



Development of Secured Knowledge Management System using Information Technology Model

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ABSTRACT

Information Technology (IT) has contributed to the development of many areas, including the development of companies and in accordance with the requirements of the free market, so it has become necessary to contribute to the development of the knowledge management system because of its importance in the use and dissemination of knowledge through the IT model that focuses on all the requirements of the knowledge management system. And the factors affecting its development, this model is characterized by meeting the needs of the system and upgradable, as well as being comprehensive and integrated (with other systems). The model is designed in several programming languages such as (C#, PHP and MySQL) and according to business requirements in addition to its ease of use so that everyone can use it (employees, clients, partners), and that the model has the ability to identify obstacles and errors that cause non-development, In terms of communication, it uses all technical resources (interviews, video conferences, chat rooms, etc.) to contribute to enhancing teamwork and communication, enhancing expertise and processing data and relying on human expertise to promote innovation and knowledge acquisition to achieve the real objective of this study which is to develop a knowledge management system.

Keyword: Knowledge Management System, Information Technology Model, Software Engineering Model.

1. INTRODUCTION

Companies are aggressively seeking to benefit from the knowledge. Knowledge is available in many different parts such as databases, knowledge cabinets, and individual minds that are used and published in the company. This causes duplication of some parts of the company's work due to the impossibility of following the knowledge methods found in other parts [1].

Competition in the free market forced companies to work largely on the presence of knowledge through which the company would be able to meet the market demands. For example, product manufacture and development need to know market needs, modern technologies and marketing methods [2].

Information technology helps develop the knowledge management system and its subsystems, as well as contributes significantly to cognitive processes, promotes innovation and adds ease in using modern technologies (virtual halls and video meetings). Information technologies support the company's functional classification and cognitive classification [3].

The changes taking place in many important sectors through which companies are developing through preservation, dissemination and use of knowledge. Therefore, information technology was used as an important factor in knowledge management, as it developed from the subsystems of the knowledge management system (knowledge acquisition, sharing and effective use) that knowledge management processes became clear through modern technologies and helped in developing subsystems promoting innovation and teamwork [4].

Information technology increases expertise, enhances efficiency, and encourages innovation as well as the flow of information. Therefore, information technology has become an important component of the processes and services available in general, so the basic and necessary elements (people, technology, processes) through which the knowledge management system is developed [5].

Information technology, which is part of modern technology, is considered a necessary and important element in developing a knowledge management system by reducing cost, spread and effectiveness. It also mainly contributes to enhancing innovation, decision-making, correcting errors and creativity in developing a knowledge management system through the software and statistical and analytical tools provided by information technology, as well as helping to gain knowledge and participate with all interested parties (employees, clients, partners) through video-conferencing and video interviews [6].

2.RESEARCH PROBLEM

To create a model that uses information technology to develop a knowledge management system, containing many advantages including (ease of use, skill development, knowledge acquisition, analysis, integration, development, communication)

2.1 Literature Review

Much research elucidates analysis models for acquired data, but little research focuses on software engineering and IT algorithms for model building [7]. Business can be divided into three parts: (infrastructure, visual cognitive management, and knowledge acquisition from models). The first part focuses on designing infrastructures to support knowledge management and data analysis. The DIANNE business model [8] illustrates how to train and use deep learning to create a parallel model that provides the infrastructure.

As for Euro cat [9], he made his model implement the algorithm of neural networks on distributed data for classification, and this model was used for training, knowledge acquisition and classification [10].

The work of ADAGE [11] WINGS [12] focused on workflow platforms and service architecture in order to gain knowledge and that this work is directed only to architectural issues and is not beneficial to many users because it is not adaptable and does not link business objectives with knowledge and difficulty of use [7].

The second part focuses on visual data that are useful in knowledge management [13], and this information is in the form of databases with important relationships to all the data within them and that are important in the knowledge processes [14]. This information and related activities are a means of understanding the management of cognitive processes. The visual cognitive management through means that enhance (visual analysis, evaluation, correction) in models intended to improve knowledge management [14] and each of Loom [13] TUORIS [15] Shneiderman [16] focus on the possibilities of visual designations for interactive exploration to understand The large and huge data set through user interfaces contains high flexibility to accommodate user requirements [17]. Zhou et al [18] indicated the inclusion of information technologies to make strong and good knowledge management decisions without compromising quality. This literature refers to the use of visual and interactive platforms as well as ease of use [16].

The third part focuses on knowledge acquisition as well as the application of knowledge concepts related to the knowledge management system that apply the concepts of information technology. This is explained by Berners-lee et al [19] and Kirrane et al [20] referred to the use of semantic research to acquire knowledge through Web and forms designed according to these standards. Many studies suggest the use of knowledge management concepts in models and also suggest the use of information technologies conceptually to develop a knowledge management system [21]. Therefore, this paper relied on an information technology model that uses many techniques to develop a knowledge system.

Rageed [22] clarifies the concepts used in the knowledge management system through the information technology model. The purpose of this is to develop the concepts and processes used in KMS, as well as the development of sub-systems (approach, planning and information), as well as the role of information technology in building new concepts for the development of knowledge management theoretically. In our research, a knowledge management system has been developed through an information technology model in theory and practice, which is proven by the results.

2.2 Proposed Method

The proposed model is to develop a knowledge management system focuses on the important requirements and features of the knowledge management system, with following features.

- 1- Individual job features
- 2- Administrative advantages
- 3- The appropriate architectural
- 4- Integration

5- Features of user interfaces

6- Security

7- Documentation

This is a simple explanation of the important parts of the model architecture:

1- Functional features: the functional features and the auxiliary factors to improve these features (classification, search and filtering) are clarified in order to enable the dynamic change of the company.

The procedures used in this model focus on:

A- The name of the user and the employee participating in the acquisition of knowledge

B- Acquired knowledge

C- Interactive knowledge that is formed through interaction between (clients, partners, and employees).

The model explains (virtual rooms for meetings, e-mail, video conferences, and electronic boards) as well as organizational e-learning (which is the procedure for detecting obstacles and errors to correct them within the interactive group). The model also focuses on managing experience by training employees with the skills needed for business. Future. Also, urgent, new and important news has been added to users

The proposed model uses video conferencing (Figure 1) in the system, which facilitates communication between the company's employees. As well as the database (Figure 2) used in the form used in the company. The login window appears for employees (Figure. 3) and it contains high security algorithms.

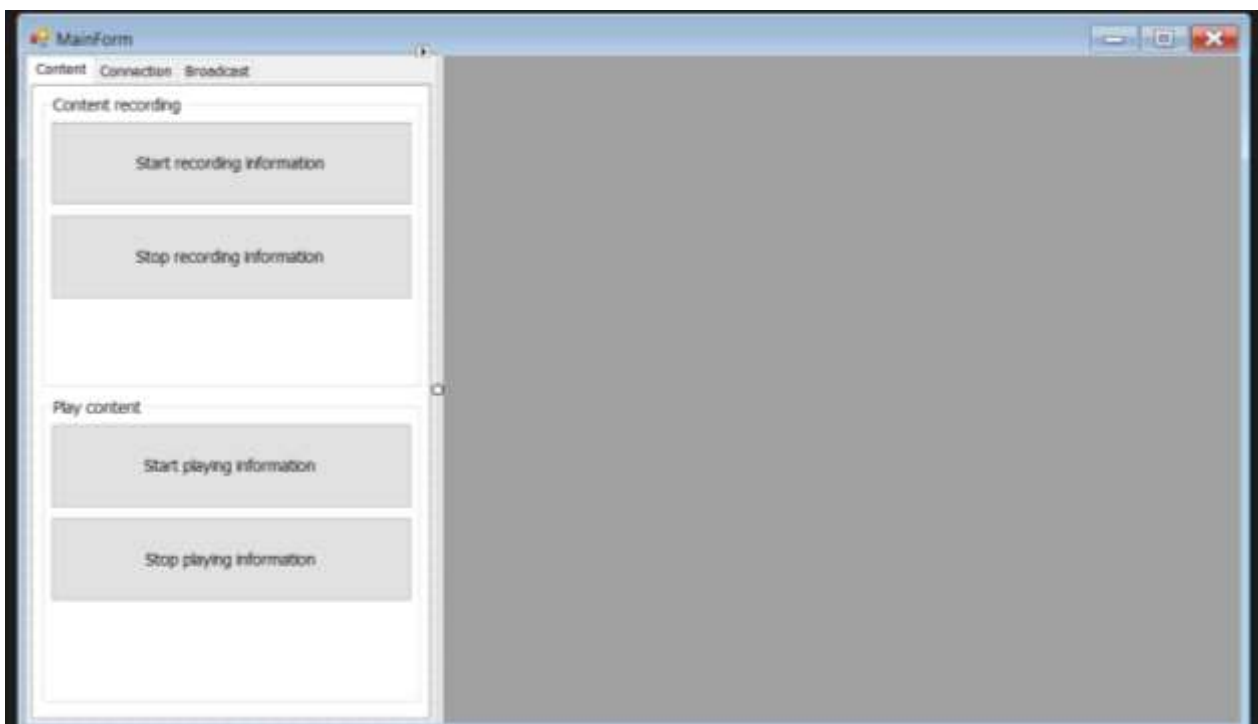


Figure1. Video conferences



Figure2. Employee information



Figure3. Login user

2- The administrative factors on which the IT model focuses on the full responsibility of the knowledge management system and is monitored on the general form in a way that prevents piracy and manipulation of knowledge users and focuses administratively on (setting rules of use, granting rights, modification, removal, reliability, approval) (Figure 4).

Manage Permissions				
User <small>This role is the default role</small>				
	Create	Edit	Delete	Comment
User Story	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Task	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Issue	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Release	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sprint	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Epic	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Figure4. Permissions for users

3- Architectural description, through which the information is determined via the Internet and has the ability to expand, update and move between sub-models in an easy and fast way with automatic support (Figure 5).

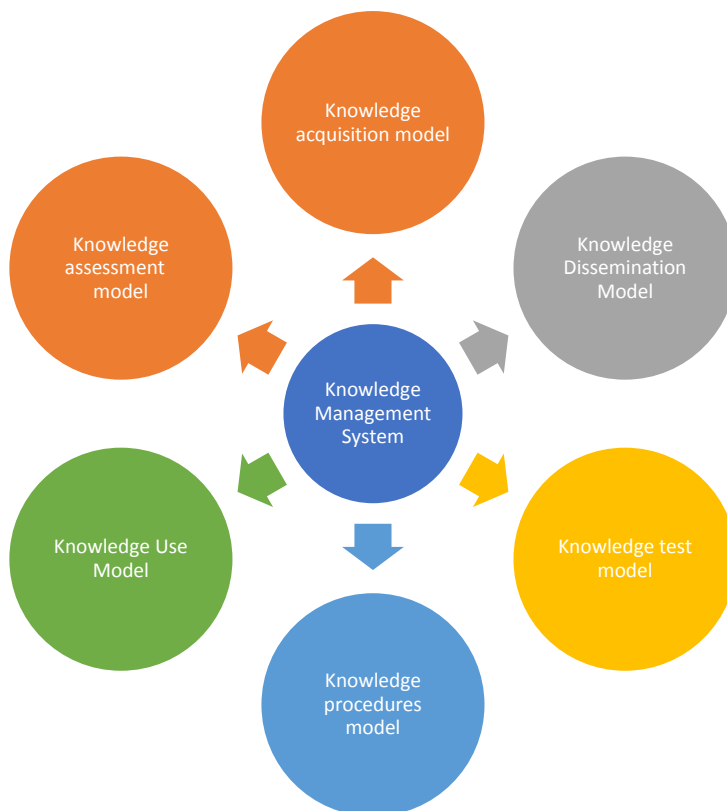


Figure5. The KMS & sub-models

4- Complementary characteristics: The proposed information technology model has complementary characteristics with the programs and applications used in the company in terms of use, storage (Figure 6) and display.



Figure 6. File type

5- User interfaces: The proposed model focuses on ease of use by (clients, partners, and employees) and accomplishes tasks quickly and effectively and meets all the end user's needs.

6- Security: The proposed information technology model stresses the important security features of developing a knowledge management system through

A- Controlling access to files

B - external access

7- Each stage has been documented with all test results and modifications that take place within the proposed IT model

In the appendix are some screens of the proposed model that was used in the Iraqi company. The model was built using (C #) language at the user level. As for the databases, (SQL) was used to manage databases and other languages according to the requirements of the programming work. The architecture (Figure. 7) of the model consists of all the important applications, devices and strategies

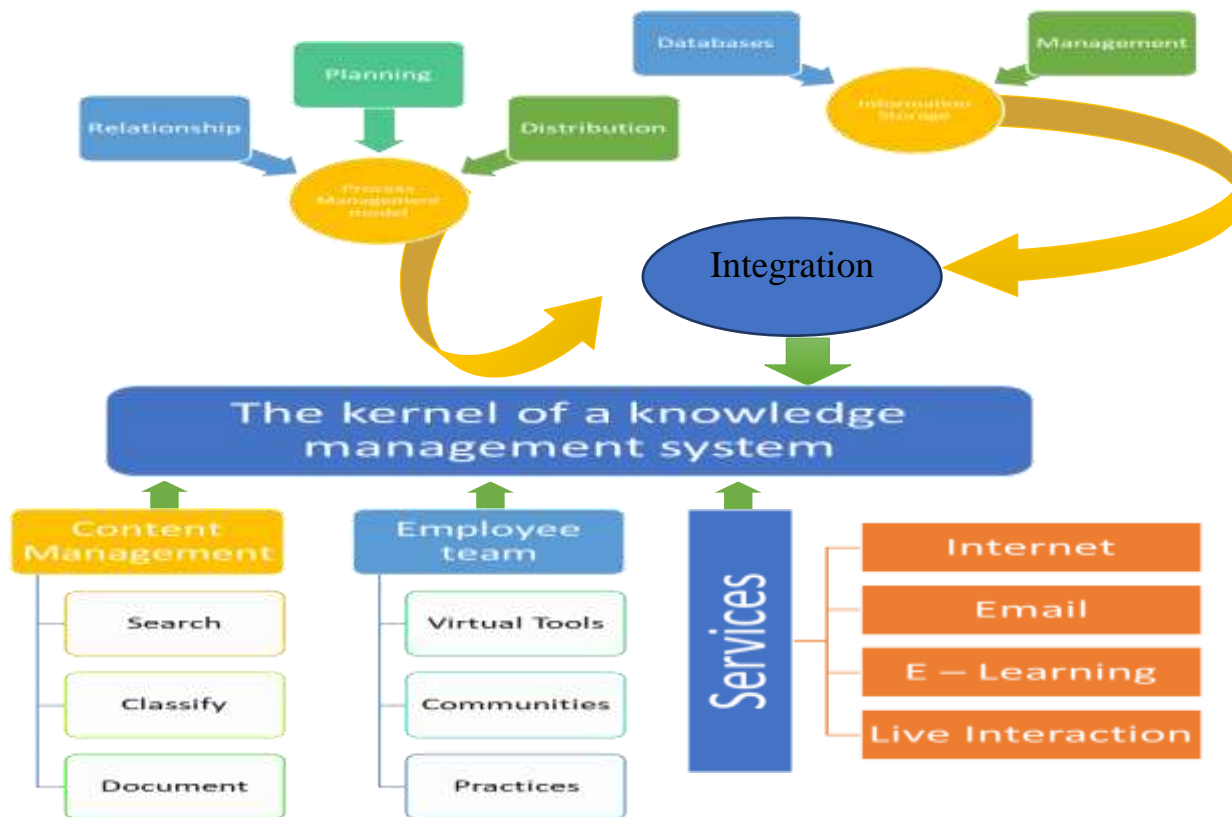


Figure7. The model architecture

3. RESULTS AND DISCUSSION

Several tests were conducted focusing on productivity (Figure 8), innovation (Figure 9) and activity (Figure 10) in the market, identifying obstacles, encouraging team work, and the opinion of employees, customers and managers regarding the proposed information technology model, as well as the changes that occurred in the company during the application of the proposed model, which lasted for six months (the third and fourth quarters of the fiscal year).

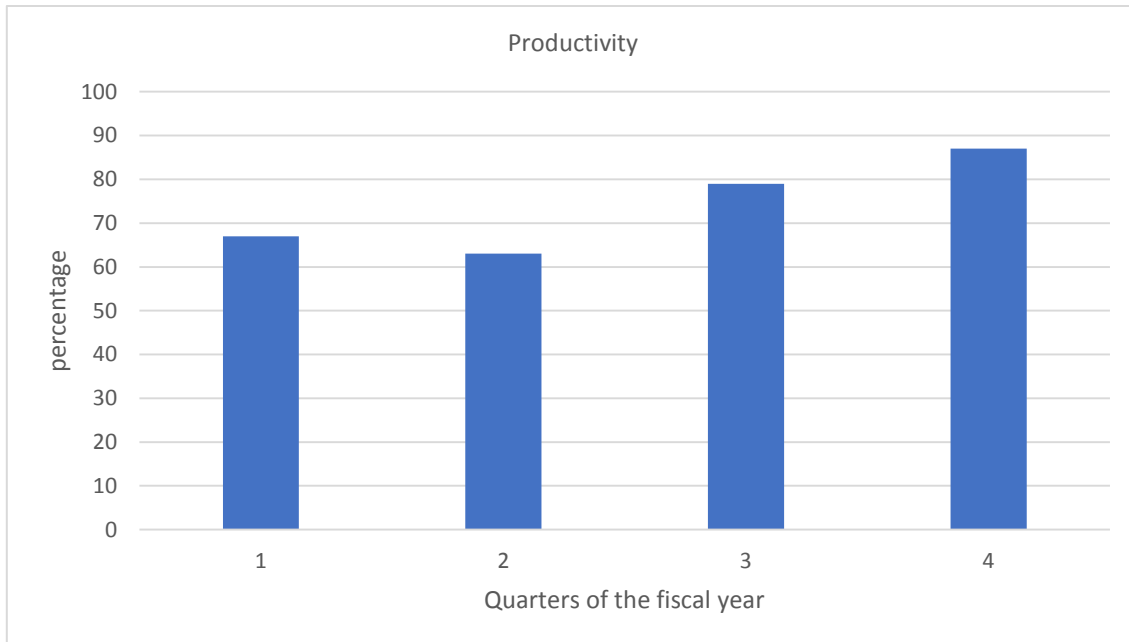


Figure 8 percentage of Productivity Bar chart

Through the productivity values, it is clear that the increase in production during the last two fiscal quarters is due to the use of the proposed model.

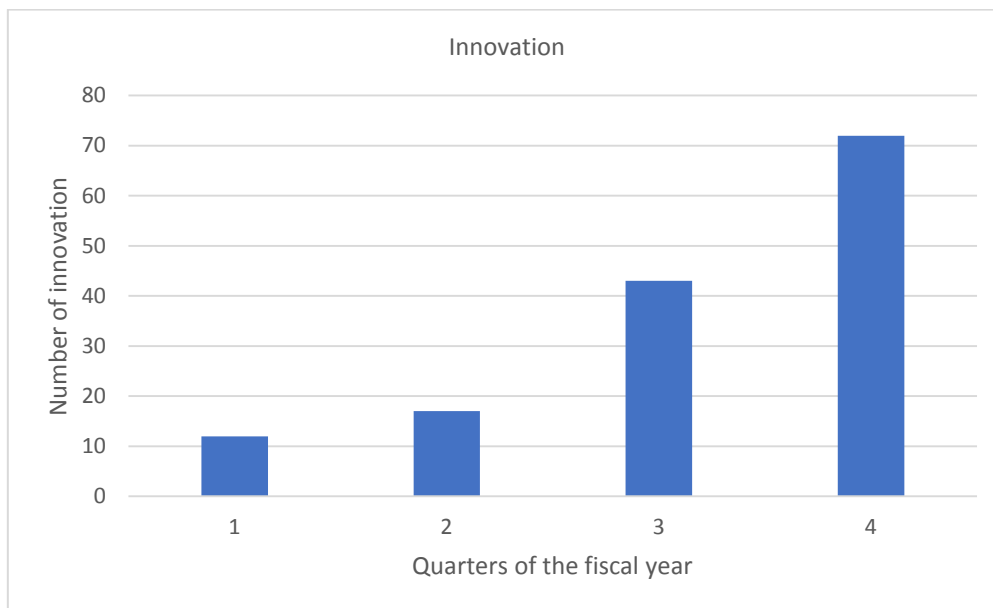


Figure 9 Number of Innovation verses fiscal years

The number of innovations increased in the last two quarters of the fiscal year, and this is evidence of the success of the proposed model by encouraging innovation

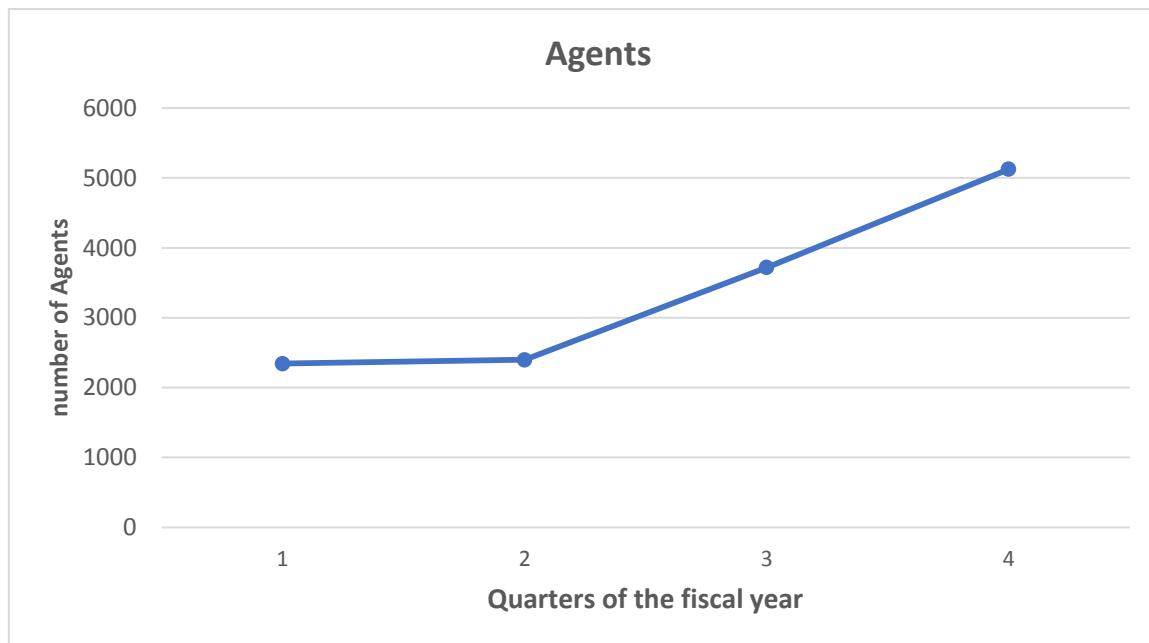


Figure10 Agents Opinion chart

The activity in the market was measured by the number of agents that increased during the end of the fiscal year. It is noticeable that the proposed model helped in this increase and made it easier for agents to contract with the company easily and meets market requirements.

Table 1: Users' opinion of the proposed model

User	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
Managers	0	0	0	3	7
Agents	23	15	1215	2382	1492
employees	2	1	200	1512	2034

The table indicates the opinions of a group of (managers, employees, and agents) (Table 1) about the proposed model and used, and the results show the positive and encouraging opinion through the evaluation of users

4. CONCLUSION

The information technology model helped to understand and develop the knowledge management system, which in turn contributes to the companies 'success in (acquiring, disseminating and using knowledge) with the possibility of applying this model to many companies. Managers and experts can focus on a subsystem suited to the knowledge development of the company. Likewise, when developing an information technology model, the return is greater in developing a knowledge management system. This model helped in knowledge processes as well as enhancing innovation and working in an integrated team and using all the necessary technologies that have the potential to develop a knowledge management system with an important and necessary feature in this model which is (integration with other systems) and it has the characteristic of security on all parts of the system with documentation.

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