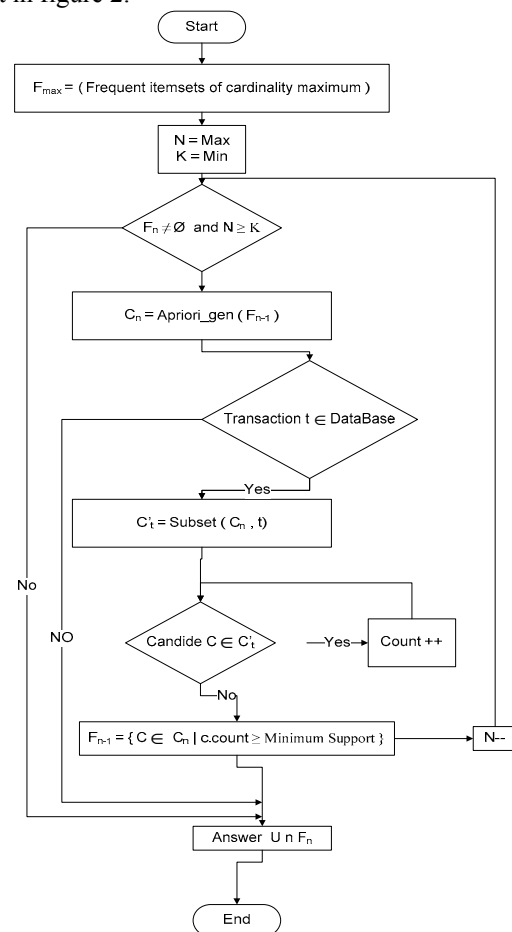


Figure 2. flowchart of novel proposed ERPASD algorithm

V. SIMULATION PROPOSED ERDQ FRAMEWORK

Table I Show List of hardware and software equipments

for implementing proposed framework in the Ministry of Education and obtained times from implementing the ERDQ framework According to records of the Ministry of Education data based on milliseconds with synchronization in processes described in Table I For simulating framework minimum hardware and software equipments were used as shown in Table I.

TABLE I. MINIMUM HARDWARE AND SOFTWARE FOR SIMULATION

	hardware or software	Information
1	Processor	Intel 1.8 GHz
2	Memory(RAM)	512 MB
3	operating system	Microsoft Windows XP Professional Version 2002 Service Pack 1
4	System type	32-bit Operating System

Results showed positive effects in implement time of the proposed algorithm in the ERDQ framework compared to Apriori algorithm. According to case study on the database of Ministry of Education Iran is surveyed precisely and comprehensively with regard to tables with the least number of records R1 and most number of records R5 and significant differences in the response time of users in ERDQ framework against algorithm obtained that results of this simulation are presented in the table II.

TABLE II. RESULT RESPOND TIMES OF IMPLEMENTATION ALGORITHM IN LMO DATABASE

	Number of records	users respond time in Apriori Algorithm (S)	users respond time in ERDQ Framework (S)
1	R1	1-5000	0.019
2	R2	5001-50000	0.043
3	R3	50001-500000	0.795
4	R4	500001-3000000	1.911
5	R5	3000001-5000000	3.007

In figure 3: shows response times of users for the number of simulated records of Ministry Education Iran database.

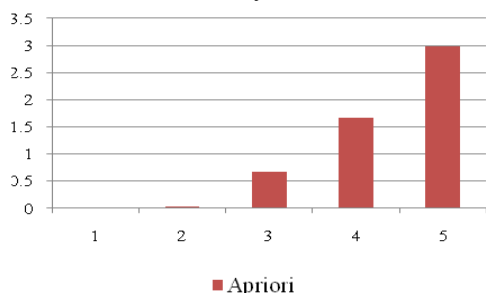


Figure 3. Total processed records in Apriori Algorithm.

In figure 4: is presented response times of users to the number of simulated records from the database of the Ministry of Education in ERDQ new framework.

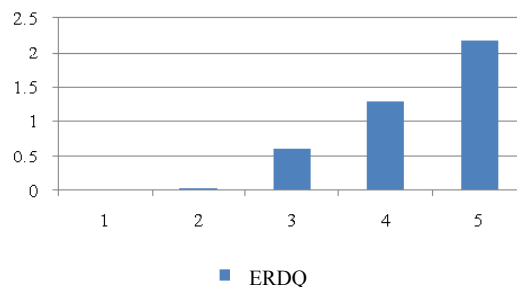


Figure 4. Total processed records in ERDQ Framework.

In figure 5 have been compared response times of users with independent parameters in the same situations.

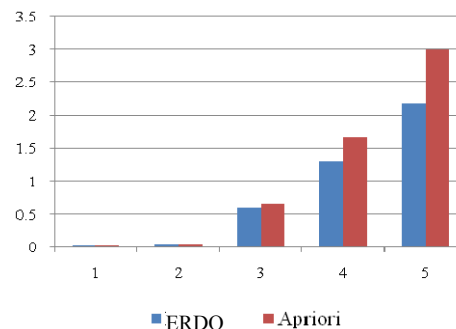


Figure 5. Compared total processed ERDQ framework and Apriori algorithms.

VI. CONCLUSION

We presented new proposed ERDQ framework in secure distributed integrated system. The combination of data mining mechanisms and above algorithm decrease users respond Significantly during using high capacity data base in Ministry Education Iran. The results of the above algorithm and the compared one show in the worst case scenario there is 0.18% increase in performance during service time and at best in average there is 3.12% increase in service time in compare with different previous simulation algorithm.

REFERENCES

- [1] A.Ghorbannia Delavar , M.Zekriyapanah Gashti , B.Noori Lahrod , " ERPASD: A Novel Algorithm for Integrated Distributed Reliable Systems Using Data Mining Mechanisms " , IEEE ICIFE 2010 , September 17-19, 2010, Chongqing, China
- [2] Arash Ghorbannia Delavar , Narjes Rohani , Mehdi Zekriyapanah Gashti . " ERPAC: A Novel Framework for Integrated Distributed Systems Using Data Mining Mechanisms " . International Conference on Software Technology and Engineering. IEEE ICSTE 2010 . October 3-5, 2010. San Juan, Puerto Rico, USA
- [3] A.Ghorbannia Delavar , V.Aghazarian , S.Sadighi "ERPSD: A New Model for Developing Distributed,Secure, and Dependable Organizational Softwares" IEEE CSIT 2009 Yerevan, Armenia, September 28 2009 ,PP.404-408.
- [4] A.Ghorbannia Delavar ,L.Saiedmoshir "Analysis of a New Model for Developing Concurrent Organizational Behaviors with Distributed, Secure and Dependable ERPSD Technology" IEEE CSIT 2007 September 24-28 2007,PP.321-324.
- [5] A.Abdullah , S..Al-Mudimigh , B.Zahid Ullah , C.Farrukh Saleem "A Framework of an Automated Data Mining Systems Using ERP Model" International Journal of Computer and Electrical Engineering (IJCEE 2009) , Vol. 1, No. 5 December 2009 , PP.651-655.

- [6] Insop Song, Federico Guedea-Elizalde , Fakhreddine Karray "CONCORD: A Control Framework for Distributed Real-Time Systems
- [7] Y.K.Alp , O.Arikan , "ERP SOURCE RECONSTRUCTION BY USING PARTICLE SWARM OPTIMIZATION ", IEEE ICASSP 2009
- [8] Yin Fen Low, and Daniel J. Strauss "An Inverse Transform Technique for the EEG Phase Reset Analysis " Proceedings of the 4th International IEEE EMBS Conference on Neural Engineering Antalya, Turkey, April 29 - May 2, 2009
- [9] Parvinder S. Sandhu , Dalvinder S. Dhaliwal , S. N. Panda , Atul Bisht " An Improvement in Apriori algorithm Using Profit And Quantity " , Second International Conference on Computer and Network Technology , IEEE ICCNT.2010
- [10] Zhang.Ch , Li.Zh , Zheng.D "An Improved Algorithm for Apriori" IEEE, ETSC 2009 Wuhan, China ,March 7-8 2009 ,PP.995-998.
- [11] Chia-Chia Lin, Wen-Chia Tsai, Dong-Her Shih " A Study of Information System Reengineering as ERP Is Introduced to Businesses Adapting to the E-Business Era" The 3rd International Conference on Innovative Computing Information and Control. IEEE ICICIC 2008.
- [12] Hong Seng Woo , " Implementing ERP in China: Lessons from Family-Owned Chinese Enterprises " PICMET 2009 Proceedings, August 2-6, Portland, Oregon USA ,IEEE PICMET 2009

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