

Implementation of Knowledge Management System in a Developing Country's Medical Facility: Stakeholder Viewpoints and Responses

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Abstract

The importance of Knowledge Management Systems (KMS) in contemporary organisations has been demonstrated in research and practice. However, stakeholders' viewpoints and responses on implementing such systems in a medical facility, particularly in developing countries, are less understood. This research draws on the stakeholder theory and qualitative interpretive case study to empirically examine how a medical facility in the developing country context of Ghana's implementation of a KMS is shaped by various stakeholders' viewpoints and responses.

Keywords: Knowledge Management System, Viewpoint and Responses, Developing Country, Medical Facility, Interpretive Case Study, Ghana

Introduction

Numerous complex environmental systems in healthcare settings are crucial to the efficiency of the medical staff and the care, recovery, and safety of patients. Patients' healing, satisfaction, and general well-being have been connected to the state of these systems and the physical environment. Managing Knowledge is becoming increasingly crucial in today's knowledge economy (Alsabbagh & Khalil, 2017a) (Kazak, 2021). According to (Moon et al., 2015), Knowledge is an essential resource for an organisation, such as a medical facility, to survive and develop more resilient in the information society of the twenty-first century. Further (Moon et al., 2015) and (Kothari et al., 2011) posits that "knowledge is the key strategic element for strengthening the international competitive power of organisations". Consequently, knowledge management (KM) must be successful if organisations are to operate well; only when individuals of an organisation actively share and use their Knowledge can KM promote such organisational effectiveness (Moon et al., 2015). according to (Alboliteeh et al., 2022) knowledge is a useful resource that may assist both individuals and companies. It is a cognitive framework that permits interpreting and understanding unprocessed facts and information.

Knowledge management refers to developing, sustaining, implementing, sharing, and updating Knowledge to improve corporate performance (Allee, 1997; Davenport et Gautam and Shankar, 2002; James et al., 2017). More prospects for organisational growth and success exist in more dynamic environments than in the past (Tajpour et al., 2022). According to (Dalkir, 2005), knowledge management is "the deliberate and systematic coordination of an organisation's people, technology, processes, and structure to add value through reuse and innovation." According to (Dalkir, 2005), the idea of KM connotes a systematic strategy for managing information utilisation to give a constant flow of Knowledge to the appropriate people at the right time, allowing for efficient and adequate decision-making in their day-to-day business. Knowledge management uses a systematic approach to acquiring, structuring, managing, and disseminating information for efficient and effective work performance by adopting best practices and eliminating non-value-adding activities (Nonaka & Takeuchi, 1995; Dalkir, 2005).

Over the years, research on knowledge management has focused more on knowledge sharing (Tchamyou, 2019), (Wu, 2020), (Muhammed & Zaim, 2020), the role of leadership support in the implementation of knowledge management (Alsabbagh & Khalil, 2017b), (Shamim et al., 2019), (Shamim et al., 2019) and motivation and knowledge sharing (Thomas & Gupta, 2020), (Gagné et al., 2019). However, little research exists on how knowledge management systems are implemented in a developing country medical facility. Therefore, the study's research question is: How do stakeholders' perspectives and responses impact implementing a knowledge management system?

The paper unfolds as follows: In section 2, we review the current literature on knowledge management systems in organisations and their relevance to modern organisations in the health industry of Ghana. There needs to be more research on stakeholders' perspectives on knowledge management systems. Thus, we reflect on the concepts of the stakeholder theory as a theoretical lens to investigate the influences of interested parties and how it has enhanced the efficiency of medical facilities in the developing economy of Ghana. In Section 3, we describe and justify the interpretive qualitative empirical research approach as the study's methodology and present the case findings and analysis of a knowledge management system initiative to discover the influences of interested parties.

2. Theoretical Background

2.1 Knowledge and Knowledge Management Systems

The concept of Knowledge has a wide range of extensions and rich connotations. In the academic community, there are differing views on what constitutes Knowledge. Knowledge is generally understood as awareness or understanding of anything, such as facts, events, etc., acquired by previous or present experience or any learning process (Lin, 2019). From the viewpoint of epistemology, Knowledge is the most valuable resource in an organisation which needs to be handled well. According to (Rashid et al., 2021), a strong and adaptable corporate structure that is changed in response to shifting environmental variables is the foundation for the organisation's strategies. We consider social psychology research findings and discuss how it relates to KM study and application (Rashid et al., 2021). Social psychology examines interactions between and within groups. In order to help people, make sensible decisions today, organisations must gather information with experience already present

in the minds of those affected by a variety of human behaviours.

Organisations continuously consider modern ways to remain competitive through proactive business processes and innovative ways to ensure sustainability (Chaurasia et al., 2020). According to (Handoko et al., 2015), one of the most widely used methods for gaining a competitive edge, cutting costs, and improving organisational cross-functional effectiveness and efficiency in knowledge management systems. These systems allow for the seamless integration of all information flowing through the organisation. Knowledge management systems (KMS) are becoming one of the solutions in assisting organisations in understanding the rapidly changing environments and withstanding threats while investing in opportunities. A knowledge management system is a digital store for pertinent data essential to the everyday duties carried out by organisational knowledge workers (James et al., 2017). A knowledge management system is a knowledge repository purposely built to assist all organisational members in integrating and sharing Knowledge, including managers, business analysts, developers, and quality assurance specialists (James et al., 2017). According to (James et al., 2017), "it is essential for knowledge management officials to create, update, or modify the knowledge content based on the employee's feedback, suggestions, and inputs which will help to maintain the quality of the". Employees become more productive and save time when they can access the proper Knowledge at the right time and location (Rashid et al., 2021).

According to (Rezaei et al., 2021) (and Gürlek & Tuna, 2018), the administration of knowledge management activities must be emphasised in the organisational core culture if long-term success and competitive viability are to be attained. Organisations must foster a culture where workers are encouraged to share information to achieve their individual and corporate goals. According to Rezaei et al. (2021), several factors affect the successful implementation of knowledge management. These factors include but are not limited to lack of leadership participation in knowledge management activities; organisational structure, individual culture; lack of incentives systems; low awareness of the benefits of knowledge management; unrealistic expectation of technology (Al-Kurdi et al., 2018); lack of training on the system (Al-Kurdi et al., 2018); and poor usability and design (Al-Kurdi et al., 2018).

In general, many organisations, particularly those in developing countries, require assistance with organisational structure, leadership participation in knowledge management activities, testimonies from other organisations on the advantages of knowledge management, and incentive systems. As a result, any business that wants to implement an effective knowledge management system to boost its organisational performance must have an integrated and consistent knowledge management strategy (Rezaei et al., 2021). A knowledge audit identifies what Knowledge exists in the organisation and what Knowledge is needed to move the organisation strategically. The audit identifies the expertise in the organisation, where it can be found, and how this expertise is accessed. Knowledge audit identifies what Knowledge is needed to make decisions and what knowledge assets are required for the future. Knowledge reviews are conducted to be aware of the current KM initiatives within the organisation. According to KM experts, there need to be some knowledge practices already occurring within the firm.

In contrast to other methods for KM assessment, Trnavcevic (2007, pg. 278) posits that "a KM audit is an organisation-wide assessment, aiming to assess all areas of KM processes". This is important because (1) excelling in one area of KM is insufficient for effective KMS, and (2) excelling in one area may depend on excelling in another. As a result of conducting a KM audit, an organisation can pinpoint its KM processes' inherent strengths and weaknesses and discover and transfer best practices in one part of the organisation to other parts. We contend that any attempt to establish the proper organisational context for promoting KM processes is only possible if the organisation adequately assesses the existing situation Biloslavo and Trnavcevic (2007, pg. 278). The implementation of knowledge management systems by many universities for a higher return on investment in terms of intellectual capital and innovation is inevitable. Rezaei et al. (2021, pg. 2) state that "the extent to which an organisation is capable of creating organisational values depends on its ability to create, transfer, and use knowledge, which also increases organisational competition."

2.2 Stakeholder Theory

The study's driving principle is the stakeholder theory. This theory, which emerged from corporate management, promotes considering the worries of people, groups, and communities that could have an impact on or be affected by actions made by an organisation (Flak & Rose, 2005). This study proposes Stakeholder Theory to look at stakeholder knowledge sharing while implementing a knowledge

management system. Stakeholder Theory focuses on the people factor instead of the technical factors of projects (Sathish et al., 2004). According to (Laplume et al., 2008), stakeholder theory establishes that organisations are managed in the interest of all their constituents and not only the owners. This study proposes Stakeholder Theory to look at stakeholder knowledge sharing while implementing a knowledge management system. Stakeholder Theory focuses on the people factor instead of the technical factors of projects. According to (Sathish et al., 2004), the stakeholders' theory looks at who (or what) are the stakeholders of an organisation and to whom (or what) organisations should pay attention. Implementing a knowledge management system involves a wide range of stakeholders, both inside and outside the business, all of whom have information that facilitates their roles during interactions across enterprise systems (Sathish et al., 2004). Such Knowledge consists of pertinent expertise that may be used and is at least partially derived through experience. A fundamental thesis of stakeholder-based arguments is that organisations should be managed in the interest of all their constituents, not only in the interest of shareholders. (Rajablu et al., 2014)

The Stakeholder Theory comprises three interrelated and mutually supportive elements: normative, descriptive, and instrumental (Flak, Nordheim, & Munkvold, 2006). The normative element of the theory assumes the existence of diverse stakeholder groups in the design and implementation of every information system (Pouloudi, Currie, & Whitley, 2018). The descriptive element involves defining and identifying stakeholders and demonstrating their importance towards the performance evaluation of digital infrastructures (Mitchell, Agle, & Wood, 1997). According to (Donaldson & Preston, 1995) Donaldson and Preston (1995), the instrumental aspects of theory primarily refer to efforts investigating the effectiveness of a stakeholder. Researchers study practical stakeholder management's impact on traditional corporate objectives within this Stakeholder Theory stream. Here, stakeholder management refers to an alternative approach to strategic management based on stakeholder theory's normative and descriptive elements (Flak & Rose, 2005) (Flak, Nordheim, & Munkvold, 2006). In this study, we identify the relevant stakeholder groups that were instrumental in the push to replace the hospital's manual operations with a knowledge management system.

3. Research Settings and Methodology

This study has been conducted as an interpretive qualitative single case study (Nurdin, 2021). According to (Nurdin, 2021), the interpretive study focuses on comprehending how people and technology interact in an organisational setting. The study was conducted in the developing country of Ghana. According to World Population Review, Ghana is a developing country with 32.83 million people as of 2021. Being a democratic country with numerous political parties, elections are held every four years. The growing urbanisation (which has increased demand for healthcare services) and technological improvement in building materials and medical equipment are the leading causes of the complexity increase in healthcare facilities. Hospitals are currently required to offer a more extensive range of healthcare services to a growing number of patients (Yousefli et al., 2020).

Given the study's goal, an interpretive single case study was used to determine how the perspectives and reactions of the various stakeholder groups in the procurement ecosystem influenced the development of the e-procurement platform (Nurdin, 2021). The use of an interpretive case study was motivated by the belief that perceptions of reality and Knowledge of it are social constructions between the researcher and the respondents, especially when the researcher wants to investigate a reality within a challenging real-world context. As a result, we gathered information from various sources, including interviews, observations, documents, and annual reports. This is consistent with interpretive research, where researchers might collect data from various sources (Andrade, 2014).

Interviews were conducted between November 1, 2022, and January 27, 2023. We used purposive sampling and word-of-mouth, i.e., snowballing, to identify the various stakeholder groups and interviewees. The identified interviewees represented the various stakeholder groups because they played significant roles in implementing the KMS. The interviewees included officials from stakeholders who are the primary staff at the various service points: one person from a pharmacy, one from the account's office – accounts manager, two doctors, one laboratory technician, one radiologist, one officer from the ward, and one from the records unit. The others are the head of administration, the head of the management information system, and five nursing staff who assist with diagnosis report entry. All 15 respondents were interviewed at their convenience, with sessions recorded upon gaining consent. Interviews were semi-structured and lasted between 30 and 45 minutes. Table 1 shows the stakeholder groups, interviewees and number of interviews.

Table 1: Interviews

Stakeholder Groups	Interviews	No. of Interviews
Pharmacy	Senior Pharmacist	1
Accounts Office	Accounts Manager	1
Doctors	General Practitioners	2
Radiology	Radiologist	1
Ward	Matron	1
Records	Records Manager	1
Administration	Chief Executive Officer	1
IT Department	Head of MIS Team	1
Laboratory	Senior Lab Technician	1
Nurses/ Medical assistants	Nurses	5
Total		15

Interviews were recorded, and notes were structured to have logical connections. We read the transcribed data numerous times to fully grasp the responses and how they relate to the research goal. To seek data confirmation and validation, we did iterative data analysis using interview data, data from other sources, and pertinent literature findings. According to the hermeneutics principle, interviewees were followed up with as needed to confirm any newly discovered information (Farooq, 2018). Following hermeneutics cycles (Farooq, 2018) for reliability and validity, we analyzed research findings when no new and relevant insights were found. We applied inductive coding techniques to analyze the acquired data, i.e. transcribed interviews and data from our observations, document, and media news.

Data reduction was made initially by creating a beginning point document outlining the installation of KMS using the secondary and transcribed data. To make understanding the causal relationship between significant events easier, we have organised the implementation process chronologically. We coded the transcribed data using available thematic content analysis after data reduction. We started by following the several stages of KMS implementation, paying attention to themes like stakeholder expectations and reactions. Next, we classified the anticipation and responses based on opinions and patients' satisfaction with healthcare delivery in Ghana. Here, we arranged the implementation process in chronological order to facilitate the understanding of the causal link between critical events. Following data reduction, we coded the transcribed data using open thematic content analysis. As a first step, we traced the various phases in the knowledge management system (KMS) implementation taking notice of themes such as expectations and reactions of stakeholders. The anticipation and reactions were then divided into viewpoints and responses, and we mapped them with the corresponding stakeholders. To ascertain their impacts on the implementation process, we subsequently examined the implementation's results in light of the established stakeholder opinions and reactions.

4. Case Description

4.1 Background

Throughout Ghana's history, healthcare has evolved considerably. With over 30 million people, Ghana's healthcare system attempts to offer both fundamental and specialist therapeutic services. The Ministry of Health governs healthcare institutions of public, private, or traditional ownership. The Ghana Health Service has overseen public healthcare since 1996 by implementing health regulations and enhancing accessibility. Teaching hospitals, psychiatric hospitals, regional and district hospitals, polyclinics, health centers, and community-based health planning centers are all health service facilities in Ghana. Providing healthcare services in Ghana has become very challenging due to growing urbanization, medical technology, and building materials improvement.

MEDARK Hospital (pseudonym) is a medical service provider offering primary health care and emergency medical services to corporate clients, individuals, families and private health insurance cardholders in five regions of Ghana, namely Greater Accra, Eastern, Central, Ashanti, Volta and Western. To help close the gap in readily accessible and dependable patient-centred healthcare services, MEDARK Hospital was established in the Republic of Ghana on Sunday, April 3 2001. On Tuesday, July 11 2002, it began offering outpatient services as a general and internal medicine practice, physician specialist clinic, and surgical and diagnostics Centre. One of its goals is to support ongoing initiatives to enhance Ghanaian citizens' access to comprehensive healthcare by offering services focused on preventive medicine and screening for cardiovascular risk factors and diseases like hypertension, diabetes, and hyperlipidemia, as well as to scan for precancerous and early-stage malignancies using available and approved screening tools is one of our objectives. MEDARK operates a strategy that ensures effective collaboration with affiliate medical providers.

4.2 Implementation of Knowledge Management System (Known as MEDYST)

"Due to inadequate healthcare, infrastructure, and investment, Ghana has failed to meet its sustainable development targets over the past several decades. It is against this that we at MEDARK Hospital think that implementing a knowledge management system can help save the lives of those who come to our doors seeking medical attention and alter the narrative" [Chief Executive Officer]. The healthcare industry depends heavily on Knowledge in its everyday operations to offer patients high-quality treatment. Healthcare delivery depends on the cooperation of numerous partners who should exchange Knowledge. For this reason, medical Knowledge should be made available and easily accessible to

everyone who requires it; hence, introducing a knowledge management system (KMS) known as Medyst at MEDARK hospital is paramount for knowledge exchange and collaboration to get the best possible results for the healthcare service.

"Our goal is to alter the perception of the healthcare system and provide services that are on par with worldwide standards. Wholistic diagnosis with modern equipment that ensures a paperless environment. This will ensure patients get safe, high-quality, patient-centred treatment in an advanced setting" [Chief Executive Officer]. The introduction of Medyst at MEDARK hospital became very necessary to solve several issues, including avoidance of potential knowledge loss due to employee retirement and turnover, gaining a competitive edge, continuing education, preventing information dissemination and isolation of an organisation, department, or person, as well as the need of meeting users' demands. Thus, the primary goal of this research is to investigate knowledge management implementation and the technologies used to manage Knowledge in healthcare for evidence-based decision-making and consequently enhance the quality of healthcare services.

Stakeholder discussions occurred, and the platform's vision, mission, objectives, and communication strategy were established. The implementation of Medyst has evolved since 2012. To investigate the viability of creating and implementing a knowledge management system, the Management of MEDARK Hospital hired an IT consultant (Promed Consult) in 2012. The planning and development of the strategy analysis, design, development, and implementation (PADDI) of the system ready for selection took place in 2013. After weighing the costs and advantages, management approved the feasibility study report in 2015. Thus, the following tasks were completed that year: launching a tender to choose a competent vendor for the project. Then, in 2016, there were contract talks and awarding to Promed Consult. Additionally, Promed Consult performed the first meetings with stakeholders and generated functional requirement specifications (FRS) and system requirement specifications (SRS) with them.

Infrastructure (technological) constraints, lack of employee motivation, unreliable manual systems, lack of senior management support, organisational politics, patient privacy concerns, lack of time, lack of attention to results and evidence, and lack of incentives for documentation and dissemination. In addition, lack of organisational communication, difficulty locating information, poor interface usability, and access to health IT applications limit access to modern technologies and medical research. The stakeholders' acceptance of FRS and SRS, testing for integration partners and complete system configuration, final stakeholders meeting, user acceptance test (UAT), and piloting of the Medyst System was conducted in 2018. The platform was officially launched in April, the system went live in May and phase two of the project was launched in October 2018. *"The new information system has improved our organisational performance and workflow by assisting us in managing organisational knowledge and empowering people to use it more effectively in their daily tasks"*. [Resident Doctor]

KMS/Medyst helps decision-making by offering a variety of tactics and tools to produce, represent, and disseminate information that people can use. KMS/Medyst reduce necessary expenses by providing recommendation, automatic provision of decision support, integration with charting or order entry systems, justification of decision support via research evidence for EBMP, user involvement in the development process, and provision of recommendation. *"The expected benefits of implementing Medyst include using its Clinical Decision Support (CDS) functionality. CDS are tools that selectively provide relevant information based on the circumstance but require human interpretation. Info button is an information retrieval tool that aids doctors in the search and retrieval of Knowledge and is being incorporated into the Electronic Health Record (HER) system"* [Head of MIS Team]. When provided at the point of treatment and supported by an EHR system, these tools can dramatically enhance the quality and safety of healthcare.

Another functionality that Medyst provides is the electronic health record (EHR), which focuses on facilitating and enhancing both individual and public health. Health officials are becoming increasingly interested in information systems because of their capacity to capture Knowledge to ensure public health preparedness, manage information more effectively, allow public health workers to collaborate virtually, and boost resource use efficiency. It is important to be aware of the role EHR systems play in integrating clinical and public health data systems so that public health authorities may use trustworthy real-time data to support health policy decisions for better and safer treatment. *"The Medyst system also provides a practical and efficient platform for information exchange amongst key stakeholders, including the public and health professionals. The demand for making healthcare decisions based on the best available evidence is always growing, so it is not a choice but necessary to distribute information at the*

appropriate moment" [Records Manager].

4.3 Analysis of the Interviews

The analysis of the interviews conducted for the implementation of a Knowledge Management System (KMS) involved:

- a) Transcription: The interviews conducted with stakeholders were manually transcribed into a written format.
- b) Data coding: After transcription, the data was coded to identify key themes, ideas, and concepts. The key themes, concepts, and categories that emerged from the interviews included:
 - i. *Awareness and understanding of KMS*: by this theme stakeholders' knowledge of KMS, their understanding of its benefits, and the level of awareness of how it can improve the medical facility's operations were realized.
 - ii. *Leadership and organizational support*: This theme confirmed how the organization's leadership supports the implementation of KMS and how they communicate the benefits to stakeholders.
 - iii. *User involvement*: This category focused on how the users, such as medical professionals, perceived KMS and their involvement in its development and implementation.
 - iv. *Training and capacity building*: This theme explored how training and capacity building initiatives were designed and implemented to ensure stakeholders have the necessary skills and knowledge to use KMS effectively.
 - v. *Technical and logistical concerns*: This category focused on technical concerns, such as the functionality and usability of KMS, as well as logistical concerns, such as the availability and accessibility of KMS.
 - vi. *Culture and resistance to change*: This theme explored the organizational culture and the level of resistance to the new system among stakeholders and how it impacted the implementation of the KMS.
 - vii. *Benefits and outcomes*: This theme focused on the benefits of KMS, such as improved efficiency and effectiveness, as well as the potential outcomes for the organization and its stakeholders.
- c) Stakeholder viewpoints and responses: Based on the data analysis, stakeholders' viewpoints and responses were identified.
- d) Synthesis of findings: Finally, the conclusions of the analysis were synthesized into a report that summarized the key themes and perspectives identified from the interviews. The information provided recommendations for addressing the challenges and concerns raised by stakeholders and identified potential strategies for a successful KMS implementation in the medical facility.

5. Analysis of Findings

The research question that motivated this study concerns how stakeholders' perspectives and responses impact the implementation of a knowledge management system. The case study results bring up several intriguing topics for investigation and debate. This part, however, focuses on the initial perspectives or expectations of stakeholder groups, the consequences of viewpoints, the essential concerns presented as answers to the outcomes, and their impacts on the knowledge management system following the study question and the analytical lens of stakeholder theory.

The research shows that although some of the stakeholder groups' original goals were met throughout the KMS's deployment, others weren't. The perspectives that were adopted and those that weren't were also affected by a number of things.

5.1. Implemented Viewpoints, Responses and Discussions

The hospital is often a vital part of its community, and any changes to its operations can significantly impact the community. A knowledge management system can help hospital staff share best practices and Knowledge with other healthcare organisations, leading to better healthcare outcomes in the community. However, the district may also have concerns about the potential for job loss or decreased

quality of care provided.

From the perspective of the medical staff, a KMS can facilitate collaboration and knowledge sharing between departments, leading to better patient outcomes. Medical staff may be more likely to embrace KMS if it is designed to be user-friendly and efficient. However, they may also be concerned about the workload associated with inputting and managing data. However, employees may also have concerns about job security, changes in their work processes and the need to learn new skills.

From the hospital management perspective, a KMS can improve organisational performance by facilitating decision-making, enhancing productivity, and reducing costs. Management may view the system as a strategic investment to improve the hospital's competitive position. However, they may also be concerned about the initial implementation cost and potential staff resistance.

From the shareholders' perspective, a KMS can improve profitability by increasing efficiency and reducing costs. Shareholders may view the system as a worthwhile investment to increase the hospital's long-term value. However, they may also be concerned about the short-term financial impact of the implementation.

Responses: Patient privacy and security must be priorities when implementing a KMS. At Medark Hospital, patients are the hospital's primary focus, and any changes made to its operations can significantly impact its operations. A KMS can help healthcare professionals access patient data more efficiently, leading to better diagnosis and treatment. However, patients may also be concerned about their personal information's privacy and security. Strict protocols and control should be implemented to ensure that patient information is only accessible by authorised personnel. Patients should also be informed about how their data is being used and can opt-out.

Furthermore, suppliers ensure hospitals have the necessary equipment and supplies to provide quality healthcare. A KMS can help the hospital staff better manage inventory levels, and order supplies more efficiently. However, suppliers may also be concerned about the system's impact on their business.

Implementing a KMS at Medark Hospital has brought significant implications for different stakeholders. In responding to these different viewpoints and concerns, it is essential to engage with stakeholders throughout the implementation process, listen to their feedback and address their concerns. By taking a stakeholder-oriented approach, it is possible to address the concerns and perspectives of each group and develop a system that maximises the benefits for all parties involved. This was made possible by developing policies and procedures for data privacy and security, providing training and support for staff, and communicating the system's benefits to parents and the community. Taking

6. Conclusion and Implications

Implementing the KMS was a success, and Medark Hospital has since seen significant benefits from the system. The KMS has helped to promote a culture of knowledge sharing and collaboration, leading to productivity and efficiency. The case study highlights the importance of identifying an organisation's specific needs and customising the KMS to meet those needs. It also underscores the successful adoption of the system.

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