

# Knowledge Management Processes and Academic Performance in Iraqi HEIs: An Empirical Investigation

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## Abstract

This study examines the relationship between the processes of Knowledge Management (KM) and educational organization outcome in respect to academic performance. The study is based on a survey design and cross-sectional. The survey was conducted on 41 quality improvement-adoption colleges in Iraqi higher-education institutions (HEIs). The study hypotheses were tested through correlation and regression analyses. The results supported the main hypotheses for the study, suggesting that Iraqi HEIs can benefit from KM processes. Pearson's correlation pointed out that all processes of KM have significant correlations with academic performance measures. Regression analysis showed significantly positive relationships. In addition, statistical analysis also indicated that the KM processes should be implemented collectively rather than separately. In conclusion, this study provided insight and further understanding of the effect of KM processes on academic performance, and therefore, allows decision-makers to get in-depth knowledge about the impact of KM processes in Iraqi HEIs context.

**Keywords:** KM, academic performance, Iraqi HEIs.

## 1. Introduction

Throughout the world, organizations are facing a universal challenge consequentially from rapid changes in a new knowledge economy. Hence, organizations need to improve their activities in order to gain sustainable competitive advantages. Many organizations accept KM as a

management paradigm worldwide in order to cope with the changing expectations of the organization (Safa, Shakir, & Boon, 2006; Yeh & Ta, 2005). Like other sectors, educational sector is also affected by the rapid changes in the business environment. According to Amin (2006), profound changes resulting from the emerging competitive business environment have made HEIs and universities to think the same way like business organizations. Meanwhile, educational markets are becoming global. Based on this fact, ability to compete and stay in business under such a condition depends largely on how the changes and improvement are managed by academic institutions.

In our modern world popularly referred to as the information age, knowledge is the key resource in this era. The problem today is not how to find the information, but how to manage it; the most important challenge for organizations is how to process knowledge and to make it profitable in the recent knowledge-driven organization (Sallis & Jones, 2002). For this reason, organizations are viewing KM as a critical success factor in today's dynamic environment (Wong & Aspinwall, 2005; Yeh & Ta, 2005; Zack, McKeen, & Singh, 2009). Therefore, understanding the link between KM and organizational performance is important for successful integration of KM into organizational strategy (Carlucci & Schiuma, 2006).

KM is relatively a new discipline, derived from other various disciplines, including management, information system, business theory, organizational behavior and social psychology (Sallis & Jones, 2002). Like other disciplines, a number of important theorists and academics are influencing the direction and development of KM. In defining KM, there is a need to look at what knowledge itself is. Anantatmula (2007) revealed that the perspective of knowledge by organization in the current knowledge economy is that knowledge is viewed as the main economic resource, and it is seen as a weapon that can be used in gaining competitive advantage.

In HEIs context, Kidwell, Vander Linde and Johnson (2000) identified KM of great benefits in higher-education environment in research process, curriculum development process, student and alumni services, administrative services and business strategic planning. It can be found that the use of KM in higher education will have many direct benefits for academic achievements. However, KM has been applied to universities and colleges in the USA, UK, and in Asian countries such as Malaysia (Chen & Burstein, 2006; Kebao & Junxun, 2008; Muhammad et al., 2011; Sedziuviene & Vveinhardt, 2009; Yeh & Ta, 2005), and also in Iraqi HEIs. According to Aljanabi (2007), KM in Iraqi HEIs is still a new concept, the higher-education sector responds positively to KM practices in institution level and individual level.

In the past, Iraqi higher education system was ranked the best in the Middle East and Gulf region not until after the economic sanction, when Iraqi HEIs suffered from a prolonged period of relative isolation due to the sanctions imposed by UN (UNESCO, 2008). According to the International Conference on Higher Education in Iraq (2007), Iraqi universities have suffered more than necessary in terms of the curricula, resources, teaching methods, modern technology and research. It was emphasized that there is an urgent need to bring the lost glory to the Iraqi educational institutes.

## **2. Problem Statement**

Even though KM concept is well known, scholars, practitioners, and others in the field of business management are still debating the concepts and definitions related to knowledge management (Martin, 2005). In general, little empirical research has been conducted to investigate the relationship between KM and performance (Kalling, 2003; Zack, et al., 2009). In education context, Sallis and Jones (2002) emphasized, there is much need for KM in education as there is in business. If excellent achievements are achieved in one area of the colleges or universities, there should be a process for knowing how they were achieved. However, very few empirical studies have been focused on KM processes and its effect on academic performance specially, in the field of higher education (Muhammad et al., 2011).

Therefore, it became apparent to what was presenting that there is an acknowledged problem concerning the subject of KM processes in the educational institutions in general. In addition, KM program in terms of the form of implementation and the degree of importance are not clear. The failure of identifying the feature of implementation (individual or collective) and the degree of significance would lead to many deficiencies and ineffectiveness in reaching competencies for universities, if such processes overlooked. However, the major question that arises here and needs to be answered is: To what extent, do the processes of KM affect academic performance in the Iraqi HEIs?

## **3. Research Importance and Objectives**

The importance of the study derives from the ability of determining the key processes of KM that affecting academic performance in the Iraqi universities. This understanding and empirical analysis would help decision-makers to work on weak processes to cope with and strength others for further improvements. Moreover, in line with the orientations of the Iraqi Ministry of Higher Education and Scientific Research (MHESR-I) about the academic performance improvement; this study tries to shed light on issues concerning the application of KM in Iraqi HEIs to overcome the barriers blocking the enhancement of academic performance. However, the study aims to:

- Enhance the understanding of KM processes and its importance in the higher-education context.
- Identify empirically the feature of implementation of KM processes in Iraqi HEIs.
- Test empirically the influence of KM processes on academic performance of Iraqi HEIs.

## **4. Literature Review and Research Hypotheses**

### **4.1 KM Processes**

In this information era, virtually all organizations are becoming knowledge-driven in order to achieve or maintain the competitive advantage. According to Choy (2006), KM has been practiced in 80 percent of the most prominent companies in the world. The author concluded

that the power of KM in an organization could not be overestimated considering the fact that for organization to maintain her growth and development.

KM has been defined in different ways and from different aspects; interestingly, no sole definition can explain the whole picture, as different authors viewed KM from a number of perspectives, which dictates the way they define it. However, according to Salis and Jones (2002), KM in education can be defined as such a tool that gives clues to managers and staffs of educational organizations on the emerging world of KM to meet the challenge of the knowledge era. KM helps educational organizations to realize the merits and beauty of knowledge creation and sharing as means of enhancing teaching and learning process.

From literature, the concept of KM is generally described based on a number of key processes of KM. Such processes have several interpretations; the term of *processes* is sometimes referred to as *activates* or *practices*. Whichever a way it is addressed, it still refers to the same thing which is the dimensions of KM and in this paper, the term “processes” is used, since it is a way to emphasize that these processes are essential and should work together to improve the performance of an organization. However, KM without certain key processes is expected to yield little in the way of real benefits (Salis & Jones, 2002).

Various studies have addressed KM processes with a view to identify the key aspects/dimensions of KM processes. These dimensions include acquisition, innovation, protection, integration, and dissemination (Lee & Yang, 2000); acquisition, conversion, application, and protection (Gold, Malhotra, & Segars, 2001); development, utilization, and capitalization (Kalling, 2003); creation, accumulation, sharing, utilization, and internalization (Lee, Lee & Kang, 2005); identification, collection, organizing, storage, sharing, and evaluation (Kiessling, Richey, Meng, & Dabic, 2009). An examination of these diverse views enables the researcher to group them into five processes: identification, acquisition, storage, sharing, and application. These five processes have received the most consensus attention in KM literature (Daud & Abdul Hamid, 2006; Gold et al., 2001; Kiessling et al., 2009; Lee & Yang, 2000; Liao & Wu, 2009). A discussion of the five processes of KM and its relationship with academic performance follows subsequent subsections.

#### **4.2 Academic Performance (AP)**

Higher education today is subject to the same pressures of the marketplace. Profound changes in competition have made universities, and HEIs think like business to the extent that students are now being treated as customers. In addition, the stockholders’ demands are getting more and more complex, which must be attended to whether the educational organization must maintain its competitive advantage (Amin, 2006). The HEIs then must ensure that the students receive high-quality service. HEIs have responsibility to produce graduates that are able to accommodate challenges emerging in society, such as graduates producing high-quality profile and competence in their respective profession (Suryadi, 2007).

HEIs are changing from a public service to a market-driven one (Kettunen, 2003), and HEIs now face pressing concerns such as international competition (Kebao & Junxun, 2008). For that reason, HEIs are faced with the need to improvement many of their existing management practices and attitudes. One of the current issues of significance is the need for performance management, particularly measurement of key performance indicators (Suryadi, 2007). It is believed that knowing such performance indicators will enable the organizations to achieve an acceptable level of AP. According to Kanji and Tambi (1999), the performance indicators in HEIs can be measured based on objective's achievement; this has to do with how well core process (educational process) is operating. Therefore, since the study focus on HEIs context (public universities), the AP measurement takes into account students related academic achievement as key indicators of AP. However, AP indicators as they have been detected in relevant literature are the following (Table 1): academic status (CPA), undergraduates' wastage rate, classes of degrees, graduation rates.

**Table1: The Indicators of Academic Performance**

AP Indicators	Author/s (Year)
Academic Status (CPA)	Higgins (1989); Ball & Wilkinson (1994); Miller (2007)
Undergraduates Wastage Rate	Johnes & Taylor (1990); Johnes (1996); Palmer & Bray (2003); Sall, (2003); Pinilla & Munoz (2005); Agha (2007); Lee & Buckthorpe (2008)
Classes of Degrees	Higgins (1989); Johnes & Taylor (1990); Ball & Wilkinson (1994); Miller (2007)
Graduation Rates	Higgins (1989); Johnes & Taylor (1990); Ball & Wilkinson (1994); Pinilla & Munoz (2005); Miller (2007)

#### **4.3 The Relationship between KM Processes and AP**

KM has been investigated at business industrials; however, there have been very limited studies done to investigate KM processes at a public organization of higher-education level. The researchers found through the reviewed literature that there are some related studies. Based on these studies, the following dissection provides justification that KM processes influence AP.

##### **Knowledge Identification (KID)**

Knowledge identification is an action of discerning the location and value of knowledge, restraints to knowledge flow, and opportunities to leverage the value of knowledge. Either looking at this perspective, knowledge can be identified by individual employees or organization (Asoh, Belardo, & Crnkovic, 2007; Darroch, 2005; Liao & Wu, 2009). Therefore, knowledge identification is well known as the initial stage of managing knowledge. This

dimension also captures all that is related to determining core competencies, recognize strategic capabilities, and assess the expertise level for each knowledge domain. In short, determining the knowledge gaps between the existing and needed (Hall & Andriani, 2002; Zack, 1999). According to Sarawanawong et al. (2009), identify the knowledge gap is necessary to support staff daily work successful. Thus, knowledge identification plays a key role in enhancing academic performance. In this regard, the following hypothesis is suggested:

*H<sub>1</sub>: knowledge identification has a positive relationship with academic performance.*

### **Knowledge Acquisition (KAC)**

Once needed knowledge is identified, it has to be acquired for utilize. Thus, acquisition process is this oriented to obtain needed knowledge from both internal and external sources (Bouthillier & Shearer, 2002; Mohammad, Hamdeh, & Sabri, 2010). This requires accessing to knowledge in knowledge-based resources to capturing the new knowledge, and exploiting the available knowledge.

According to Lee and Yang (2000), there are two activities through which organization acquires knowledge, which are; searching and organization learning. Knowledge acquisition through searching can be achieved via three means such as scanning, focused research, and performance monitoring. Meanwhile, organization learning takes a fundamental part in knowledge acquisition since there is a need for organization to enhance its performance constantly. This further stresses how significant it is for organizations to determine the best practices to be adopted in order to achieve excellent performance (McKeen et al., 2006; Asoh et al., 2007; Liao & Wu, 2009). As a result, knowledge acquisition is linked to academic performance, and a hypothesis is proposed:

*H<sub>2</sub>: knowledge acquisition has a positive relationship with academic performance.*

### **Knowledge Storage (KST)**

It is generally believed that if knowledge is valuable, then storing such valuable assets should be given an utmost concern. After obtaining the required knowledge, it is expected to be coded and recorded to enable easy access to such knowledge (Kiessling et al., 2009). From competitive advantage perspective, there is no way one can talk about knowledge storage without mentioning special kind of database is called the Knowledge Base, which allows collection, organization and retrieval of knowledge to be carried out in a computerized manner. Knowledge base can be categorized into two major types: The Machine-readable and the Manual knowledge base (Kiessling et al, 2009; Asoh et al, 2007; Liao & Wu, 2009). According to MBNQA (2004), academic performance measurement in HEIs should focus on students' achievement, which requires a comprehensive and integrated reliable-based system. This can be achieved through sound database and effective process of knowledge storage, which should provide reliable data. Hence, ever since knowledge storage affects academic performance, the following hypothesis is formed:

*H<sub>3</sub>: Knowledge storage has a positive relationship with academic performance.*

### **Knowledge Sharing (KSH)**

Knowledge sharing involves the exchange of information and knowledge from one source (person, group or organization) to another (Fugate, Theodore, & Mentzer, 2009; Lee et al., 2005; Liao & Wu, 2009). According to Botthillier and Sheare (2002), the success of any KM processes in any organization relies on the effectiveness of the knowledge sharing. The general problem in KM is that most of the large organization is not conscious of valuable knowledge they have (Kießling et al, 2009). With effective KM processes, hidden knowledge can easily be discovered, and such process mostly facilitated via sharing. According to Liao and Wu (2009), knowledge sharing plays an intermediate role to support knowledge exchange in the organization and aids the achievement and sustenance of their competitive advantage. Therefore, in higher-education context, knowledge sharing as a vital pillar of KM is critical to academic performance (Daud & Abdul Hamid, 2006). It is clearly that knowledge sharing is greatly supported to improve academic performance. In this regard, the following hypothesis is proposed:

*H<sub>4</sub>: Knowledge sharing has a positive relationship with academic performance.*

### **Knowledge Application (KAP)**

Knowledge application concerns the process of using of knowledge that has been stored in organization. Zack (1999) revealed that knowledge as a process cannot be separated from its respective action-application. Meaning that knowledge without application process is considered as information. Within KM context, the concept of application has another interpretation, sometimes in literature where it is referred to as utilization. Many researchers stated that knowledge application process denoted actual utilization of the knowledge (Asoh et al., 2007; Gold et al., 2001; Lee et al., 2005; Liao & Wu, 2009; Zack, 1999). Moreover, Nonaka and Takeuchi (1995) argued that the process of applying knowledge happens when new knowledge is acquired and put to use. Lee and Lee (2007) described knowledge application as the effective retrieval mechanisms that enable access to knowledge. The authors further revealed that the knowledge application is the actual process of knowledge retrieval and knowledge dissemination. This means knowledge application involves effective retrieval mechanisms that enable organization's members to access relevant knowledge. Undeniable, academic performance will be improved since the knowledge application is supported among educational partners. Consequently, the following hypothesis is formed:

*H<sub>5</sub>: Knowledge application has a positive relationship with academic performance.*

## 5. Research Framework

The main objective of this study is to investigate the relationship between KM processes and academic performance. Based on the above literature review, a research framework was developed. Figure 1 demonstrates these relationships. In this framework, KM processes are independent variables and academic performance is a dependent variable respectively.

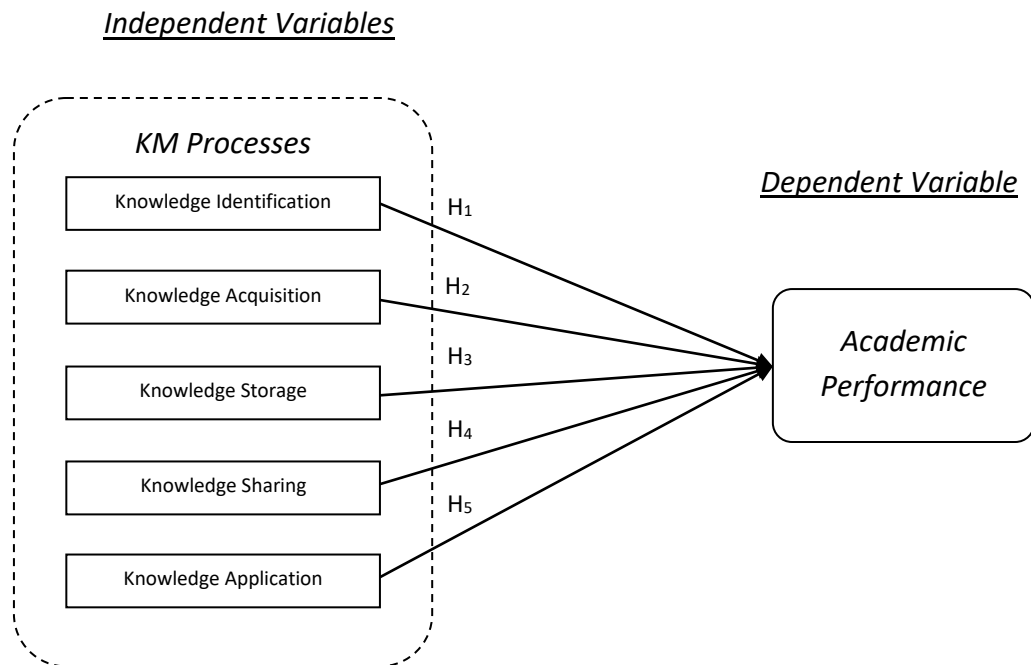


Figure 1: Research Framework

## 6. Research Methodology

### 6.1 Research Design

The study is based on a survey design and time horizon was cross-sectional. Since the objective of this study is to measure the actual level of each of the KM processes on academic performance in Iraqi HEIs, academic leadership (dean or dean assistant) which was knowledgeable about organizational practices considered appropriate subject. The survey was carried out in 64 colleges, which offered the undergraduate programs. The colleges are selected randomly from four public universities in Iraq.

The final number of participants for this study was 41 colleges. The sample size comprised about 63 percent of the total population. The study hypotheses were tested using correlation and regression analyses. The academic leadership as respondents were requested to focus on questions related to degree or extent of practices KM processes and academic performance in their organizations with items followed a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. In this study, the indicators for academic performance of HEIs context are:



academic status (CPA), undergraduates' wastage rate, classes of degrees, graduation rates, and overall academic achievements (Johnes, 1996; Lee & Buckthorpe, 2008; Miller, 2007). The respondents are required to answer the questions regarding their organizations perceived performance over the past three years in order to reduce the influence of temporary fluctuations in those AP indicators.

## 6.2 Instrument Measures

To measure the two constructs of importance of this study, the researchers adopted the items of instrument from relevant literature. The instrument was pre-tested and reviewed by four academicians (heads of departments). The participants were involved to evaluate the questionnaire in terms of readability, accuracy, and brevity of the instrument. However, Table 2 showed the sources of these items.

**Table 2: The Number of Adopted Items and its Sources**

Constructs	Code	No. of Items	Sources
<i>Independent Variables</i>			
Knowledge Identification	KID	6	Asoh et al., 2007; Bothillier & Shearer, 2002; Darroch, 2005; Liao & Wu, 2009; Zack, 1999
Knowledge Acquisition	KAC	6	Gold et al., 2001; Lee et al., 2005; McKeen et al., 2006; Liao & Wu, 2009
Knowledge Storage	KST	5	Asoh et al., 2007; McKeen et al., 2006; Liao & Wu, 2009; Kiessling et al., 2009
Knowledge Sharing	KSH	5	Daud & Abdul Hamid, 2006; Fugate et al., 2009; Sallis & Jones, 2002; Lee et al., 2005; Liao & Wu, 2009
Knowledge Application	KAP	7	Asoh et al., 2007; Gold et al., 2001; Lee et al., 2005; Liao & Wu, 2009; Zack, 1999
<i>Dependent Variable</i>			
Academic Performance	AP	5	Agha, 2007; Johnes, 1996; Miller, 2007; Palmer & Bray, 2003; Pinilla & Munoz, 2005; Sall, 2003

In order to assess the goodness of the instrument measures, the instrument was subjected to the construct validity and reliability tests. The construct validity was evaluated by factor analysis with eigenvalues of at least 1.0, and factor loading of at least 0.40. Meanwhile, the reliability was evaluated by the coefficient of Cronbach's alpha with acceptable value of 0.7 and above (Hair, Black, Babin, & Anderson, 2010). Table 3 illustrates the results of validity and reliability for the latent constructs.

**Table 3: Results of Validity and Reliability**

Constructs	No. of Items	Factor Loading	KMO	Eigen Value	% of Variance	Cronbach's Alpha
<i>Independent Variables</i>						
Knowledge Identification	6	.685, .757, .809, .742, .807, .711	.825	4.615	65.929	.845
Knowledge Acquisition	6	.781, .811, .738, .780, .696, .634	.818	3.306	55.105	.834
Knowledge Storage	5	.799, .816, .796, .747, .746	.797	3.051	61.024	.839
Knowledge Sharing	5	.743, .734, .680, .853, .814	.817	4.325	68.868	.821
Knowledge Application	7	.796, .810, .780, .742, .851, .617, .673	.874	4.006	65.890	.873
<i>Dependent Variable</i>						
Academic Performance	5	.715, .753, .817, .837, .759	.835	3.380	67.606	.833

Based on the displayed in the Table 3, the results indicate that factor loadings for all constructs were more than 0.4, and all constructs explain more than 50 percent of total variance. According to Pallant (2007), KMO value should be greater than 0.60. KMO values are greater than 0.60. Other than that, the Bartlett's test of sphericity was significant ( $\alpha = 0.05$ ). Moreover, the results also show that all values of Cronbach's alpha were greater than 0.70. In short, the instrument measures used in this study was valid and reliable.

## 7. Data analysis and Results

According to Hair et al. (2010), before data analysis, we should check the assumptions regarding normality, linearity, and outliers. Normality of the observed variables was evaluated through the examination of skewness and kurtosis values. None of the observed variables are significantly skewed or highly kurtosis (standardized residuals  $< \pm 2.5$ ). Meanwhile, all observed variables shown to be linearly related (via scatter plots). Moreover, using Mahalanobis distance, no obvious outlier was noticed ( $D^2/df < 2.5$ ). Thus, it can be suggested that these basic assumptions are not violated.

As described at the earlier section, the sample sizes was 41 cases, which have achieved the required assumptions. The sample size of 41 cases is practically sufficient to be analysed in this study. According to Sekaran and Bougie (2010), sample sizes larger than 30 and smaller than 500 are fitting for all research.

Pearson's correlation analysis is conducted to measure the relationship between two variables in the study. In examining the correlation among the KM constructs, Table 4 shows results of Pearson's correlation. The entire KM processes correlate significantly with each other ( $p \leq 0.01$ ). Even though there are several ( $r$ ) values in the level of medium and high correlation, high correlation values are more frequently discerned among KM processes. These positive associations tend to support the previous agreement that KM processes should be implemented holistically, not individually. Many researchers (such as Choy, 2006; Shankar & Gupta, 2005; Zivojinovic & Stanimirovic, 2009) have supported the concept of holistic approach of KM processes.

**Table 4: Pearson's Correlation among KM Processes**

No.	KM Processes	KID	KAC	KST	KSH	KAP
1	Knowledge Identification (KID)	1.000				
2	Knowledge Acquisition (KAC)	.637**	1.000			
3	Knowledge Storage (KST)	.679**	.530**	1.000		
4	Knowledge Sharing (KSH)	.570**	.736**	.464**	1.000	
5	Knowledge Application (KAP)	.597**	.759**	.519**	.782**	1.000

(p\*\*) Correlation is significant at the 0.01 level (1-tailed).

The relationships between KM processes and academic performance variables are exhibited in Table 5. All processes of KM are positively and significantly related with academic performance at  $\alpha = .01$  levels. Most of KM processes show strong correlation with academic performance. Meaning that, all the KM processes are highly associated with academic performance. This finding agrees with several studies that have been conducted to explain such relationships (e.g., Daud & Abdul Hamid, 2006; Muhammad et al., 2011).

**Table 5: Pearson's Correlation between KM processes and AP**

KM Processes	KID	KAC	KST	KSH	KAP
Academic Performance	.679**	.763**	.572**	.767**	.811**

(p\*\*) Correlation is significant at the 0.01 level (1-tailed).

Table 6 demonstrates the multiple regression analysis between KM processes and academic performance measures. In this model, AP acts as the dependent variable and KM with the five processes: knowledge identification, knowledge acquisition, knowledge storage, knowledge sharing, and knowledge application as the independent variables. From the results in Table 6, the analysis shows that strong relationships existed as hypothesized; whereas the regression model has moderately high values of adjusted  $R^2$  (0.475), which means that 47.5 percent of the variation in AP can be explained by knowledge identification, knowledge acquisition, knowledge

storage, knowledge sharing, and knowledge application. Table 6 also shows that only two variables had a significant and positive effect on AP. They are knowledge sharing ( $\beta=0.238$ ,  $p=0.013$ ) and knowledge application ( $\beta=0.214$ ,  $p=0.036$ ). It can be concluded that knowledge sharing has the greatest effect on AP followed by knowledge application. Furthermore, the regression analysis result also revealed significant F value at level  $\alpha = 0.01$ .

**Table 6: Multiple Regression between KM Processes and AP**

KM Processes (Independent Variable)	Academic Performance (Dependent Variable)				
	Beta	Std. Error	Std. Beta	t	Sig.
(Constant)	1.062	.358		2.964	.003
Knowledge Identification	.000	.091	.000	.003	.498
Knowledge Acquisition	-.115	.112	-.098	-1.030	.105
Knowledge Storage	-.092	.079	-.093	-1.168	.245
Knowledge Sharing	.275	.110	.238	2.500	.013
Knowledge Application	.249	.118	.214	2.117	.036
R <sup>2</sup>			.496		
Adjusted R <sup>2</sup>			.475		
Significance of F			.000		

Nevertheless, based on the results in Table 6, multicollinearity was appeared. This is on line with many researches position (Lim, Rushami, & Zainal, 2004; Miles & Shevlin, 2001). The regression model has one or more standardized regression coefficients taking on negative values when common sense and correlation analysis suggest a positive relationship exist between the independent and dependent variables (see Table 5 and Table 6). Many of the estimated coefficients are insignificant despite the F value is significant. The strong correlation among KM processes ( $0.464 \leq r \leq 0.782$ ) also proposing the presence of multicollinearity (see Table 4). According to Pallant (2007), multiple regression doesn't like multicollinearity; and this definitely doesn't contribute to a good regression model. This is because when the independent variables are highly related, the estimated standard errors for the coefficients will be large, and as a result the t-statistics will be small (Agus, 2000). The estimated coefficients with large standard errors will be unstable and hence, weakened the analysis.

There are several techniques that researchers can utilize to reduce the effect of multicollinearity. In this study, the Principal Component Analysis (PCA) was employed to handle multicollinearity as suggested by Hair et al. (2010). The results of PCA indicated that the first principal component of KM processes explained 63.50 percent of the total variance of the KM processes. KM variables were analyzed collectively principal component scores of KM variables were retrieved (Agus, 2000; Lim et al., 2004). A simple linear regression analysis was later carried out between academic performance and the first saved of principal component scores of KM processes as exhibits in Table 7.

**Table 7: Simple Linear Regression between Principal Component Scores of KM Processes and AP**

Model	Beta	Std. Error	Std. Beta	t	Sig.	R <sup>2</sup>
(Constant)	.940	.325		2.890	.004	
Regression IV = Principal component scores of KM DV = Academic Performance	.261	.028	.573	9.174	.000	.293*

\* F-statistics are significant at the .05 level.

From the result as shown in Table 7, the R<sup>2</sup> is 0.293, which means that 29.3 per cent of the variation in academic performance can be explained by KM variables. The results of simple regression analysis as well indicate that KM variables (collectively) have a significant relationship with academic performance variable. Regression coefficient ( $\beta=0.573$ ) of the regression model is statistically positive and significant at  $\alpha = 0.05$ . Thus, based on  $\beta$  value, the researchers conclude that KM processes have a significant and positive effect on AP. In short, data analysis results provide sufficient evidence to support all five alternative hypotheses.

## 8. Discussion And Study Implications

Notwithstanding the significant affinity that exists between KM and performance, empirical research on the link between KM processes and AP has hardly been touched, especially in HEIs context (Muhammad et al., 2011). In Iraq context, most HEIs have started to consider KM as a critical part of their activities in order to improve their performance (Aljanabi, 2007). Unfortunately, there are very limited studies that touch KM and its effects on the educational-institutes performance. Moreover, most of these researches were conceptual and case studies. Considering the study's domain, this study attempts to narrow the gap in literature, particularly in developing countries.

The primary purpose of this study was to investigate empirically the relationships among KM processes, and to identify the effects of KM processes on academic performance within Iraqi HEIs context. Through testing the research hypotheses, which were developed based on relevant literature, the purpose was accomplished. The significant implications from the results for researchers and practitioners, respectively, are discussed in the rest of this section.

Results of Pearson's correlation indicated that all the correlations among the KM constructs were significantly positive with each other. The findings also consistent with those in literature that have demonstrated that KM processes should be implemented holistically rather than individually (Choy, 2006; Shankar & Gupta, 2005; Zivojinovic & Stanimirovic, 2009).

Meanwhile, correlation results indicated that the KM processes had a strong association with academic performance (see Table 5). This study is consistent with the prior research conducted

by Daud and Abdul Hamid (2006) and Muhammad et al. (2011). In this regard, it is found that Iraqi HEIs can benefit from KM processes. The correlation results of this study also revealed that knowledge application recorded highest correlation with AP (0.811), followed by knowledge sharing (0.767), knowledge acquisition (0.763), and knowledge identification (0.679). Thus, focusing on these processes will enhance AP within Iraqi HEIs context. More detail, for example, knowledge sharing involves the exchange of information and knowledge from one source to another (Daud & Abdul Hamid, 2006; Liao & Wu, 2009). Therefore, knowledge sharing plays a major role in ensuring that the shared thinking and provide adequate internal communication throughout the educational-organization, and that help aids the achievement and sustenance of their performance.

Knowledge application had the greatest correlation with AP as compared to the other KM processes. One possible reason is that one of the common forms of this process is to adopt the best practice from other leading organizations by discovering relevant knowledge and apply it (Lee et al., 2005). Such practices create opportunities for educational partners to apply new knowledge, which in turn leads to enhance their performance.

Within KM processes, knowledge acquisition also recorded great association with AP. As mentioned by many researchers, knowledge acquisition requires accessing knowledge-based resources to capturing the unknown knowledge, and exploiting the available knowledge (Lee et al., 2005; Ooi, 2009; Liao & Wu, 2009). Thus, this process provides the approach to create new knowledge that aimed at achieving better performance. As for the relationship between knowledge acquisition and AP, The findings also highlight the importance of knowledge identification and knowledge storage, which is found to have a significantly positive and high correlation with AP. Therefore, these processes are a significant factors and very important in achieving better academic performance. On the other hand, knowledge storage had the lowest correlation with AP as compared to the other KM processes. One plausible reason is that probably not all colleges have an effective system to support the process of knowledge storage. Therefore, academic leadership in Iraqi HEIs must be taken into consideration this issue.

Concerning the effect of KM processes on academic performance, the regression model has moderately high values of  $R^2$ , adjusted  $R^2$  and significant F-values. Results of multiple regression indicated that knowledge sharing was positively related to academic performance and had the greatest impact on academic performance as compared to the other four processes. One plausible reason is that knowledge sharing as a vital pillar of KM is critical to academic performance in this knowledge era. According to Botthillier and Sheare (2002), the success of any KM processes in any organization relies on the effectiveness of the knowledge sharing.

However, the values of overall standard errors and many insignificant independent variables primed the researchers to the presence of the multicollinearity problem. Multicollinearity could lead to incorrect variable estimations and eventually unstable regression models formation. Hence, there is a need to employ other statistical techniques to handle this problem. In this study, PCA technique was employed to reduce the effect of multicollinearity as recommended by Hair et al. (2010).

The results of the simple regression analysis implied that KM processes (collectively) have a significant and positive effect on academic performance. The analytical results as well consistent with those in the literature that stated that KM processes positively and significantly contributes to academic performance (Daud & Abdul Hamid, 2006; Muhammad et al., 2011).

The implications of this study can be divided into three aspects: theoretical contributions, robustness of research methodology, and practical contributions. From the theoretical perspective, this study demonstrated the importance of KM processes in the education service sector. This study supports the studies (Gold et al., 2001; Kiessling et al., 2009; Lee & Yang, 2000; Liao & Wu, 2009) in which KM is operationalized as a multidimensional construct. In addition, it gives contribution to the literature in terms of the impact of KM processes on academic performance and provides to a better understanding of the relationship between KM and AP in the educational organizations. Thus, implementation of KM is crucial since the KM processes are found to have a significant positive impact on academic performance. Briefly, academic performance will enhance if there is a sound management foundation like KM processes. Considering the study's domain, these findings have some important implications for theory. It is also imperative to note that this study attempts to enrich the literature review and make a contribution in KM-related studies, especially in developing countries.

Undeniable, there is a growing number of literature reviews on KM in education. However, there has been almost anecdotal and no-methodologically rigorous research. With regard to the research methodology, in this study, the survey instrument has achieved the validity and reliability criteria, thus leading to greater accuracy of results. The findings contribute by using HEIs in Iraq, which proves to be valuable as an example of a methodology that might be used to track the extent of KM effects on academic performance.

In terms of practical implications, the study highlights management issues involving the influence of KM processes on academic performance. In the other words, this study draw attention to the role of academic leadership in creating relevant organizational knowledge through KM processes. However, if HEIs as knowledge-driven organizations need to leverage knowledge creation capabilities, stress should be given to KM processes, which are: knowledge identification; knowledge acquisition; knowledge storage; knowledge sharing; and knowledge application. Hence, by implementing these processes collectively and effectively, academic leadership can use the items establishing KM in this study to assess where their organization stand with regard to the use of KM processes or as a guideline in implementing them. Moreover, they can use the AP indicators as a check instrument to appraise the results of AP achievements over time.

The researchers believe this study contains findings that are useful to practicing managers not only in the educational-service sector but also in the non-educational organizations. This study has shed some light for managers how planning to improve organizational performance, whereby the top management will be able to gauge the effects of KM processes and the organizational performance.

## 9. Conclusion And Future Research

This study explored the relationship between KM processes and academic performance. Results have shown that the KM processes had a significant effect on academic performance; educational organizations, therefore, need to find solutions on how to improve these processes in order to improve academic performance among educational partners (students and educators).

Currently, many Iraqi HEIs have been implementing knowledge management initiatives, in order to improve their performance and obtain a sustainable competitive advantage. In this regard, the current study serves as a guide to decision makers, who seek to improve academic performance and capturing the particular knowledge via KM program. KM program as a knowledge-based approach will guide and facilitate the process of performance improvement, thereby assisting the organization to achieve excellence performance and better meet the changing requirements of their customers.

The findings indicate that HEIs should emphasize greater attention to the key processes of KM namely: knowledge identification; knowledge acquisition; knowledge storage; knowledge sharing; and knowledge application. To other researchers, future studies should attempt to identify the effect of critical success factors (CSFs) of KM implementation that may produce such differences. The theoretical model used in this study can also be tested by conducting cross-country studies. In addition, this study would help the researchers to identify important variables of KM processes for educational organizations in developing countries, especially in the study of KM in Iraq.

This study covers only 41 colleges within four public universities in Iraq. More variations of results could be obtained through a wider coverage of respondents. Otherwise, a comparison between public universities and private universities could provide additional insights. For future study in line of this research, the researchers believe that the analysis pertaining to the effect of KM processes on other performance indicators (such as non-students related academic achievement) along with students' related academic achievement is essential. The relation between KM and academic performance has been studied before (Muhammad, et al., 2011), but empirical studies in this field are very limited. Finally, the researchers hoped that this study would encourage attention towards further research in domain area for more empirical studies.

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