

# **The Relationship between Knowledge Management and Business Performance: An Empirical Study in Iraqi Industry**

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*The purpose of this study is to explore the relationships between knowledge management, which consists of processes and contentet with business performance. The main objective of this study is to investigate whether knowledge management has a direct effect on business performance. However, a review of the management literature reveals that the relationship between knowledge management and business performance is still vague. Hence this study will try to fill the gap from the perspective of resource-based view.*

## **1. Introduction**

In the knowledge-based economy era, the field of business performance measurement has evolved rapidly in the last few years due to technological development, fierce competitive and globalization (Coelho 2005; O'Reilly 2000; Wang & Chang 2005; Zack 2009). Knowledge assets hence are regarded as a critical key to improve business performance. To help companies sustain their competitive advantage, a knowledge asset should be maintained and managed whence conventional assets are depreciated or replaced. In this context, knowledge management pose a strategic issue for companies (Curado 2008; Pikes 2002; Stam 2007; Warnar & Witzed, 2004).

Even though scholars have proposed that knowledge management in general is imperative for businesses performance in contemporary organizations, little is known as to what extent knowledge management components specifically affect performance. So this study seeks to find out the factors contribute to this relationship. In other words, previous studies have dealt with KM too broadly without considering the specific aspects of KM, and this limits our understanding of the extent of effect KM has on business performance, given that KM as a concept is complex in nature (Carlucci 2004; Firestone & McElroy 2003; Massa & Testa, 2009; Marr & Schiuma 2004; Nemati & Steiger, 2001). Because few studies have attempted to disentangle the complexities in the relationship between KM and business performance (Carlucci & Schiuma 2004; Zack 2009), the present study intends to fill this gap.

Based on the above, numerous pervious studies show the lack of empirical evidence about the relationships among knowledge management and business performance (Kaplan & Norton 2004; Zack 2009).

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## **2. Defining Knowledge Management (KM)**

In order to understand the meaning and the content of knowledge management it is particularly important to analyze the different interpretations of KM Carlucci (2004). According to Horwitch and Armacost (2002, P.3) knowledge management refers to “creation, extraction, transformation, and storage of the correct knowledge and information in order to design better policy, modify action and deliver results”. Holm (2001) defines KM as “getting the right information to the right people at the right time, helping people create knowledge and sharing and acting on information” . While Alavi and Leidner (2001) refer to KM as "Specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value” (Kanagasabapathy & Radhakrishnan 2004).

Knowledge management is defines as an introductory step it is useful to distinguish between raw information and knowledge (Edwards 1994; Cited Ingie 2003).

### **2.1 Knowledge Management Process**

#### **2.1.1 Creation and Acquisition**

Knowledge can be acquired from any type of consumers as well as through direct interaction with customers either by mails, questionnaire, interviews, phones, contacts at fairs, etc. Through these means, companies acquire knowledge about market trends and competitors.

#### **2.1.2 Sharing and Dissemination**

Knowledge sharing and transfer are important elements which help organizations explain their level of knowledge internally and externally. The foundations for effective knowledge transfer and sharing can be performed through internet and intranet. In fact from the interpersonal perspective, the company’s intranet is the main source of knowledge communicational channel within the company, where company and industry has a common platform to share. The things which can be published on the intranet can be press reviews, acknowledgements, trends, awards and other information Massa and Testa ( 2009).

Knowledge can also be shared or transferred through interviews. This phase is very important to absorb the tacit knowledge permeating the firm and to build the basis for subsequent knowledge transfer and sharing.

#### **2.1.3 Utilizations and Application**

The analysis of literature reveals two streams of studies i.e. knowledge creation and knowledge assessment (Carlucci 2004). Knowledge creation begins with the seminal work of Nonaka (1994) who introduced the concept of the knowledge creating company and defines knowledge management approaches and models as both descriptive and prescriptive frame works. Descriptive frameworks attempt to distinguish the nature of KM

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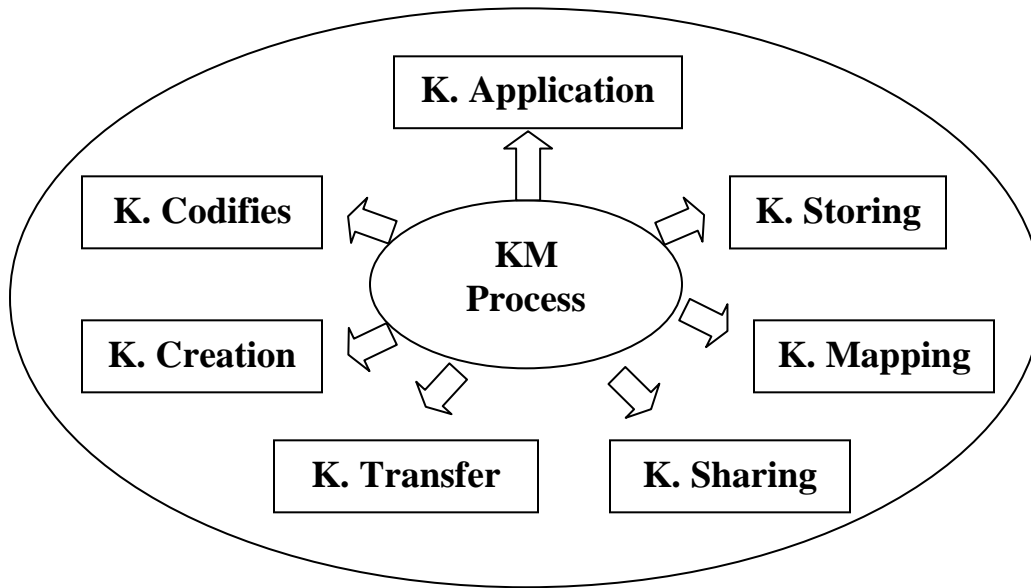
phenomena, while prescriptive frameworks attempt to direct methods to be followed in conducting KM.

Among resource-oriented partial frameworks, the intellectual capital model group McAdam and McCreedy (1999) and the Economic School in Earl's taxonomy Earl (2001), are well known in the business environment. Human Resources literature relies heavily on this grouping of KM models and frameworks, as does the Accounting discipline's work on intangible assets. From this perspective, KM focuses on hiring, retaining, training of personnel, i.e. 'intellectual assets', and organizational knowledge is defined as 'the sum of the knowledge of its personnel'. De Grooijer (2000) framework using the concept of performance scorecards would fit into this grouping. However, in the broader view of KM, this is just one aspect that would be included in an integrated approach Meliha (2006).

The knowledge process wheel Marr and Schiuma (2004) proposes taxonomy of knowledge management processes. This model identifies seven main processes of knowledge management i.e. knowledge generation, knowledge codify, knowledge application, knowledge sharing, knowledge mapping, knowledge storing, and knowledge transfer (see Figure 1). The process is based on the understanding that knowledge is a dynamic in nature. On this basis, knowledge can be transferred, shared, developed and renovated as the cognitive assets of an organization Wiig (1997).

Application of knowledge to create a company image, which can fully meet expectations of customers, is the core objectives for companies. Through knowledge application the road map is created and it can further direct the companies to excel their strategies (Massa & Testa 2009). Another significant characteristic of the company's image that incorporates knowledge of customers' opportunity is its localness i.e. the image of a company that is strictly connected to traditions and never forgets its origins.

Figure 1: Knowledge process wheel



Source: Carlucci (2004, p.575)

Knowledge assessment as the second stream of study builds on the base of KM and is intended to provide methodological instrument to identify and value intellectual capital of a company. Although it is important for an organization to manage knowledge internally, it is equally important to effectively manage knowledge as well (El Sawy- Gosan & Young 1999).

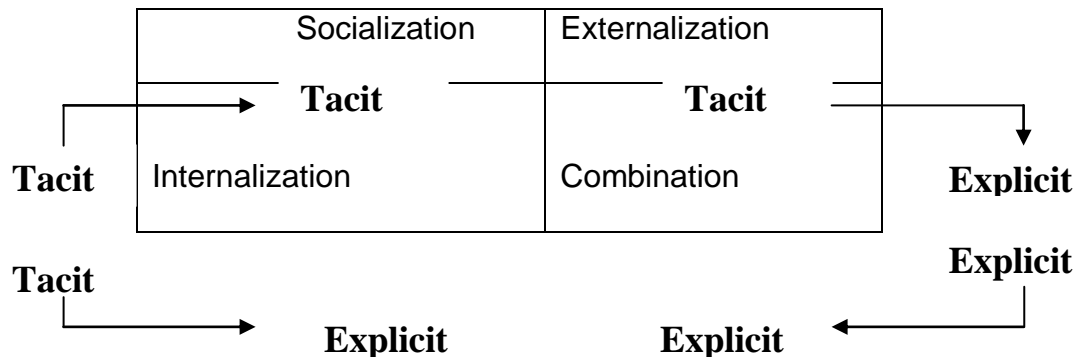
## 2.2 Knowledge Management Contents

According to McInerney (2002) there are two types of knowledge strategies. The first strategy pertains to the supply side that tends to focus on the distribution and dissemination of current knowledge of the organization and the second one is the demand side that focuses on meeting organization needs to new knowledge. In other words, the first strategy focuses on knowledge sharing and dissemination and the second towards innovation science and mechanics of any knowledge generation.

There are two types of knowledge i.e. explicit knowledge and tacit knowledge. Both types of knowledge are significant for organizations. In generally speaking, the creation knowledge depended on the conversion between these types (Earl 2002; Haanes & Lowendhal 1997).

According to Nonaka & Takeuchi (1994), the dynamics of the analysis of knowledge creation through cycles of socialization, externalization, combination and internalization cycles based on the assumption that knowledge is created through conversion between tacit and explicit knowledge. Form this assumption, Nonaka & Takeuchi (1994) proposed four different models of knowledge conversion from: (See figure 2).

Figure 2: Creation knowledge model



Source: (Nonaka & Hirotaka 1994) Dynamic Theory of Organizational Creation, Organization Science, 5 (1)

- 1) Tacit to tacit (share experiences, spend time together).
- 2) Explicit to explicit (Community based electronic discussion).
- 3) Tacit to explicit (Acquisition, processing, sharing).
- 4) Explicit to tacit (Personal experience).

The basic terms in the model are as follows:

- Socialization : process of sharing tacit knowledge
- Externalization : process of conversion tacit to explicit knowledge
- Combination : process of discussion of explicit knowledge through communication.
- Internalization : process of embodying explicit knowledge to tacit knowledge.

### 2.2.1 Tacit Knowledge

The term tacit knowledge is defined as the undocumented and articulated McInerney (2002). It is also known as "inarticulate intelligence," "collective wisdom," or "elusive knowledge." The term "tacit knowledge" was put forward by Polanyi (1958, 1966), an influential philosopher of epistemology, but in recent years it has been used by management theorists as a key piece in the process of knowledge management Firestone and Mc Elroy (2003).

The term tacit knowledge is matched with explicit knowledge, which is further defined as the way of communication with others. When explicit knowledge is noted, it becomes "codified." The term codified knowledge is usually quite structured and visible in the form of written documentation, reports, databases, and other media Stove (2004).

In general tacit organizations are required to take a holistic approach in managing tacit knowledge as part of their knowledge management initiatives for the purpose of capturing

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storing, sharing and leveraging what is demanded from employees and what is better for them Bhardwaj & Monin (2006).

### **2.2.2 Explicit Knowledge**

The term explicit knowledge is an approach that holds knowledge is something that can be explained by individuals, even though some effort and even some forms of assistance may sometimes be required to help individuals articulate what they know. As a result, the explicit knowledge approach assumes that the useful knowledge of individuals in an organization can be articulated and made explicit. Working from the premise that important forms of knowledge can be made explicit, the explicit knowledge approach also believes that formal organizational processes can be used to help individuals articulate the knowledge they have to create Knowledge assets. The explicit knowledge approach also believes that explicit knowledge assets can then be disseminated within an organization through documents, drawings, standard operating procedures, manuals of best practice, and the like Ron- Sanchez and Linden (2001).

## **3. Business Performance**

If organizations cannot measure performance, they cannot manage their business (Kaplan & Norton, 1996). If organizations are to survive and prosper in information age competition, they must use measurement and management systems derived from their strategies and capabilities. This statement summarizes the necessity of performance to measure, and as direct consequence, and to evaluate their performance (O'Reilly - Wathey & Gelber 2000).

Summarizing the ideas of many authors, it can be said that the roles of business performance evaluation are to ensure compliance with crucial minimum standards, to check how well organization are doing, to test strategic assumptions, and to provide a reliable basis for communicating with interested parties Coelho (2005).

The business performance extends the eras of measurements to the three perspectives Maluenda (2006) .There are innovation, rate of new product development, customer satisfaction, customer retention and operating costs Zack (2009).

Business performance is defined as measurable result of the level of attainment of organizations goals (Daft & Marcic 2001) or measurable result of the organization's management of its aspects (ISO 1999), or mechanism for improving the likelihood of the organization successfully implementing a strategy Anthony (1998). Business performance evaluation is the process to help management decisions regarding an organization's performance by selecting indicators, collecting and analyzing data, assessing information against performance criteria, reporting and communicating and periodically reviewing and improving this process Coelho (2005).

## **4. Knowledge Management and Business Performance**

In the current competitive context, many organizations have realized that the only source of sustainable competitive advantage they can leverage is the effective use of their

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existing knowledge as well as the fast acquisition and utilization of new knowledge Carlucci (2004). Tecce (1998) argues that the competitive advantage of companies in today's economy stems not from market position, but from the difficulty to replicate knowledge assets and the manner in which they are deployed. In agreement with this viewpoint, (Carlucci 2004), claim that "knowledge assets are as important for competitive advantage and survival, if not more important, than physical and financial assets".

Due to the strategic significance of knowledge, strategists are faced with a rapidly growing need to find and improve on ways to create, locate, manage and ensure that the power of knowledge is leveraged and shared throughout the organization (Krueger & Andreas 2008). Zack (1999) argue that the power of KM does not only reside in the ability to positively influence strategy formulation (i.e. knowledge to exploration leading to innovative ideas), but also, and just as importantly, in the ability to exploit the power of knowledge via strategy formulation.

It seems to be generally accepted that in today's competitive environment, continuous innovation is a necessary precondition. Therefore, many authors, implicitly or explicitly equate the ability to innovate with competitive advantage (Dixon 2000; Stam 2007). So KM is not a goal in itself, but to support the economic goal of continuous innovation as a decisive factor of competitive advantage. Based on an extensive research among 25 firms on industry, Zack (1999) concludes that the most important context for guiding KM is the firm's strategy.

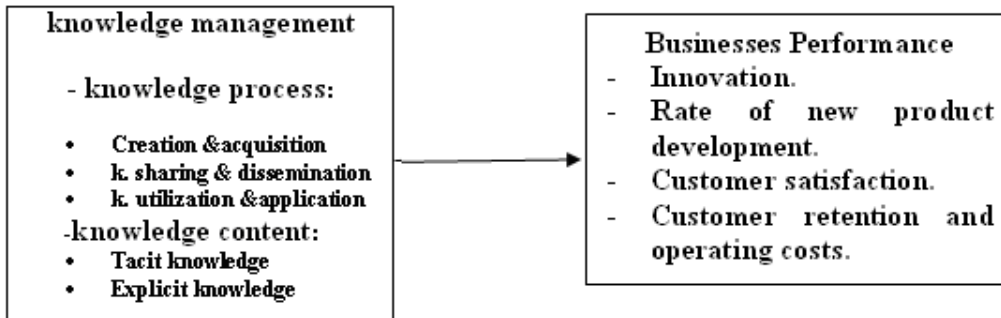
As noted by the observers in strategic management, effective KM through the development of capabilities should contribute to key aspects of business performance (Gold- Malhotra & Segars 2001). Reconciling the insights and recommendations of recent literature within KM with performance based assessment of the strategic management literature; we sought to identify the key contributions of KM capability. Such contributions may include improved ability to innovate, improved coordination of efforts, and rapid commercialization of new products. Other contribution may include the ability to anticipate surprises, responsiveness to market change and reduced redundancy of information knowledge edge (Gold et al., 2001).

In summary, KM is at the heart of business performance improvement and value creation Carlucci (2004). And the ability to continually explore and exploit knowledge relates directly to the organization's goal of sustaining survival via growth and profitability. It would seem that the ability to explore and exploit the power vested in knowledge more rapidly will be directly related to a decrease in imitation and increase in innovation, with successive stages gradually up to evolutionary process of transforming what is incremental into what is technological and then into groundbreaking innovation Kruger (2008).

## 5. Conceptual Framework

Based on the previous studies, the conceptual framework is developed based on the recourse-based view. Consequently, Figure 3 shows the relationship between knowledge management and businesses performance.

Figure 3: Conceptual framework



The proposed conceptual framework might be a good contribution to the knowledge management literature. It shows the relationship between knowledge management and businesses performance.

## 6. Hypothesis Development

This section discusses how business performance is related to its predictors; knowledge process, knowledge content. The finding of a study conducted by Alexander and Nick (2008) reported that the top five academic journals in the field are: Journal of Knowledge Management, Journal of Intellectual Capital, Knowledge Management Research and Practice, International Journal of Knowledge Management, and The Learning Organization have shown that the knowledge management has a positive and significant relationship with business performance.

In another study conducted by Alexander Nick (2008) have indicated that knowledge management and intellectual capital e has a positive influence on business performance.

**H1: There is relationship between knowledge management process and business performance**

**H1a: There is relationship between knowledge creation and business performance**

**H1b: There is relationship between knowledge sharing and business performance**

**H1c: There is relationship between knowledge utilization and business performance**

**H2: There is relationship between knowledge management content and business performance**

**H2a: There is relationship between tacit knowledge and business performance**

**H2b: There is relationship between explicit knowledge and business performance**

## 7. Research Design

The objective of this study is to investigate the factors that effect business performance among Iraqi companies. On the other hand it will be looking forward to know the relationship between intellectual capital and Iraqi industry's' performance. This study involves investigating the factor and problems face by Iraqi industry. The main concern



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of this study is to investigate the problem which Iraqi industry is facing in term of improving their performance. The design of the questionnaire for this research required a wide rang of measures and items. The items have been collected and adopted from different sources.

### 7.1 Sampling Method

This study is focused to be collected form difference Iraqi companies. There will be only one set sample in the study which will be targeting the random sampling of the 320 managers of Iraqi companies. The companies will be further divided in to three categories on the base of their market equity.

### 7.2 Data Collection

Data will be collected through quantitative survey approach. This data will be collected through field survey. The questionnaires will be distributed among the 320 managers of Iraqi companies, especially managers to answer the questions in the questionnaire.

### 7.3 Data Analytical Approach

In this study, the responses and information collected from the various statistical methods will be used to analyze the data that we will collect from the 191 respondents. The Statistical Package for the Social Sciences SPSS V.17 package and Amos V.5.

## 8. Result

**H1: There is relationship between knowledge management process and business performance**

### Correlation Analysis:

Study, a correlation coefficient measured the strength of a linear between the five variables of A correlation Coefficient measured the strength of a linear between two variables. In the knowledge management process namely, (knowledge creation, knowledge sharing and knowledge utilization) and business performance. The correlation results were shown in the Table (1).

**Table 1: Pearson Correlation between variables of Knowledge management process and Business performance (N=191)**

	knowledge creation	knowledge sharing	knowledge utilization
Pearson Correlation	0.484**	0.176*	0.479**
Sig. (2-tailed)	0.000	0.015	0.000

Note: \*  $P \leq 0.05$ , \*\*  $P \leq 0.01$

The correlations between knowledge creation , and knowledge utilization and Business performance were positive and were significant at the 0.01 level (2-tailed), whereas

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correlation between knowledge shearing and Business performance were positive and were significant at the 0.05 level (2-tailed). Therefore, the study indicates that the correlations between knowledge creation, and knowledge utilization and Business performance were higher than that between knowledge shearing and Business performance. However, these results revealed support for hypothesis 1.

### Multiple Regression Analysis:

In order to further reveal support for hypothesis 1, the factors that influenced Business performance, the three variables of Knowledge management process were used in a multiple regression analysis. The multiple regression procedure was employed because it provided the most accurate interpretation of the independent variables. The three independent variables were expressed in terms of the standardized factor scores (beta coefficients). The significant factors that remained in the regression equation were shown in order of importance based on the beta coefficients. The equation for Business performance was expressed in the following equation:

$$Y_s = \beta_0 + B_1X_1 + B_2X_2 + B_3X_3$$
Where,

$Y_s$  = Business performance

$\beta_0$  = constant (coefficient of intercept)

$X_1$  = knowledge creation

$X_2$  = knowledge sharing

$X_3$  = knowledge utilization

$B_1, B_2, B_3$  = regression coefficient of three variables.

Table (3) showed the results of the regression analysis. To predict the goodness-of fit of the regression model, the multiple correlation coefficient ( $R$ ), coefficient of determination ( $R^2$ ), and  $F$  ratio were examined. First, the  $R$  of independent variables (Three factors,  $X_1$  to  $X_3$ ) on the dependent variable (Business performance, or  $Y_s$ ) is 0.556, which showed that the Business performance had positive and high overall association with the three attributes. Second, the  $R^2$  is 0.310, suggesting that more than 30% of the variation of Business performance was explained by the three attributes. Last, the  $F$  ratio, which explained whether the results of the regression model could have occurred by chance, had a value of 27.948 ( $p = 0.00$ ) and was considered significant. The regression model achieved a satisfactory level of goodness-of-fit in predicting the variance of Business performance in relation to the five attributes, as measured by the below – mentioned  $R$ ,  $R^2$ , and  $F$  ratio. In other words, at least one of the three attributes was important in contributing to Business performance. In the regression analysis, the beta coefficients could be used to explain the relative importance of the five attributes (independent variables) in contributing to the variance in Business performance (dependent variable). As far as the relative importance of the three knowledge management process attributes is concerned, knowledge creation,  $B_1=0.358$ ,  $p=0.000$ ) carried the heaviest weight for Business performance, followed by knowledge utilization,  $B_3=0.347$ ,  $p=0.000$  and knowledge sharing,  $B_2=-0.170$ ,  $p=0.021$ . The results showed that a one-unit increase in knowledge creation would lead to a 0.358 unit increases in Business performance, one-unit increase in knowledge utilization would lead to a 0.347unit increase in Business performance; one-unit increase in knowledge sharing would lead to a 0.170 unit decrease in Business performance. In conclusion, all underlying dimensions are significant. Thus, the results of multiple regression analysis agree hypothesis 1, that there is relationship between the selected knowledge management process attributes

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and the overall Business performance. So, there is a relationship, which is what you expected.

**Table 2: Regression Results of Business performance Based on the Dimensions (N=191)**

Dependent variable: Business performance independent variable: Three knowledge management Process attributes

### Analysis of variance

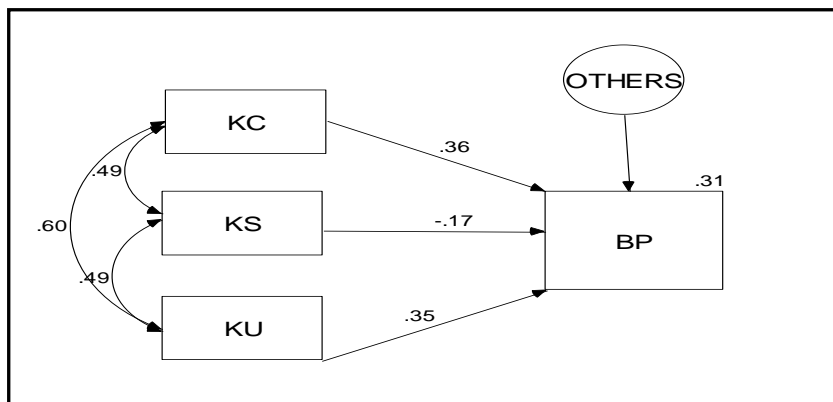
	Sum of Squares	df	Mean Square	F	Sig.
Regression	21.058	3	7.019	27.948	0.000
Residual	46.967	187	0.251		
Total	68.025	190			

### Regression Analysis

Independent variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.327	0.385		3.443	0.001
KC	0.417	0.092	0.358	4.526	0.000**
KS	-0.228	0.097	-0.170	-2.336	0.021*
KU	0.469	0.107	0.347	4.373	0.000**

Note: \* p < 0.05, \*\* p < 0.01

**Figure 4: Path diagram estimating the relative importance of direct effect of knowledge management process attributes on business performance. Two head arrows designate relationship (number adjacent these arrows represent correlation coefficient value); one head arrows designate the direction of causality (number adjacent these arrows represent size of effect (path coefficient)).**



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**Hypothesis 2: There is relationship between knowledge management content and business performance**

### **Correlation Analysis:**

A correlation Coefficient between the two variables of knowledge management content namely (Explicit knowledge and Tacit knowledge) and Business performance, were shown in the Table (4).

**Table 3: Pearson Correlation between variables of Knowledge management content and Business performance (N=191)**

	Explicit knowledge	Tacit knowledge
Pearson Correlation	0.148*	0.274**
Sig. (2-tailed)	0.041*	0.000

Note: \* NS=not significant, \*\*  $P \leq 0.01$

The correlations between Explicit knowledge and Business performance was positive and significant at the 0.01 level (2-tailed), whereas correlation between Tacit knowledge and Business performance was positive but not significant at the 0.05 level (2-tailed). Therefore, the study indicates that the correlations between Tacit knowledge and Business performance was higher than that between Explicit knowledge and Business performance. However, these results revealed support for hypothesis 2 in case of relationship between tacit knowledge and Business performance, but reject for hypothesis 1 in case of relationship between explicit knowledge and Business performance.

### **Multiple Regression Analysis:**

Business performance was regressed against two variables Knowledge management content namely (Explicit knowledge and Tacit knowledge).

The equation for Business performance was expressed in the following equation:

$$Y_s = \beta_0 + B_1X_1 + B_2X_2, \text{ Where,}$$

$Y_s$  = Business performance

$\beta_0$  = constant (coefficient of intercept)

$X_1$  = Explicit knowledge

$X_2$  = Tacit knowledge

$B_1, B_2$  = regression coefficient of Knowledge management content variables.

Table (4) showed the results of the regression analysis. To predict the goodness-of fit of the regression model, the multiple correlation coefficient ( $R$ ), coefficient of determination ( $R^2$ ), and  $F$  ratio were examined. First, the  $R$  of independent variables (two factors,  $X_1$  and  $X_2$ ) on the dependent variable (Business performance, or  $Y_s$ ) is 0.274, which showed that the Business performance had positive but low overall association with the two attributes. Second, the  $R^2$  is 0.074, suggesting that only 7.4% of the variation of Business performance was explained by the two attributes. Last, the  $F$  ratio, which explained whether the results of the regression model could have occurred by chance,

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had a value of 7.635 ( $p = 0.001$ ) and was considered significant. The regression model achieved a satisfactory level of goodness-of-fit in predicting the variance of Business performance in relation to the four attributes, as measured by the below – mentioned  $R$ ,  $R^2$ , and  $F$  ratio. In other words, at least one of the two attributes was important in contributing to Business performance. In the regression analysis, the beta coefficients could be used to explain the relative importance of the two attributes (independent variables) in contributing to the variance in Business performance (dependent variable). As far as the relative importance of the two Knowledge management content attributes is concerned, Tacit knowledge,  $B_2=0.285$ ,  $p=0.001$ ) carried the heaviest weight for Business performance, followed by Explicit knowledge,  $B_1=-0.019$ ,  $p=0.289$ . The results showed that a one-unit increase in Tacit knowledge would lead to a 0.285 unit increase in Business performance, one-unit increase in Explicit knowledge would lead to a 0.019 unit decrease in Business performance. In conclusion, the results of multiple regression analysis agree hypothesis 2, that there is relationship between the selected knowledge management content and the overall Business performance. So, there is a relationship, which is what you expected.

**Table 4: Analysis of variance**

	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.110	2	2.555	7.635	0.001
Residual	62.915	188	0.335		
Total	68.025	190			

**Table 5: Regression Results of Business performance Based on the Dimensions (N=191)**

**Dependent variable: Business performance**

**Independent variable: Two knowledge management content attributes**

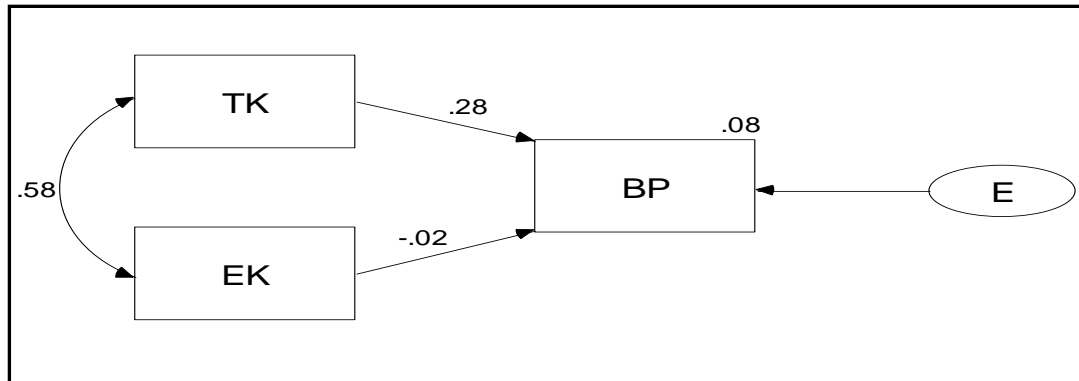
### Regression Analysis

Independent variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.369	0.460		5.150	0.000
EK	-0.026	0.123	-0.019	0.216	0.829NS
TK	0.403	0.122	0.285	3.291	0.001**

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$

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Figure 5: Path diagram estimating the relative importance of direct effect of knowledge management content attributes on business performance. Two head arrows designate relationship (number adjacent these arrows represent correlation coefficient value); one head arrows designate the direction of causality (number adjacent these arrows represent size of effect (path coefficient)).



## 10. Conclusion

The result of this study emphasize there is positive the relationship between relationship between knowledge management (consists of processes and content) and businesses performance (consists of innovation, rate of new product development, customer satisfaction, customer retention and operating costs). In addition, further research will be needed to confirm the conceptual framework.

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