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The Implications of Human Resources Management and Organizational Culture Adoption on Knowledge Management Practices in Nigerian Oil and Gas Industry

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ABSTRACT

This study attempted to explore how organizational culture influence knowledge management practices through human resource management practices. Using case study method, we examined the cultural values and knowledge management approach within Nigeria oil and gas industry. Initial research on organizational values and knowledge management suggested that Organizational values are important to facilitate effective knowledge sharing practices among firm members. Our study shed light on the important role of knowledge management leaders and the role of top management in legitimizing and empowering the staff. The study in addition shows how organizational innovation has become an essential weapon for organizations to compete in this competitive business environment. The statistical results obtained in this study showed that human resource management has a significant positive impact on organizational innovation and that knowledge management effectiveness has a mediation effect on relationship between human resource management practices and organizational innovation. The results of this study offer several suggestions on how to focus on training programs. That employees undertaking the training programs should apply the knowledge acquired for product, process an administrative innovativeness. Our empirical findings provided several important managerial implications. Those managers should strive to improve product, process and administrative innovations by providing adequate training programs. Nonetheless, the study encountered some limitations. Our data was cross sectional which constrains our ability to make causal inferences. We suggested that future research in this area might be expanded to other sectors in order to generalize the results reported in this study. Finally, we recommended that, top management of the Nigeria oil and gas industry should encourage employees to acquire, share and apply their knowledge in order to achieve the objectives set by the organization.

INTRODUCTION

Knowledge management to facilitate the creation, storage, transfer and application of knowledge in organizations have perceived wide attention in practice and research in the past several years. It has been argued that the success of today's business increasingly depends on their intellectual assets as opposed to their tangible resources. Among other things, these assets include attitude, knowledge and skills of the workforce, according to American Society for Training and Development (ASTD), these assets are known as competencies. They are areas of personal capability that enable people to perform successfully to their jobs by achieving outcomes or

completing tasks effectively. Drucker (2001) emphasizes that every organization needs one core competence, innovation further stresses that every organization needs a way to record and appraise its innovative performance.

Mohanty (2006) outlined that for an economy, or a nation to achieve preeminent position and superior status, it has to pioneer the culture of innovation. In a rapidly changing market, the only way to do either is to innovate effectively.

The knowledge based view of the firm suggests that intellectual resources are key organizational assets that enable sustainable competitive advantage (Teece, 2003). Teece noted that any organization(s) that are able to effectively manage these knowledge resources are expected to reap benefits such as improved customer service, reduced costs in people and infrastructure, better decision-making, innovation, improved corporate agility, rapid development of new product lines and efficient transfer of best practices.

Contemporary literature provides numerous examples of knowledge management success stories, organizations seeking to engage in such efforts also face a variety of challenges among the most difficult of these challenges is organizational culture. Janz and Prasarnphanich (2003) noted that organizational culture is believed to be the most significant input to effective knowledge management and organizational learning. Increased realization of knowledge as the core competence coupled with recent advances in information technology has increased organizational interest in the topics of knowledge management, human resources management and organizational culture. Following Churchman (1971), such topics are best suited for:

Well-structured problem situations for which there exists strong consensual position on the nature of the problem situation.

- Facilitating and managing organizational innovation and learning.
- Leveraging the expertise of people across the organization
- Increasing network connectivity between employees and external groups with the objective of improving information flow.

Many large organizations have resources dedicated to knowledge management, of ten as a part of information technology, human resource management or business strategy. Knowledge management is linked and related to what has become known as the learning organization, lifelong learning and continuous improvement. Hence, the emergence of knowledge management has generated new roles and responsibilities in organizations. The emergence has created an increasing presence of academic debates within epistemology emerging in both the theory and practice of knowledge management.

Studies have shown that organizations that foster strong cultures have clear values that give employees a reason to embrace the culture. A strong culture may be especially beneficial to firms operating in the service sector since members of these organizations are responsible for delivering the services and for promoting consistency and encouraging co-ordination and control within the organization. Where culture is strong, people do things because they believe it is the right thing to do.

In this study, we propose a construct for measuring the influence of organizational culture for fostering the adoption of knowledge management as a competence of an individual, ability to generate ideas, ownership to the organization and decision making competencies.

Objectives of the Study

The main objective of this study is to explore the relationship between organizational culture, human resources management practices and knowledge management effectiveness in the Nigeria oil and gas industry. Other specific objective include to provide knowledge access across a global organization.

Research Questions

More specifically, we seek to address the following questions:

- How do the organizational values influence the use and outcomes of the use of knowledge management tools?
- How to shape employee behaviour at work?
- How to increase team cohesiveness among the industry's various departments and divisions?
- How to better align the industry towards achieving its vision, mission and goals?

Statement of Hypotheses

This study sought to examine the indirect relationship between organizational culture and organizational innovation through knowledge-management effectiveness. Therefore, we hypothesized that:

- H₁:** Knowledge management effectiveness mediates the relationship between organizational culture and product innovation.
- H₂:** Knowledge management effectiveness mediates the relationship between organization culture and process innovation.
- H₃:** Knowledge management effectiveness mediates the relationship between organizational culture and administrative innovation.

REVIEW OF RELATED LITERATURE

The studies on knowledge-management, human resources management practices and organizational culture have validated the importance of cultural values for firm's knowledge management initiatives and provided insights into some important issues. The studies focuses almost exclusively on the processes of knowledge sharing and creation. Other processes such as knowledge seeking and use, the employment of tools to support knowledge-management and the outcomes of knowledge management have yet to be carefully examined. The studies have led us to expect that within a given firm, numerous values might exist simultaneously, attributable to both local as well as organization wide cultures. These cultural differences might influence value preference related to knowledge and its applications and use in their respective settings.

Growing interest in knowledge management stems from the realization that in the knowledge era, organizational knowledge is a strategic corporate asset that needs to be garnered, retained, updated, disseminated and applied to future organizational problems (Drucker, 1994, Stewart 1997). The term knowledge management is referred to the practices, implicit or explicit used by firm to acquire new knowledge and to re-arrange and diffuse existing knowledge within the firm. According to Malhotra (1998) define knowledge management in the following terms:

Knowledge management caters to the critical issues of organizational adoption survival and competence in face of increasingly discontinuous environmental change.

Malhotra noted that knowledge management essentially embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies and the creative and innovative capacity of human beings.

Nonaka and Takauchi (1995) suggested that knowledge is created through the interaction between tacit and explicit knowledge through four different modes. These modes include socialization, which involves conversion from tacit knowledge to tacit knowledge second, externalization, which involves conversion from tacit to explicit knowledge. Third, combination which involves conversion from explicit to explicit knowledge and finally, international, which involves conversion from explicit knowledge to tacit knowledge (Churchman, 1971), clearly explicated that knowledge does not reside in the collection of information and hence underscore the importance of humans in the process of knowledge creation. Churchman's emphasize on the human nature of knowledge creation seems more pertinent given the increasingly "wicked" environment characterized by discontinuous change. A review of churchman's inquiry systems in context of the extent thinking on knowledge management underscores the limitations of the dominant model of inquiry systems used by today's organizations.

In addition, several methods have been used to classify organizational culture, while there is no single type of organizational culture and organizational culture vary widely from one organization to the next. Schein (2005) defined organizational culture as:

"A pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration that has worked well enough to be considered valid and therefore to be taught to new members".

Schein (2005) posited that culture is the most difficult attribute to successfully achieve by many organizations, Schein organizational model illuminates culture from the standpoint of three cognitive levels of organizational culture.

Cooke and Lafferty (1987) came up with the concept of organization culture inventory define culture as the behaviors that members believe are required to fit in and meet expectations within their organization. According to Cooke and Lafferty, organizational culture inventory, measures twelve behavior of norms that are grouped into three general types of culture:

- Constructive cultures, in which members are encouraged to interact with people and approach tasks in way that help them meet their higher satisfaction needs.

- Passive/defensive cultures, in which members believe they need to interact with others in ways that might not threaten their own security.
- Aggressive/defensive culture, in which members are expected to approach tasks in forceful ways to protect their status and security.

From the above, organizational culture is reflected in the way people perform tasks, set objectives and administer the necessary resources to achieve set objectives. Culture affects, the way individuals make decisions, feel and act in response to the opportunities and threats affecting the organizations.

Writers from critical management studies have expressed skepticism about the functionalist and unitarist views of culture put forward by mainstream management thinkers. They pointed out the ways in which culture can stifle dissent and reproduce management propaganda and ideology.

In other words, the organizational communication perspective on culture look at culture in three areas:

- Traditionalism; views culture through objective things such as stores, rituals and symbols.
- Interpretivism, views culture through a network of shared meanings (organization members sharing subjective meanings).
- Critical interpretivism, views culture through a network of shared meanings as well as the powers struggles created by a similar network of competing meanings.

In this study, we have chosen to conceptualize organizational culture in terms of values with several reasons. First, values are more easily studied than basic assumptions that are invisible, whereas artifacts are hard to decipher.

Second, the majority of prior theoretical work aimed at exploring the linkage between culture and social group behaviors and actions. Prior studies examining organizational culture influence on knowledge management have done so using a value-based conceptualization of culture. It is our intention to build upon this prior studies by exploring further the relationship between organizational culture and knowledge management practices.

Studies on organizational culture and knowledge management suggest that organizational cultures are important to facilitate effective knowledge sharing practices among firms members (Barrett, Cappleman, Shoib, & Walsham, 2004; Davenport, De Long, & Beers, 1998; Janz & Prasarnphanich 2003).

Jarvenpea and Staples (2001) study of university personnel shows that shared organizational cultures influence individual's perception of ownership of knowledge and subsequent tendencies to share knowledge with others. Their study concluded that a propensity to share and perceive organizational ownership of information leads to greater use of collaborate media to share information.

Lee and Cole (2003) found that the culture of the extended Linux community was important in regulating the norm of open sharing, in addition to providing quality control mechanism. They

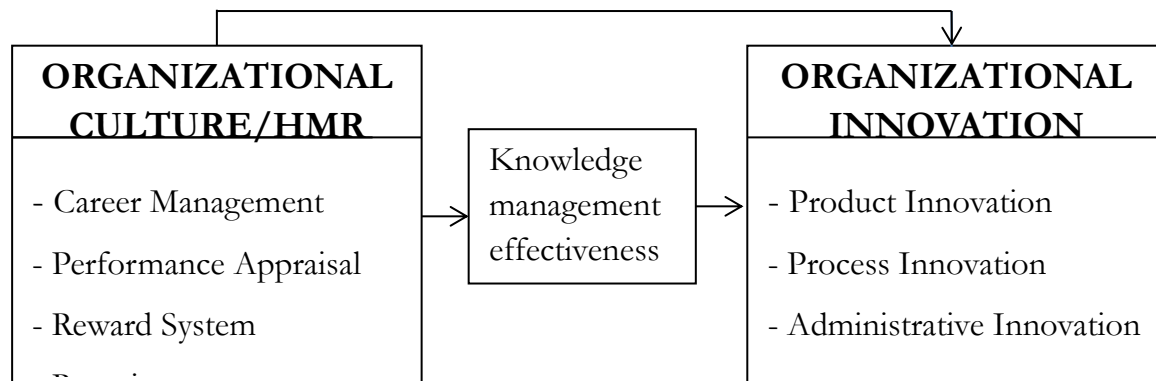
found that culture act as a social control mechanism to manage community members and to sanction those who deviated from norms.

To achieve the above stated conceptual framework is through effective human resource management (HRM) practices. This study examine the direct relationships between HRM practices (performance appraisal, career management, training, reward system and recruitment and organizational innovation (product, process and administrative innovations. In addition, examine the mediating role of knowledge management effectiveness on the direct relationship. Human resource management practices have been defined as a system that attracts, develops, motivates and retains employees to ensure the effective implementation and the survival of the organization and its members (Schuler & Jackson, 1987). Besides, HRM practices is also conceptualized as a set of internally consistent policies and practices designed and implemented to ensure that a firm's human capital contribute to the achievement of its business objectives (Delery & Doty, 1996), likewise, Minbaeva (2005) viewed HRM practices a set of practices used by organization to manage human resources through facilitating the development of competences that are firm specific, produce complex social relation and generate organization knowledge to sustain competitive advantage. Against this backdrop, we conclude that HRM practices relate to specific practices, formal policies, and philosophies that are designed to attract, develop, motivate and retain employees who ensure the effective functioning and survival of the organization.

RESEARCH METHODOLOGY

The context of this study is the implementation of knowledge management system in the Nigeria oil and Gas Industry. Data for the study were collected from questionnaires completed by the employees of the oil and gas industry in Nigeria.

In addition, we adopted a case study approach to explore our research questions. Case research was useful and we took a positive approach which implies that we assume a priori that there were discoverable relationships between organizational culture and knowledge management behavior and outcomes. We began our inquiry at a broad level of analysis and seek to analyze the case data in such a way as to provide insights into the more specific nature of the relationship between organizational culture value, human resources management practices and knowledge management. Based on this, the following research framework was adopted.



Source: Adopted from Gupta and Singhai (1993)

- i. **Organization Culture/HRM practices:** Sparrow, Schuler, & Jackson (1994) posited that the world is becoming more competitive and unstable than ever before, that most organizations are seeking our ways to gain competitive advantage at all cost and are turning to more innovative sources. A review of the literature demonstrated five common practices that have been consistently associated with organizational culture/HRM, which include career management, reward system, training and development and recruitment (Gupta & Singhai, 1993).
- ii. **Knowledge Management Effectiveness:** Knowledge management (KM) has been broadly defined from many perspectives Wig (1997) viewed knowledge management as a set of activities that lead on organization in acquiring knowledge both internally and externally. According to Salibury (2003), knowledge management is defined as the deployment of a comprehensive system that enhances the growth of an organizations knowledge. In an effort to expand the knowledge management discipline, KM deals with management functions that encompass the creation of knowledge within the organization and usage of knowledge is an effective and efficient manner for the long-term benefit of the organization. Hence, knowledge management effectiveness is regarded as the management discipline, which focuses on the development and usage of knowledge to support the achievement of strategic organizational objectives.
It is noted that organizations that effectively manage their knowledge within organization might have higher organization innovation in turn to achieve breakthrough competitive advantage.
- iii. **Organizational Innovation:** Organizational Innovation is defined as the creation of new idea and new behavior to organization (Damanpor & Gopalakrishnan, 2001). Fundamentally, there are two distinctive types of organizational innovation, namely technological and administrative innovations. Li, Tasi, and Chuang (2005) categorized technological innovation into secondary dimensions, product and process innovations, product innovation is defined as the development and commercialization of new product to create value and meet the needs of the external user, while process innovation is viewed as a creation of new process or improvement to existing process. It involves the implementation of a new significantly improved production or delivery method which includes changes in techniques, equipment.

On the other hand, administrative innovation is viewed as performance derived from the changes to organizational structure and administrative process, reward and information system. It encompasses basic work activities within the organization which is directly related to management. It is considered as the pivotal sources of competitive advantage.

Population/Sample Size Determination

The population of the study was derived from the staff strength of the Nigeria Oil and Gas Industry located at the oil region of Port-Harcourt, Nigeria. As of 2010, the staff strength of the industry was recorded as ten thousand staff (10,000).

The sample size for the study was determined using the following formula:

$$n = N = \frac{385}{1 + N(e)^2}$$

Where: n = sample size
N = population
E = margin of error (0.05)

Three hundred and eighty-five questionnaire were distributed to the respondents, overall, three hundred and fifty usable questionnaires were returned and analyzed, representing a response rate of 90.9 percent.

Methods of Analysis

In this study, organizational innovation were measured using 15 items that included product innovation (5 items), process innovation (5 items) and administrative innovation (5 items). The items were adopted from Zhang (2006) and Chew (2000). Knowledge management effectiveness also comprised of 15 items adopted from Zheng (2005). The response format was based on a five point Likert scale ranging from (1) strongly disagree to (5) strongly agree. The hypothesis were tested using hierarchical regression. According to previous studies, organization innovation was influenced by firm size and years in operation (Akgün, Keshin, Byrne, & Aren, 2007). For this reason, these two variables were controlled in the regression analysis. Reliability coefficients of the study variables were as follows:

Career management (0.91), training and development (0.89), performance appraisal (0.87) reward system (0.89), process innovation (0.88) and administrative innovation (0.85). these values exceeded Salisbury (2003) acceptable level of 0.60

Hypotheses Testing

A two-step hierarchical regression was conducted to test the hypotheses. Two variables (firm size and years in operation) were entered in step 1.

In step 2, the five HRM practices variables (performance appraisal, career management, training, reward system and recruitment) were entered. The results of the regression analysis between HRM practices and organizational innovation (product, process and administrative innovations) are shown in the table below:

	Product Innovations	Process Innovation	Administrative			
Predictors	Model I std β	Model 2 Std β	Model I std β	Model 2 Std β	Model I std β	Model 2 Std β
Step 1 Control Variable						
Firm size	- 0.11	-0.06	-0.10	-0.08	0.04	0.04
Years in operation	0.08	0.01	-0.01	-0.04	0.5	0.03
Step 2 HRM Practices						
Performance Appraisal		0.16		0.07		0.22 ^x
Career Management		0.14		0.18		0.15
Training		0.35 ^{xx}		0.27 ^{xx}		0.32 ^{xx}
Reward System		-0.27 ^{xx}		0.02		-0.02
Recruitment		-0.03		-0.23 ^{xx}		-0.07
R ²	0.03	0.4	0.02	0.18	0.01	0.33
Adjusted R ²	0.02	0.18	0.02	0.16	-0.01	0.29
F-value	1.86	4.82 ^{xx}	1.09	4.73 ^{xx}	0.47	6.84 ^{xx}

P^{xx}< 0.01; P^x< 0.05

Table 1: Results of Regression Analysis.

In this study, both the central variables (firm size and years in operation) have no effects on product innovation ($R^2=0.03$), process innovation ($R^2=0.02$) and administrative innovation ($R^2=0.01$). On adding the HRM practices variables, R^2 of product innovation increased to 0.04, indicating that the five dimensions of HRM practices contributed an additional 17.0 percent to the variance in product innovation. On the other hand, the R^2 of process innovation increased to 0.18, projecting that the five dimensions of HRM practices contributed an additional 17.0 percent of the variance in process innovation, the R^2 of administrative innovation indicates a steep increase to 0.33, showing that the five dimensions of HRM practices contributed 21 percent to the variance in administrative innovation.

The F-value of product innovation (4.82), process innovation (4.73) as well as administrative innovation (6.84) was significant ($P<0.01$), of the five dimensions of HRM practices, only training was found to be positively and significantly related to product innovation ($\beta=0.35$, $P<0.01$) process innovation ($\beta=0.25$, $P<0.01$) and administrative innovation ($\beta=0.32$, $P<0.01$).

Performance appraisal was also found to be positively and significantly related to administrative innovation ($\beta=0.22$, $P<0.05$), process innovation ($\beta=0.27$, $P<0.05$) and administrative innovation ($\beta=0.32$, $P<0.05$). Performance appraisal was also found to be positively and significantly related to administrative innovation ($\beta=0.22$, $P<0.05$).

Career management, reward system and recruitment had no relationship with product, innovation, process innovation and also administrative innovation.

The above results show the effect of HRM practices on organizational innovation (product innovation, process innovation and administrative innovation).

Predictors	Knowledge Management Effectiveness steel β	Product Innovation without KME* std β	Product Innovation with KME* std β
Training	0.34 ^{xx}	0.32 ^{xx}	0.21 ^{xx}
KME	-	-	0.33
R ²	0.75	0.19	0.23
Adjusted R ²	0.74	0.15	0.18
E – value	69.5 ^{xx}	4.83 ^{xx}	5.73 ^{xx}
P ^{xx} < 0.01; P ^x < 0.05		<i>*Knowledge management effectiveness</i>	

Table 2: Mediation Test of Knowledge Management Effectiveness on Relationship between HRM Practices and Organizational Innovation.

Table 2, above, summarizes the results of the mediation effects of knowledge management effectiveness on the relationship between HRM practices and organizational innovation. As shown in table 2, the effect of training on product innovation was significant without knowledge management effectiveness ($\beta=0.32$, $P<0.01$) and also with knowledge management effectiveness ($\beta=0.21$, $P<0.01$) from the results, the Beta value decreased in the presence of knowledge management effectiveness. This result indicated partial mediation. In other words, training has an indirect effect on product innovation through knowledge management effectiveness.

Table 3, below, summarizes the mediation test of knowledge management effectiveness on the relationship between the HRM practices and process innovation.

Predictors	Knowledge Management Effectiveness steel β	Product Innovation without KME* std β	Product Innovation within KME* std β
Training	0.37 ^{xx}	0.26 ^{xx}	0.03
KME	-	-	0.52 ^{xx}
R ²	0.74	0.17	0.27
Adjusted R ²	0.73	0.13	0.24
F–value	68.32 ^{xx}	4.72 ^{xx}	7.38 ^{xx}
P ^{xx} < 0.01; P ^x < 0.05		<i>*Knowledge management effectiveness</i>	

Table 3: Mediation Test of Knowledge Management Effectiveness on Relationship between HRM Practices and Process Innovation.

Table 3 above summarizes the results of the mediation test of knowledge management effectiveness on the relationship between HRM practices and process innovation. From the results, the effect of training on process innovation ($\beta=0.26$, $P<0.01$) became insignificant in the presence of knowledge management effectiveness ($\beta=0.03$ $P>0.05$), thereby implying full

mediation. In other words, training has an indirect effect on process innovation through knowledge management, effectiveness. Hence, the alternative hypothesis is supported.

Finally, Table 4 summarizes the mediation test of knowledge management effectiveness on the relationship between HRM practices and administrative innovation

In this analysis, we observed that the effect of performance appraisal ($\beta=0.19$ $P<0.01$) became insignificant with the presence of knowledge management effectiveness ($\beta=0.10$, $P<0.05$), thereby implying full mediation. In addition, the effect of training ($\beta=0.28$, $P<0.01$) on administrative innovation became insignificant in the presence of knowledge management effectiveness ($\beta=0.08$, $P<0.05$) implying full mediation.

The results indicated that both training and performance appraisal have indirect effect on administrative innovation through knowledge management effectiveness. Therefore, the alternative hypothesis is supported.

Predictors	Knowledge Management Effectiveness steel (KME) steel β	Product Innovation (without KME) std β	Administrative Innovation (with KME) std β
Performance Appraisal	0.13 ^{xx}	0.19 ^{xx}	0.10
Training	0.36 ^{xx}	0.28	0.08
KME	-	-	0.48 ^{xx}
R ²	0.74	0.29	0.38
Adjusted R ²	0.73	0.24	0.35
F – value	68.43 ^{xx}	8.46 ^{xx}	13.75 ^{xx}
P ^{xx} < 0.01; P ^x < 0.05		<i>*Knowledge management effectiveness</i>	

Table 4: Mediation Test of Knowledge Management Effectiveness on Relationship between HRM Practices and Administrative Innovation.

CONCLUSION

Our empirical findings provide several important managerial implications, the results shows that the circumstances are rapidly changing and continuous renewal of competitive advantages are needed for rapid development of new capacities at the innovation is critical to survive under these new circumstances.

In many organizations, knowledge management has created its place in one of the most top investment priorities. It is generally recognized that knowledge management effectiveness is positively associated with the intellectual capital of the organization which consequently affects financial achievement and the innovation itself.

In spite of the interesting implications, this study has several limitations, first, this study was the snapshot research that did not consider the feedback effects. Second, we surveyed the individual in the organization, though we tried to avoid response bias through careful questionnaire design, we were not totally free from such bias. The results from this study were limited to Nigeria oil

and gas industry located in Port-Harcourt, Nigeria our data was cross-sectionals which constraints our ability to make causal inferences. The findings obtained may not generalized to other samples across other regions. Future research could be duplicated with larger samples from different regions within the same industry, which would improve the generality of the findings. Moreover, future research in this area may be expanded to other service sectors in order to generalize the results reported here.

RECOMMENDATIONS

In looking over the results and the questions raised in this study, we have several recommendations for future work in this area. We hope that some future researchers might be inspired by this study to explore more, thoroughly the cross-country comparison of the firm-level innovative process using a common framework to determine the dynamics of the model linkages and apply the model to different sectors and sizes of the organizations. Hence, we recommend that:

1. It is essential that the management the Nigeria oil and gas industry provide good performance appraisal, to their employees. Fair performance appraisal reinforces employee motivation, leading to increase in administrative innovation.
2. Management of the Nigeria oil and gas industry should encourage employees to acquire, share and apply their knowledge in order to achieve the objectives set by the organization.
3. Management should establish a suitable framework to enable knowledge to be shared and transferred from the organization to an individual, from an individual than individual and from an individual back to the organization.

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