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The Impact of Knowledge Management on SMEs Performance in Egypt

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Abstract

Small and medium-sized enterprises (SMEs) have commonly been perceived as a main force for sustained economic growth, development and job creation in developing countries. From a social viewpoint, SMEs secure a large and expanding segment of the population. Various research is available in the knowledge management literature investigating the effect of knowledge management on the business process. In particular, little empirical research has been found to determine the implementation of knowledge management practices in the context of developing countries and small businesses. This dissertation aimed to fill the perceived gaps by investigating the relationship between knowledge management and organizational performance in the context of Egyptian SMEs. Knowledge management processes were conceptualized as three-dimensional constructs: knowledge acquisition, knowledge sharing and knowledge application. While organizational performance was divided into two dimensions namely, non-financial performance and financial performance. The researcher chose non-financial performance which was conceptualized as three-dimensional constructs: innovativeness, competitive advantage, customer satisfaction.

Subject Areas

Knowledge Management, Knowledge Sharing, Knowledge Acquisition, Knowledge Application and Small and Medium Enterprises (SMEs) Performance

Keywords

Small and Medium Enterprises (SMEs), Knowledge Management

1. Introduction

The world is experiencing an era which has been termed the "knowledge age" or

the "knowledge economy". In this new context, knowledge is the primary commodity, and knowledge flows are regarded as the most important factors in the economy. Since rapid technological innovations are quickly bridging the gap between competing companies, there has been a trend in the industry to regard the collective knowledge of the employees as the key factor in producing innovative and competitive products. It was stated that business organizations are coming to view knowledge as their most valuable and strategic resource [1]. In addition, it was found that in an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge [2]. This change of focus forces organizations to re-think the way they manage their business since the focus is no longer on tangible assets but people's abilities and experience. Managing this intangible asset involves a change in mindset, since previously managers did not encourage dissemination and sharing of knowledge amongst employees. This management of knowledge within organizations has become more and more crucial because many activities of organizations and of the broader economic and social life today are knowledge-driven. In recent years, this managerial activity has been known as Knowledge Management (KM).

One important business sector in this context is SME's sector, as it is one of the major drivers of the Egyptian economy nowadays. In addition, the government is giving much attention and consider SME's sector as one of the main wheels in the growth and development strategy.

There is a robust, positive relationship between the relative size of the SME sector and economic growth. SME sector started since 2004 to attract the attention from both policymakers and academic scholars. However, different categorizations of SMEs, across economies and sometimes institutions of the same country [3].

According to The World Bank, SMEs have contributed greatly to the growth and development of the global economy in terms of GDP and employment opportunities. In developed countries. Thus, it becomes vital to develop such sector to get better performance and hence higher productivity.

Accordingly, this dissertation is designed to examine the relationship between knowledge management and SME's performance to choose the right and effective approach of applying knowledge which could provide better performance to such a sector.

2. Literature Review

In this section, the researcher will examine the relationship between knowledge management factors (acquisitions, sharing and applications) on Small-Medium Enterprises (SMEs) performance through some studies that the researcher has addressed on studying this relationship over the years from 2011 to 2019.

Knowledge Management and Small-Medium Enterprises (SMEs) Performance

The impact of knowledge management on Small-Medium Enterprises (SMEs)

performance was examined. A structural survey was conducted for collecting primary data from employees of Small-Medium Enterprises (SMEs) in Thailand. The sample size was 81 respondents that analyzed to test the study hypothesis (the impact of knowledge management on Small-Medium Enterprises (SMEs) performance). The conclusion stated that knowledge management had a positive significant impact on Small-Medium Enterprises (SMEs) performance [4].

In addition, the influence of knowledge management factors (acquisitions, sharing and applications) on Small-Medium Enterprises (SMEs) performance was studied. The study based on questionnaire survey approach through gathering primary data from employees of Small-Medium Enterprises (SMEs) in Iran. The valid sample size was 30 Small-Medium Enterprises (SMEs) in Iran that used to analyze using regression analysis method to test the study hypothesis (the influence of knowledge management factors (acquisitions, sharing, and applications) on Small-Medium Enterprises (SMEs) performance). The conclusion found that knowledge management factors (acquisitions, sharing and applications) had a positive significant influence on Small-Medium Enterprises (SMEs) performance [5].

Also, the influence of knowledge management on Small-Medium Enterprises (SMEs) performance of pharmaceutical firms was explained. An administered survey questionnaire was conducted to test the study hypothesis (the influence of knowledge management on Small-Medium Enterprises (SMEs) performance) through collecting primary data from employees of Small-Medium Enterprises (SMEs) of pharmaceutical firms. The valid sample size was 132 surveys that analyzed using structural equations modeling (SEM). The results found that knowledge management had a significant influence on Small-Medium Enterprises (SMEs) performance [6].

Moreover, the relationship between knowledge management and Small-Medium Enterprises (SMEs) performance was explained. The study stated the important role of Small-Medium Enterprises (SMEs) in achieving economic growth and sustainable development for any nation especially in Nigeria where Small-Medium Enterprises (SMEs) represented about 95% of its enterprises. The study used a cross-sectional research design, where the data is collected only at one point in time. A drop and pick method employed to collect data from 278 owner-managers of manufacturing Small-Medium Enterprises (SMEs) in Nigeria. The findings reached that there is a significant and positive relationship between the knowledge management and business performance of Small-Medium Enterprises (SMEs) [7].

As well as, the relationship between knowledge management and Small-Medium Enterprises (SMEs) performance was lighted. A structured questionnaire consisted of close-ended multiple-choice question to collect primary data and the valid sample size was 15 - 30 respondents that analyzed using SPSS program. The results showed that there is a significant relationship between knowledge management and Small-Medium Enterprises (SMEs) performance [8].

Furthermore, the effect of knowledge management on Small-Medium Enter-

prises (SMEs) performance was illustrated. A survey questionnaire was conducted for collecting primary data from 250 Small-Medium Enterprises (SMEs) in the period from December 2013 to April 2014 (5 Months) through 600 questionnaires sent to them. Only 101 questionnaires were valid and used to analyze to examine the study hypothesis (the effect of knowledge management on Small-Medium Enterprises (SMEs) performance) using SPSS program. The results stated that knowledge management had significant impact on Small-Medium Enterprises (SMEs) performance [9].

In addition, the relationship between knowledge management factors (acquisitions, sharing and applications) and factors (acquisitions, sharing and applications) performance was clarified. The study showed that Small-Medium Enterprises (SMEs) played an essential role in economic growth of any nation. The study based on collecting primary data from factors (acquisitions, sharing and applications). The findings showed that knowledge management factors (acquisitions, sharing and applications) had significant impact on Small-Medium Enterprises (SMEs) performance [10].

Moreover, the influence of knowledge management on Small-Medium Enterprises (SMEs) performance was investigated. The study based on quantitative approach method by collecting primary data from 978 manufacturing Small-Medium Enterprises (SMEs) in Kano-Nigeria. The valid sample size was 278 responses that analyzed using Partial Least square (PLS) to examine the study hypothesis (the influence of knowledge management on Small-Medium Enterprises (SMEs) performance). The conclusion reached that knowledge management had positive significant influence on Small-Medium Enterprises (SMEs) performance in Kano-Nigeria [11].

As well as, the impact of knowledge management on Small-Medium Enterprises (SMEs) performance was investigated. The data of this study were collected from 903 managers of Spanish Small-Medium Enterprises (SMEs) through personal interviews and analyzed the valid data using Partial Least Square (PLS) and structural equation modeling (SEM) to test the study hypothesis (the impact of knowledge management on Small-Medium Enterprises (SMEs) performance). The results found that knowledge management had significant impact on Small-Medium Enterprises (SMEs) performance [12].

Also, the relationship between knowledge management factors (acquisitions, sharing and applications) and Small-Medium Enterprises (SMEs) performance was expounded. An online questionnaire was conducted for gathering primary data through 419 questionnaires distributed on employees of Small-Medium Enterprises (SMEs) in Malaysia in the period from July to September 2015. The valid sample size was 176 questionnaires that analyzed using structural equation modeling (SEM) to test the study hypothesis (the relationship between knowledge management factors (acquisitions, sharing and applications) and Small-Medium Enterprises (SMEs) performance). The findings stated that knowledge management factors (acquisitions, sharing and applications) had direct significant impacts on Small-Medium Enterprises (SMEs) performance [13].

Furthermore, the relationship between Small-Medium Enterprises (SMEs) performance and knowledge management was explained. The study built upon quantitative approach through survey methods for gathering primary data from employees of manufacturing Small-Medium Enterprises (SMEs) in Oman. The conclusion stated that knowledge management had positive significant effect on manufacturing Small-Medium Enterprises (SMEs) performance in Oman [14].

As well as, the impact of knowledge management factors (acquisitions, sharing and applications) on Small-Medium Enterprises (SMEs) performance was examined. The study methodology based on collecting primary data through administrated survey questionnaire in Jordon distributed on 480 employees that represented in various industries in Jordon companies and the data was collected from 247 SME IT managers. The valid sample size was 177 responses that analyzed using structural model-based tools (PLS) and PLS regression techniques to examine the study hypothesis (the impact of knowledge management factors (acquisitions, sharing, applications) on Small-Medium Enterprises (SMEs) performance). The results showed that knowledge management factors (acquisitions, sharing and applications) had significant impact on Small-Medium Enterprises (SMEs) performance [15].

In addition, the relationship between knowledge management and Small-Medium Enterprises (SMEs) performance was lighted. The study based on questionnaire method by gathering primary data from employees of Italian Small-Medium Enterprises (SMEs) and the valid sample size was 88 Italian Small-Medium Enterprises (SMEs) that analyzed using structural equation modeling (SEM) to test the study hypothesis (the relationship between knowledge management and Small-Medium Enterprises (SMEs) performance). The results found that knowledge management played a significant role in Small-Medium Enterprises (SMEs) performance [16].

Therefore, the researcher can develop the following hypothesis: Knowledge Management and SMEs Performance.

Furthermore, the effect of knowledge management on innovativeness in Small-Medium Enterprises (SMEs) was indicated. This study based on an email questionnaire that sent to businesswomen who have Small-Medium Enterprises (SMEs) in Spain during the period from June 2006 to November 2006 and the valid data was 111 questionnaires that analyzed to examine the study hypothesis (the effect of knowledge management on innovativeness in Small-Medium Enterprises (SMEs)). The study found that knowledge management had positive effect on innovativeness in Small-Medium Enterprises (SMEs) [17].

As well as, the relationship between knowledge management, innovation and performance was studied and the hypothesis of study stated that knowledge management not only affects the performance positively but also has an impact on innovation, which in turn contributes to firm performance. To achieve the purpose of the study the required data collected from 89 high technology firms in Jiangsu Province of China. A survey was conducted in China to test the research model, the data collection developed through a questionnaire. The results

of study found that both explicit and tacit knowledge management practices facilitate innovation and performance. Explicit knowledge sharing has a significant effect on innovation speed and financial performance. While tacit knowledge management has significant effect on innovation quality and operational performance [18].

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Moreover, the impact of knowledge management on innovation capability and innovation performance of the firms was investigated. While knowledge management and innovation are two important factors that affect the SMEs performance. To achieve the purpose of the study the required data collected through a survey on companies in Kahramanmaras. The data collected from questionnaire were analyzed through smart PLS 2.0 program. The results of the study found that knowledge management had an influence on innovation capability of the firms. In addition, the innovation capability had an influence on innovation performance [19].

As well as, the effect of different factors on social web knowledge management and its effect on innovation performance in manufacturing small and medium-sized enterprises (SMEs) was indicated. The study seeks to understand the factors affecting social web knowledge management by demonstrating that technological and organizational factors have greater impact than environmental factors on social web knowledge management. To achieve the main purpose of the study the required data collected from the targeted population, which is manufacturing SMEs from Spain. Data collected from 1291 were identified for participation; data collection was conducted in two phases: a pilot study and a questionnaire. The results found that web knowledge management has a positive effect on organizational innovation and then affects the performance of SMEs firms [20].

Therefore, the researcher can develop the following hypothesis: Knowledge Management and innovativeness.

Also, the influence of knowledge management on competitive advantage in Small-Medium Enterprises (SMEs) was expounded. A questionnaire was conducted for collecting primary data from Small-Medium Enterprises (SMEs) in union areas of north-west Europe (2000 Small-Medium Enterprises (SMEs) up

to 250 employees) and 1396 Small-Medium Enterprises (SMEs) were valid and analyzed to test the study hypothesis (the influence of knowledge management on competitive advantage in Small-Medium Enterprises (SMEs)) using SPSS software version. The findings reached that knowledge management had significant influence on competitive advantage in Small-Medium Enterprises (SMEs) [21].

Furthermore, the relationship between knowledge management and competitive advantage in Small-Medium Enterprises (SMEs) was indicated. A self-administered survey was conducted for gathering primary data from managers of manufacturing Small-Medium Enterprises (SMEs) in Malaysia and the valid sample data was 246 surveys that analyzed to test the study hypothesis (the relationship between knowledge management and competitive advantage in Small-Medium Enterprises (SMEs)) using Partial Least Square Structural Equation Modeling (PLS-SEM) and Artificial Neural Network (ANN). The results indicated that knowledge management had positive impact on competitive advantage in Small-Medium Enterprises (SMEs) [22].

Moreover, Kmieciak and Michna, the link between knowledge management, competitive advantage, and innovativeness that affect customer satisfaction of small and medium-sized enterprises (SMEs) was tested. To achieve the main purpose of the study the required data must collected through survey from 120 Polish SMEs and the partial least squares method. The results found that there is a positive and significant relationship between knowledge management and innovativeness that affect customer satisfaction [23].

Therefore, the researcher can develop the following hypothesis: Knowledge Management and competitive advantage.

Furthermore, the relationship between knowledge management and customer satisfaction through innovation was indicated. As firm innovativeness partially mediated the relationships between knowledge sharing and customer satisfaction. To achieve the main purpose of the study the required data collected through survey data and a quantitative methodological approach. A questionnaire was tested on a sample of 10 managers of SMEs in January and February of 2015. Data for the main survey was collected in the first and quarter of 2015 among SMEs associated with the Employers' Organization of Polish Copper and from the SMEs that collaborated with them but were not members of the organization. The results found that knowledge management and SMEs innovativeness are positively related to customer satisfaction [24].

Therefore, the researcher can develop the following hypothesis: Knowledge Management and customer satisfaction.

3. Research Methodology

3.1. Data Collection and Sample Selection

Three guidelines were used to estimate the sample size for this research. Firstly, if simple random sampling had been appropriate, a sample size of 384 would be

required for the population of SM'S employees, according to statistical tools and at a confidence level of 95 percent and a confidence interval of 5 percent [25]. Secondly, a substantial quantitative research project requires at least 350 respondents. Thirdly, experience from the pilot testing indicated that an average of around four employee responses could be expected from each participating SME, although the number would vary because of the wide-ranging staff numbers across organizations [26]. Applying these guidelines, target levels for this research were set at a total of 400 staff responses from SME'S.

3.2. Variables and Measurement

The variables used in this study can be categorized into two main types which are; the dependent and independent variables.

3.2.1. Dependent Variable

The dependent variable for this study is SMEs performance dimensions in Egypt (innovativeness, competitive advantage and customer satisfaction).

3.2.2. Independent Variable

There Independent variables: Knowledge management dimensions (knowledge acquisition, sharing and application) (**Figure 1** & **Table 1**).

3.3. Research Model

Small-Medium Enterprises (SMEs) Performance = $\beta 0 + \beta 1$ knowledge management $+e$.

Noting:

$\beta 0$ = Regression constant.

$\beta 1$ = Regression coefficient for knowledge management.

e = the error term.

The pervious equation is initiated by the researcher according to the study hypothesis which is there is significant relationship between Small-Medium Enterprises (SMEs) Performance and knowledge management.

4. Descriptive Statistics

The descriptive statistics is a tool in which it explains and gives a distinct understanding of the features of certain data set, by giving short summaries about

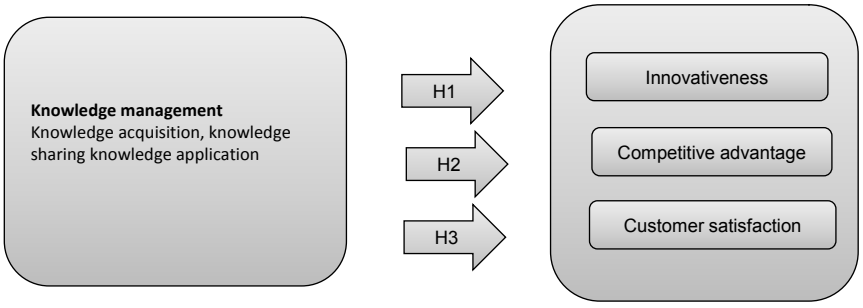

Figure 1. Relationship diagram between independent variables and dependent variables.

Table 1. Presents a summary for all the variables including the dependent and independent of the study.

Research Variable	Variables	Measurement
knowledge management	Knowledge acquisition	1) Knowledge is obtained from customers 2) Knowledge is obtained from employees 3) Much time is taken by an employee to get the relevant knowledge 4) Knowledge is acquired through on-job training, mentoring, seminars and conferences 5) There is a KM strategy in the company 6) Well defined processes for creation, capture, and acquisition of knowledge 7) In our company knowledge acquisition through research helps improve how resources are utilized 8) Through training there is increased capabilities in using and developing knowledge in the sector 9) We conduct research on new service, which helps employees to up-skill results in knowledge acquisition 10) In our company knowledge acquisition through research helps employees to be more competent
	Knowledge sharing	11) Knowledge is shared across the units 12) Knowledge is shared between supervisors and subordinates 13) People at workplace share their experiences and knowledge willingly 14) Formal channels for knowledge sharing (like meeting, courses, tours and similar activities) 15) Useful knowledge can be easily shared and acted upon 16) Our company provides incentives for knowledge sharing 17) Our company encourages employees to articulate information when sharing knowledge
	Knowledge application	18) Effectively managing different sources and types of knowledge 19) Utilizing knowledge into practical use 20) Applying knowledge to solve new problems 21) Applying experiential knowledge 22) SME'S leadership has pioneered and driven KM adoption and use 23) There is a KM strategy in SME'S 24) There are continuous improvements as a result of KM application
	Innovativeness	25) Employees have capacity to generate new ideas 26) Employees are able to absorb new ideas 27) Employees are able to transform knowledge and ideas into new product, processes and systems 28) My company introduces more innovative products and services than other companies 29) My company provides information to its customers regarding new systems
Small-Medium Enterprises (SMEs) Performance	competitive advantage	30) KM has resulted in new products 31) KM increases the speed of response to market crises 32) KM improves existing products 33) KM generates new processes 34) KM improves existing processes
	customer satisfaction	35) My company deals with customers' suggestions or complaints urgently and with utmost care 36) My company is fast in adopting latest technology 37) KM enhances customer retention. 38) My company offers services with reasonable prices 39) My company offers free services if

samples and how to measure the data. The three major types of descriptive analysis are frequency, measures the central tendency such as averages, and measure of variability such as standard deviation. Measures of variability describes the level of how different the scores are from the mean. Measures of central tenden-

cy suggest unique value that generally represents the entire scores set.

Frequency statistics sum how many times each variable is repeated. In the following section, means, standard deviations and frequency statistics will be conducted on both, demographic data and the research variables. Table 1 shows the respondent profile. It could be observed that the number of Male respondents is higher than Female respondents as it got 54.6%, while the age group 31 - 40 is higher than other age groups with a percentage of 50.6%. Further, the experience from 1 to 5 years is higher than other work experiences with a percentage of 33.3%. Moreover, bachelor's degree has the highest number of respondents as it got 40.0% of the sampling. Finally, from Service sector is higher than other sectors with a percentage of 42.8% (Table 2).

Table 2. Respondent profile.

	Frequency	Percent %	Total
Gender			
Male	274	54.6	502
Female	228	45.4	
Age			
less than 30	124	24.7	502
31 - 40	254	50.6	
41 - 50	113	22.5	
Over 50	11	2.2	
Work Experience			
Less than 1 year	27	5.4	502
1 to 5 years	167	33.3	
6 to 10 years	127	25.3	
11 to 15 years	113	22.5	
More than 15 years	68	13.5	
Education Level			
Bachelor's degree	201	40.0	502
Master's degree	189	37.6	
Doctorate Degree	67	13.3	
Other	45	9.0	
The business was started			
As a family owned business	55	11.0	502
It was bought as a running business	119	23.7	
On my own initiative	143	28.5	
Other	185	36.9	
Firm Type			
Commercial	78	15.5	502
Manufacturing	94	18.7	
Service	215	42.8	
Other	115	22.9	

Table 3 shows the Mean and Standard Deviation for Research variables. It could be observed that the mean and the frequencies of most responses are in the agreement zone, as the mean values for the research variables: Knowledge Acquisition, Knowledge Sharing, Knowledge Application, Critical Thinking, Innovativeness, Competitive Advantage, and Customer Satisfaction are 3.8347, 3.7311, 3.8028, 3.8825, 4.3068, 4.1614, and 4.3167 respectively.

5. The Results

In this section, the hypotheses under study are tested using the correlation and regression (Testing the Relation between Knowledge Management Dimensions and SMEs Performance Dimensions).

- Testing the Relation between Knowledge Management dimensions and Innovativeness: Table 4 shows the correlation matrix for the relationship between Knowledge Management dimensions, Knowledge Acquisition, Knowledge Sharing, Knowledge Application, and Innovativeness. It was found that there is a significant positive relationship between Knowledge Acquisition, Knowledge Sharing, Knowledge Application, and Innovativeness, as the corresponding P-values are less than 0.05 and correlation coefficients are 0.318, 0.229, and 0.122, respectively.

The regression models of the effect of Knowledge Management dimensions on Innovativeness, results are shown in the following Tables. Table 5 shows the simple regression for the effect of Knowledge Acquisition on Innovativeness, it could be noted that there is a significant positive effect, as the regression coefficient is 0.429 and P-value is less than 0.05. Moreover, the R Square is 0.097, which means that 9.7% of the variation of the Innovativeness can be explained by the independent variable Knowledge Acquisition.

Table 6 shows the simple regression for the effect of Knowledge Sharing on Innovativeness. It illustrates that there is a significant positive effect, as the regression coefficient is 0.238 and P-value is 0.000 which is less than 0.05. Moreover, the R Square is 0.061, which means that 6.1% of the variation of the Innovativeness can be explained by the independent variable Knowledge Sharing.

Table 3. Summary for descriptive statistics of variables.

Research Variables	N	Mean	Std. Deviation	Frequency				
				1	2	3	4	5
Knowledge Acquisition	502	3.8347	0.38244	0	0	85	415	2
Knowledge Sharing	502	3.7311	0.54479	0	0	160	317	25
Knowledge Application	502	3.8028	0.40819	0	0	101	399	2
Critical Thinking	502	3.8825	0.50952	0	0	98	365	39
Innovativeness	502	4.3068	0.52627	0	0	16	316	170
Competitive Advantage	502	4.1614	0.62216	0	0	63	295	144
Customer Satisfaction	502	4.3167	0.50277	0	0	9	325	168

Table 4. Correlation Matrix between knowledge management dimensions and innovativeness.

			1.	2.	3.	4.
Spearman's Rho	1. Knowledge Acquisition	Correlation Coefficient	1.000			
		Sig. (2-Tailed)	.			
		N	502			
	2. Knowledge Sharing	Correlation Coefficient	0.048	1.000		
		Sig. (2-Tailed)	0.279	.		
		N	502	502		
	3. Knowledge Application	Correlation Coefficient	−0.019	0.077	1.000	
		Sig. (2-Tailed)	0.665	0.085	.	
		N	502	502	502	
	4. Innovativeness	Correlation Coefficient	0.318**	0.229**	0.122**	1.000
		Sig. (2-Tailed)	0.000	0.000	0.006	.
		N	502	502	502	502

Table 5. Regression model of knowledge acquisition on innovativeness.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
		B	Std. Error	Beta			
1	(Constant)	2.660	0.225		11.807	0.000	0.097
	Knowledge Acquisition	0.429	0.058	0.312	7.344	0.000	

A. Dependent Variable: Innovativeness.

Table 6. Regression model of knowledge sharing on innovativeness.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
		B	Std. Error	Beta			
1	(Constant)	3.418	0.158		21.653	0.000	0.061
	Knowledge Sharing	0.238	0.042	0.247	5.689	0.000	

A. Dependent Variable: Innovativeness.

Table 7 shows the simple regression for the effect of Knowledge Application on Innovativeness. It illustrates that there is a significant positive effect, as the regression coefficient is 0.184 and P-value is 0.001. Moreover, the R Square is 0.020, which means that 2% of the variation of the Innovativeness can be explained by the independent variable Knowledge Application.

Table 8 shows the regression model fitted for the effect of Knowledge Management dimensions, Knowledge Acquisition, Knowledge Sharing, and Knowledge Application, on Innovativeness. It could be noted that there is a significant positive effect of the Knowledge Acquisition, Knowledge Sharing, and Knowledge

Table 7. Regression model of knowledge application on innovativeness.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	R-square
		B	Std. Error	Beta			
1	(Constant)	3.607	0.218		16.524	0.000	0.020
	Knowledge Application	0.184	0.057	0.143	3.227	0.001	

A. Dependent Variable: Innovativeness.

Table 8. Regression model of knowledge management dimensions on innovativeness.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	R-square
	B	Std. Error	Beta			
(Constant)	1.286	0.321		4.007	0.000	0.167
Knowledge Acquisition	0.416	0.056	0.302	7.380	0.000	
Knowledge Sharing	0.212	0.040	0.219	5.332	0.000	
Knowledge Application	0.167	0.053	0.130	3.158	0.002	

A. Dependent Variable: Innovativeness.

Application, on Innovativeness as the regression coefficients are 0.416, 0.212 and 0.167 and P-values are less than 0.05. Moreover, the R square is 0.167 which means 16.7% of the variation of the Innovativeness can be explained by Knowledge Sharing, and Knowledge Application together.

- Testing the Relation between Knowledge Management dimensions and Competitive Advantage: Table 9 shows the correlation matrix for the relationship between Knowledge Management dimensions, Knowledge Acquisition, Knowledge Sharing, Knowledge Application, and Competitive Advantage. It was found that there is a significant positive relationship between Knowledge Acquisition, Knowledge Sharing, and Competitive Advantage, as the corresponding P-values are less than 0.05 and correlation coefficients are 0.196, and 0.188 respectively, while, there is an insignificant relationship between Knowledge Application and Competitive Advantage as the corresponding P-value is more than 0.05.

The regression models of the effect of Knowledge Management dimensions on Competitive Advantage, results are shown in the following Tables. Table 10 shows the simple regression for the effect of Knowledge Acquisition on Competitive Advantage, it could be noted that there is a significant positive effect, as the regression coefficient is 0.306 and P-value is 0.000 which is less than 0.05. Moreover, the R Square is 0.035, which means that 3.5% of the variation of the Competitive Advantage can be explained by the independent variable Knowledge Acquisition.

Table 11 shows the simple regression for the effect of Knowledge Sharing on Competitive Advantage. It illustrates that there is a significant positive effect, as

Table 9. Correlation matrix between knowledge management dimensions and competitive advantage.

			1.	2.	3.	4.
Spearman's Rho	1. Knowledge Acquisition	Correlation Coefficient	1.000			
		Sig. (2-Tailed)	.			
		N	502			
	2. Knowledge Sharing	Correlation Coefficient	0.048	1.000		
		Sig. (2-Tailed)	0.279	.		
		N	502	502		
	3. Knowledge Application	Correlation Coefficient	−0.019	0.077	1.000	
		Sig. (2-Tailed)	0.665	0.085	.	
		N	502	502	502	
	4. Competitive Advantage	Correlation Coefficient	0.196**	0.188**	0.044	1.000
		Sig. (2-Tailed)	0.000	0.000	0.326	.
		N	502	502	502	502

Table 10. Regression model of knowledge acquisition on competitive advantage.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
		B	Std. Error	Beta			
1	(Constant)	2.990	0.275		10.856	0.000	0.035
	Knowledge Acquisition	0.306	0.071	0.188	4.276	0.000	

A. Dependent Variable: Competitive Advantage.

Table 11. Regression model of knowledge sharing on competitive advantage.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
		B	Std. Error	Beta			
1	(Constant)	3.292	0.212		15.511	0.000	0.042
	Knowledge Sharing	0.234	0.056	0.202	4.169	0.000	

A. Dependent Variable: Competitive Advantage.

the regression coefficient is 0.234 and P-value is 0.000 which is less than 0.05. Moreover, the R Square is 0.042, which means that 4.2% of the variation of the Competitive Advantage can be explained by the independent variable Knowledge Sharing.

Table 12 shows the simple regression for the effect of Knowledge Application on Competitive Advantage. It illustrates that there is an insignificant effect, as the regression coefficient is 0.072 and P-value is more than 0.05.

Table 13 shows the regression model fitted for the effect of Knowledge Management dimensions, Knowledge Acquisition, Knowledge Sharing, and Knowledge

Table 12. Regression model of knowledge application on competitive advantage.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
		B	Std. Error	Beta			
1	(Constant)	3.889	0.260		14.935	0.000	0.002
	Knowledge Application	0.072	0.068	0.047	1.051	0.294	

A. Dependent Variable: Competitive Advantage.

Table 13. Regression model of knowledge management dimensions on competitive advantage.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
	B	Std. Error	Beta			
(Constant)	2.035	0.400		5.091	0.000	0.074
Knowledge Acquisition	0.290	0.070	0.178	4.121	0.000	
Knowledge Sharing	0.220	0.049	0.192	4.438	0.000	
Knowledge Application	0.052	0.066	0.034	0.783	0.434	

A. Dependent Variable: Competitive Advantage.

Application, on Competitive Advantage. It could be noted that there is a significant effect of the Knowledge Acquisition, and Knowledge Sharing, on Competitive Advantage as the regression coefficients are 0.290, and 0.220 and P-values are less than 0.05, while, there is an insignificant effect of Knowledge Application on Competitive Advantage as the P-value is more than 0.05. Moreover, the R square is 0.074 which means 7.4% of the variation of the Competitive Advantage can be explained by the Knowledge Acquisition, and Knowledge Sharing.

- Testing the Relation between Knowledge Management dimensions and Customer Satisfaction: Table 14 shows the correlation matrix for the relationship between Knowledge Management dimensions, Knowledge Acquisition, Knowledge Sharing, Knowledge Application, and Competitive Advantage. It was found that the relationship is significant between Knowledge Acquisition, and Competitive Advantage, as the corresponding P-value is less than 0.05 and correlation coefficient is 0.175, while, there is an insignificant relationship between Knowledge Sharing, Knowledge Application and Customer Satisfaction as the P-values are more than 0.05.

The regression models of the effect of Knowledge Management dimensions on Customer Satisfaction, results are shown in the following Tables. Table 15 shows the simple regression for the effect of Knowledge Acquisition on Customer Satisfaction, it could be noted that there is a significant positive effect, as the regression coefficient is 0.250 and P-value is 0.000 which is less than 0.05. Moreover, the R Square is 0.036, which means that 3.6% of the variation of the Customer Satisfaction can be explained by the independent variable Knowledge Acquisition.

Table 14. Correlation matrix between knowledge management dimensions and customer satisfaction.

			1.	2.	3.	4.
Spearman's Rho	1. Knowledge Acquisition	Correlation Coefficient	1.000			
		Sig. (2-Tailed)	.			
		N	502			
	2. Knowledge Sharing	Correlation Coefficient	0.048	1.000		
		Sig. (2-Tailed)	0.279	.		
		N	502	502		
	3. Knowledge Application	Correlation Coefficient	−0.019	0.077	1.000	
		Sig. (2-Tailed)	0.665	0.085	.	
		N	502	502	502	
	4. Customer Satisfaction	Correlation Coefficient	0.175**	0.055	−0.028	1.000
		Sig. (2-Tailed)	0.000	0.221	0.531	.
		N	502	502	502	502

Table 15. Regression model of knowledge acquisition on customer satisfaction.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
		B	Std. Error	Beta			
1	(Constant)	3.360	0.222		15.104	0.000	0.036
	Knowledge Acquisition	0.250	0.058	0.190	4.324	0.000	

A. Dependent Variable: Customer Satisfaction.

Table 16 shows the simple regression for the effect of Knowledge Sharing on Customer Satisfaction. It illustrates that there is an insignificant effect, as the P-value is more than 0.005.

Table 17 shows the simple regression for the effect of Knowledge Application on Customer Satisfaction. It illustrates that there is an insignificant effect, as the P-value is more than 0.05.

Table 18 shows the regression model fitted for the effect of Knowledge Management dimensions, Knowledge Acquisition, Knowledge Sharing, Knowledge Application, on Customer Satisfaction. It could be noted that there is a significant effect of the Knowledge Acquisition, on Customer Satisfaction as the regression coefficient is 0.245 and P-value is less than 0.05, while, there is an insignificant effect of Knowledge Sharing, and Knowledge Application on Customer Satisfaction as the P-values are more than 0.05. Moreover, the R square is 0.039 which means 3.9% of the variation of the Customer Satisfaction can be explained by the independent variables together.

Table 19 shows the SEM analysis of the impact of Management dimensions; Knowledge Acquisition, Knowledge Sharing, and Knowledge Application, on

Table 16. Regression model of knowledge sharing on customer satisfaction.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
		B	Std. Error	Beta			
1	(Constant)	4.122	0.155		26.531	0.000	0.003
	Knowledge Sharing	0.052	0.041	0.057	1.266	0.206	

A. Dependent Variable: Customer Satisfaction.

Table 17. Regression model of knowledge application on customer satisfaction.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
		B	Std. Error	Beta			
1	(Constant)	4.437	0.211		21.069	0.000	0.001
	Knowledge Application	−0.032	0.055	−0.026	−0.575	0.565	

A. Dependent Variable: Customer Satisfaction.

Table 18. Regression model of knowledge management dimensions on customer satisfaction.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-square
	B	Std. Error	Beta			
(Constant)	3.332	0.329		10.122	0.000	0.039
Knowledge Acquisition	0.245	0.058	0.187	4.243	0.000	
Knowledge Sharing	0.045	0.041	0.049	1.101	0.271	
Knowledge Application	−0.033	0.054	−0.027	−0.602	0.548	

A. Dependent Variable: Customer Satisfaction.

Table 19. SEM analysis of knowledge management dimensions and SMEs performance dimensions.

			Estimate	P	R2
Innovativeness	<---	Knowledge acquisition	0.406	***	0.268
Innovativeness	<---	Knowledge sharing	0.240	***	
Innovativeness	<---	Knowledge application	0.194	0.008	
Competitive Advantage	<---	Knowledge acquisition	0.221	***	0.106
Competitive Advantage	<---	Knowledge sharing	0.177	***	
Competitive Advantage	<---	Knowledge application	0.170	0.025	
Customer Satisfaction	<---	Knowledge acquisition	0.187	0.007	0.048
Customer Satisfaction	<---	Knowledge sharing	−0.029	0.596	
Customer Satisfaction	<---	Knowledge application	0.210	0.011	

SMEs Performance dimensions: Innovativeness, Competitive Advantage, and Customer Satisfaction. It could be noted that there is a significant effect of

Knowledge Acquisition, Knowledge Sharing, and Knowledge Application, on Innovativeness as the estimate values are 0.406, 0.240, and 0.194 and P-values are less than 0.05. Furthermore, the R square is 0.268, which means that the model explains 26.8% of the variation in Innovativeness. Also, it could be noted that there is a significant effect of Knowledge Acquisition, Knowledge Sharing, and Knowledge Application on Competitive Advantage as the estimated values are 0.221, 0.177 and 0.170 and P-values are less than 0.05.

Furthermore, the R square is 0.106, which means that the model explains 10.6% of the variation in Competitive Advantage. Moreover, it could be noted that there is a significant effect of Knowledge Acquisition, and Knowledge Application, on Customer Satisfaction as the estimate values are 0.187, and 0.210 and P-values are less than 0.05, while there is an insignificant effect of Knowledge Sharing on Customer Satisfaction as the P-value is more than 0.05. Furthermore, the R square is 0.048, which means that the Knowledge Acquisition, and Knowledge Application explains 4.8% of the variation in Customer Satisfaction.

The model fit indices: CMIN/DF = 1.900, GFI = 0.914, CFI = 0.910, AGFI = 0.897, and RMSEA = 0.042 are all within their acceptable levels. The SEM model conducted for the effect of the Knowledge Management dimensions and SMEs Performance dimensions is illustrated in **Figure 2**.

Therefore, based on the analysis the first sub hypothesis of the third hypothesis that there is a significant relationship between Knowledge Management dimensions and Innovativeness is fully supported. Therefore, based on the analysis the second sub hypothesis of the third hypothesis that there is a significant relationship between Knowledge Management dimensions and Competitive Advantage is fully supported. Therefore, based on the analysis the third sub hypothesis of the third hypothesis that there is a significant relationship between Knowledge Management dimensions and Customer Satisfaction is partially supported. Thus, based on the analysis the third hypothesis that there is a significant relationship between Knowledge Management dimensions and SMEs Performance Dimensions is partially supported (**Table 20**).

Contributions and Originality

SMEs performance is a main concern of management within organizations. This

Table 20. Summary of hypotheses results.

Hypotheses	Description	Results
H_1	There is a significant relationship between knowledge management dimensions and innovativeness	Fully Supported
H_2	There is a significant relationship between knowledge management dimensions and competitive advantage	Fully Supported
H_3	There is a significant relationship between knowledge management dimensions and customer satisfaction	Partially Supported

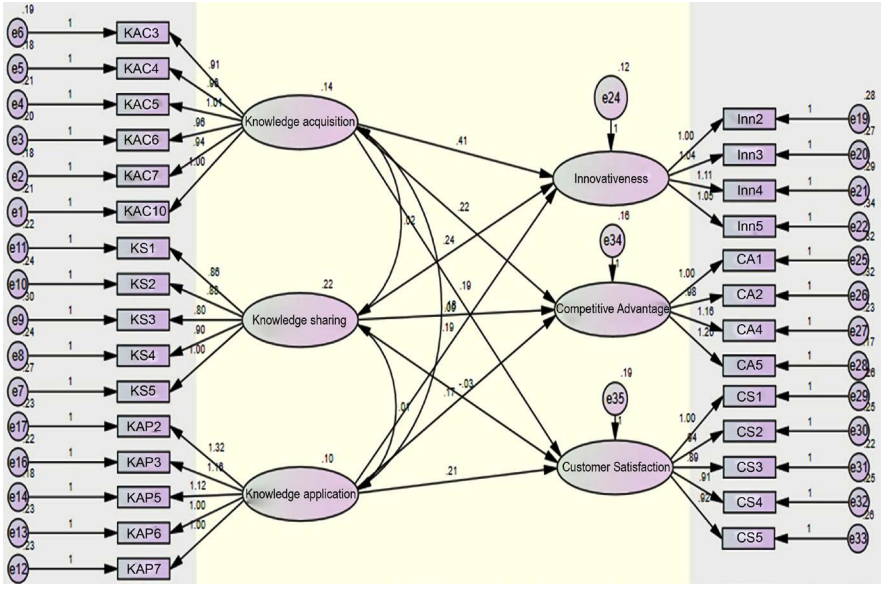

Figure 2. SEM for knowledge management dimensions on SMEs performance dimensions.

research investigated the relationship between Knowledge Management (KM) and performance of SMEs in Egypt. Based on this finding, the researcher revealed some important conclusions. Regarding the first objective, knowledge acquisition, knowledge sharing and knowledge application impact on Innovativeness are statistically significant positive effect, so the first hypothesis is fully supported. Concerning Knowledge Acquisition, Knowledge Sharing, Knowledge Application, and their relationship to Competitive Advantage. It was found that knowledge acquisition, knowledge sharing and knowledge application impact on Competitive Advantage are statistically significant positive effect, so the second hypothesis is fully supported.

For the impact of Knowledge Management dimensions; Knowledge Acquisition, Knowledge Sharing, Knowledge Application, on Customer Satisfaction. It was found that the relationship is significant between Knowledge Acquisition, Knowledge Sharing, and Customer Satisfaction while Knowledge Application has an insignificant effect on Customer Satisfaction, so the third hypothesis is partially supported. Moreover, Firm Type as a moderator between knowledge management dimensions and performance dimensions was rejected.

Contribution of the Study to Knowledge: This study investigated the relationship between knowledge management (KM) and performance of SMEs in Egypt. Despite previous empirical studies founding that KM has a significant relationship with companies' performance, it has been observed that the focus of past studies had been on SMEs in developed countries. This research contributes to empirical literature by highlighting that knowledge management KM has a positive influence on performance of SMEs in Egypt. Moreover, the research adds to the present body of empirical literature. The study spreads the conceptualization of the relationship between SMEs in Egypt KM and performance

through the integration of a moderating variable (critical thinking) This integrated study model has vital implications to both practitioners and researchers in knowledge management sectors and SMEs. Moreover, the three critical factors that are utilized in this study comprising of knowledge acquisition, knowledge sharing, and knowledge application enhances the conceptualization of knowledge management (KM) framework.

The research supports the proposition of RBV that intellectual capital such as the knowledge that employees grasp and which are developed are responsible for creating and sustaining Innovativeness, competitive advantage and enhancing customer satisfaction contributing to SMEs performance. Furthermore, the research supports the proposition of organization's learning theory as a fundamental element in sustaining innovativeness, competitive advantage and customer satisfaction that increase SMEs performance.

Recommendation

Recommendation for Policy and Practice: The results of this research have vital implications for policy and practice that can be used for the purpose of enhancing management of knowledge in SMEs in Egypt. Management of SMEs should consider improving practices associated with the different elements of knowledge management such as acquisition, sharing and application.

Consequently, management of SMEs should enhance all activities relating to knowledge acquisition, sharing and application. Information should be more available and accessible, and its movement should be enhanced in order to smooth transmission of tacit knowledge.

In this case, management of SMEs in Egypt should take initiatives to pioneer and drive knowledge management KM adoption and use along with committing more financial resources on knowledge management (KM) training programs.

In addition, management should make initiatives to improve the absorptive capacity of employees for new ideas and value of education in generating alternative courses of action in decision and problem situations. Likewise, managers in other knowledge intensive organizations should promote and improve knowledge management (KM) practices to increase efficiency and effectiveness.

Furthermore, critical thinking was rejected as a moderator in the link between KM and performance. Management of SMEs in Egypt should enhance collaboration among SMEs members in development and use of new information and ideas besides promoting all practices that improve utilization of knowledge with respect to SMEs performance.

Recommendations for Further Study: This research aimed to investigate the relationship between KM and performance of SMEs in Egypt, as well as to establish the moderating role of critical thinking on the relationship between KM and performance. In this case, the findings and conclusions are limited to SMEs in Egypt. Besides, the research ignored the effect of the specific dimensions of firm's culture on the relationship between KM and performance. Likewise, the

researcher did not consider other variables such as firm's environment, firm's size and firm's strategy which may influence the relationship between knowledge management (KM) and performance.

Further studies might be done in other developing countries, where the comparison could probably make. Researches on how large enterprises behaviors on KM practices are also essential for the comparison with the SMEs.

Future research should emphasize on validating the results and conclusion of this study by replicating researches in other corporate and sectors in Egypt. Additionally, further research should be done to investigate the moderating and mediating role of other variables on the relationship between knowledge management and performance.

Limitations

SMEs need to focus on knowledge management to develop the company's sustainable growth, efficiency, innovation, and performance. By taking a critical view on this study, the researcher collected the data from one city representing Egypt. It is suggested to collect data from another country and compare the results and see if the findings of the current research that is applied in Egypt are similar if applied to another country.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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