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Knowledge Management Process and Innovation in Indian Nationalised Bank

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Abstract: ***In present days, knowledge management has become the important concept and necessary to employ for the success of firm. This research paper depicts the framework to understand the knowledge management process that impact the innovation in a bank. In current scenario, future of any firm will be based on employment of knowledge management at right time leading to innovation. The impetus of the study is to recognize the influence of knowledge management process on innovation in Indian nationalised banks. The component of knowledge management process acknowledged as knowledge acquisition, knowledge transfer, knowledge integration and knowledge application were tested using structural equation model. 209 response were gathered from the respondent working in Indian nationalised bank in Lucknow through data gathering instrument. The finding reveals that all component of knowledge management process significantly impacts the innovation except knowledge acquisition. Knowledge transfer is significant predictor among the component of knowledge management process.***

Keywords: Knowledge acquisition, knowledge transfer, knowledge integration, knowledge application, knowledge management process and innovation.

I. INTRODUCTION

In present days, banks had already automated the most of manual process that lead to consistent generation of data within banks. With the help of information technology, which is considered as key critical success factors, banks are in position to manage these data in a better way. Moreover, due to automation issues of huge data generation, information explosion arises leading to ineffectiveness and research is required to get the needful thing. Consistent and speedy development in financial segment, banking sector is facing tough competition [2]. In the age of knowledge, it is considered as power [1] and significant resource to enhance the performance [2]. Banks has now recognized knowledge as resource to sustain a competitive advantage and taking benefits of it rather than losing it to their competitor [1].

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To get the competitive advantage, perpetual existence of firm and to deal with dynamic environment, using knowledge management as debate is important [3]. As firms initiate to develop capability in dealing internal knowledge and application of it to achieve set target, by acquiring the new knowledge which may not be available within the limits of the firm [7]. In current scenario, firm need to compete by way of consistent upgrading and innovation to get the competitive advantage [4]. A strong knowledge management system permits the integration of applications between existing and new [5]. Knowledge creation, transfer and its management are at top priority in numerous organization [6]. Hence, knowledge is now consistently being acknowledged as a significant resource that provide the market leverage [1]. Moreover, knowledge management play a significant role in facilitating collaboration and providing explicit knowledge for innovative ideas [8]. Most of the organization follow diverse knowledge management strategies to match the abilities and culture [9]. Limited benchmarks of best practice had appeared due to introduction of knowledge management [6]. It becomes the key strategic resource for future and necessary to develop the understanding of knowledge management process [10]. Further, it has strategic role in achieving goals of the firm and modernize its operational affairs [11]. Knowledge is an influential resource that empowers firms and employees to attain faster learning [12]. It would be difficult for the firm to acknowledge the effective knowledge management if they are not aware about the existence of knowledge and its residence [13]. It is not only viewed as a key asset in firm but also considered as most significant factor of economic growth [14]. The dynamic business environment forces to consistently enhance knowledge throughout the firm [15]. Further, employment of knowledge management process needs to be investigated [6]. Data and information are used for numerous purposes to enhance the possibility of knowledge potential, customer satisfaction and explore new market and product [16].

We are in the era of knowledge economy that act as prime source of wealth and hence, fastest rising areas of corporate sector is knowledge management system [24]. Further, it is considered as means for growth and survival of firm [25]. It plays a significant role in integration of knowledge that enable knowledge sharing [8]. Knowledge management is an emerging discipline [26] and it is a process of organizing the disorganized information that exists in the firm [11]. It can combine the information technology, knowledge development and innovation efforts to enhance competitiveness [16].

Hence, it is essential to study the key constituent of knowledge management process in nationalised bank of India and their impact on innovation to get the insight in order to diminish the impact of external and dynamic environment.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Knowledge is important for each firm and most of firm want to develop their own methods according to their context [17]. It helps in resolving the complex issues across the different fields [18]. It is rapidly becoming the major source of wealth for firm as well as for individual [19]. Further, it is important driving force for success of business [20] as well as become an essential constituent in procedure of modernisation [18]. Moreover, it emerged as an asset for firm in dynamic scenario [21]. Knowledge acquired from new source has value when it recombines with existing knowledge [22]. It is used to create and transfer knowledge more effectively [23].

A. Knowledge management process:

It facilitates the capability to explore, capture knowledge and utilize it in a context by the firm [7]. It is defined as transformation from data to knowledge through information [27]. It is essential in current scenario viewed at knowledge as an important factor to take competitive advantage [7]. All the firm are consistently using the information and knowledge to enhance decision making process [24]. Knowledge management process enable the firm for generation and acquisition of knowledge, knowledge transfer, and knowledge application across the firm [28]. Based on literature; important component of knowledge management process was taken under study i.e. knowledge acquisition, knowledge transfer, knowledge integration and knowledge application.

Knowledge acquisition: It is defined as the capability of employees to generate or acquire new knowledge from existing database or from any external source [38]. It includes the storage of knowledge in repository for future access [39]. **Knowledge transfer:** Successful knowledge transfer refers that sharing the outcome of accumulation of new knowledge and act as conveyance for knowledge from one person to another [44]. Motivation to share the knowledge impact the employee's behaviour and intension that may encourage the willingness of employees to engage in knowledge transfer [41]. Further, proactive transfer of knowledge is commenced before the implementation of the innovation by the user [43]. Differences in culture and management practices are observed as major hindrance in successful knowledge transfer [42]. Knowledge transfer can be effective by way of formal and social networks and human behaviour can be affected by firm's environment [45]. ***Knowledge integration:*** It is a general phenomenon and application of resultant knowledge will resolve the issue [18]. It is a process of combining existing knowledge to explore new pattern and relation [48]. The capability to resolve certain issues needs an integration of existing knowledge that change the current situation [18]. **Knowledge application:** It is defined as the extent to which knowledge acquired is applied in a valuable manner in the firm [58]. It is the succession of knowledge sharing in the knowledge management process [59]. Knowledge application leads to innovations [56]. Effective knowledge application helps the firm to improve firm efficiency and reduce cost [61].

C. Innovation*:*

The organization firmly trust that knowledge is essential for generation of new idea and effective knowledge management practices to innovate [30]. Knowledge act as a source of innovation [35] and it is process of generating new knowledge [36]. Investing in knowledge management leads to sustainable competitive advantage [33]. Most important challenge for all type of organization is innovation [29]. It is important for consistent upgradation of learning outcome [31] adopted by most of the firm to enhance the service quality [32].

This theoretical discussion leads to the following hypothesis that are proposed in the context of Indian nationalised banks:

H1: There is positive influence of knowledge acquisition on innovation.

H2: There is positive influence of knowledge transfer on innovation.

H3: There is positive influence of knowledge integration on innovation.

H4: There is positive influence of knowledge application on innovation.

III. RESEARCH METHODOLOGY

A. Research in Indian nationalised Banks

Banking sector is a key sector of Indian economy and play a significant role in the development of country. In the era of knowledge, it is used as strategy to take the competitive edge and for sustainable development with the help of innovative ideas. Knowledge management portal was developed by most of the bank but appointment and reporting in annual report regarding chief knowledge officer was done by few. Banking sector is the area where huge data generation takes place on daily basis. Hence, in this study we propose to relate the component of knowledge management process and innovation in Indian nationalised bank.

B. Data collection and analysis

Data was collected from nationalised bank operated in Lucknow with the help of questionnaire. Questionnaire was administered among 320 bank employees and adopted convenience sampling technique. 229 responses gathered (response rate of 71.56%.) After discarding 20 invalid responses only 209 response (65.31%) were taken for further study. As suggested by author [50], sample size is adequate. The scale was adapted from the existing literature as specified in Table I and modification was done according to banking industry. The scale contains two section i.e. first section for demographic profile and second section for knowledge management scale having 18 variables on 5-point likert scale. This research is based on cross sectional design. We employed exploratory factor analysis to find the reliability of construct and problematics variable and later; for testing the hypothesis, structural equation model employed.

Conceptual Research Model

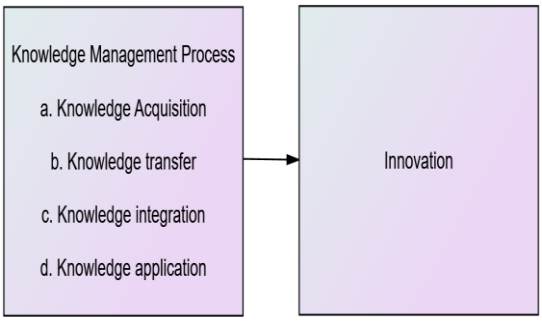

Figure:1

Table: I
Source of measurement instruments

Variable	Dimension	No. of item	Source
Knowledge management process (KMP)	Knowledge Acquisition (KA)	3	*"Kotlarsky et al. (2014). Wu and Hu (2012), Wu, I.L. and Hu, Y.P., (2018) and Ref. for Instrument: Wu and Chen (2014), Idris et al. (2015)."* Cited by Wu, I & Hu, Y. (2018) [52]
	Knowledge Transfer (KT)	3	
	Knowledge Integration (KI)	3	
	Knowledge Application (KAP)	3	
Innovation (I)		6	*"Ref. for instrument: Booz Allen Hamilton (1982)"* Cited by Darroch, J. (2005) [51]

IV. DATA ANALYSIS AND RESULTS

A. Demographic profile of respondent

The details of demographic profile of respondents from Indian nationalised bank are listed in Table II.

Table: II
Demographic profile of respondent

Variable	Category	Frequency	%
Age	Less than 25 years	40	19.1
	25-35 year	56	26.8
	35-45 year	68	32.6
	More than 45 year	45	21.5
Experience	Less than 5 years	60	28.7
	5-10 year	19	09.1
	More than 10 year	130	62.2
Gender	Male	110	52.6
	Female	99	47.4
Education	Upto Class XII	18	08.6
	Graduation	136	65.1
	Post-Graduation	55	26.3
Post	Managerial	117	56.0
	Clerk	92	44.0

B. Exploratory factor analysis

Exploratory factor analysis is employed to get the insights and interrelated variable that are clustered based on one factor are confirming the literature. However, after employing exploratory factor analysis, drop one item i.e. "I1" as its factor loadings and communalities value is less than .4. After removing "I1", finding of exploratory factor analysis is stated below:

A principal component analysis was conducted on the 17 items with orthogonal rotation-varimax. The Kaiser -Meyer – Olkin measure confirmed the sampling adequacy for the analysis, KMO = .896, and all KMO values for individual items were > .841, which is well above the acceptable limit of .50. Bartlett's test of sphericity χ^2 (136) = 2252.937, $p < .001$, indicated that correlations between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component in the data. Five components had eigenvalues over Kaiser's criterion of 1 and in combination explained 76.564% of the variance. Given the large sample size, and Kaiser's criterion on five components,

this is the number of components that were retained in the final analysis. The factor loadings after rotation is depicted in Table III. The items that cluster on the same components suggest that component 1 represents innovation, component 2 represents knowledge acquisition, component 3 represents knowledge application, component 4 represents knowledge transfer and component 5 represents knowledge Integration [54]. Moreover, Cronbach's α of all construct is greater than .70 [53] listed in Table III and hence it is reliable as suggested by author.

Table III - Rotated Component Matrix

	Component				
	1	2	3	4	5
I4	.873				
I2	.868				
I3	.812				
I5	.787				
I6	.786				
KA3		.853			
KA1		.820			
KA2		.810			
KAP3			.806		
KAP2			.775		
KAP1			.749		
KT2				.801	
KT3				.797	
KT1				.748	
KI1					.836
KI3					.799
KI2					.692
Eigenvalues	7.576	1.663	1.388	1.219	1.170
% of variance	44.57	9.78	8.16	7.17	6.88
1) Cronbach's alpha, α	.935	.869	.811	.817	.795
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 6 iterations.					

C. Measurement model assessment

Next step undertaken to measure the model as suggested by Author [53], discriminant validity and convergent validity was tested and verified with the help of AMOS software.

C1. Convergent Validity

Table IV depict the value of mean, standard deviation, factor loading, AVE and CR. The value of AVE and CR is greater than suggested value i.e. .50 and .70. Further, all the values of factor loadings are greater than suggested value i.e. .60. Thus, convergent validity holds true.

Table IV- Convergent Validity

Construct	**Dimension**	**Item**	**Mean**	**S.D.**	**Loading**	**AVE**	**CR**
KMP	KA	KA1	3.73	1.08	.752	.696	.872
		KA2	3.81	1.23	.858		
		KA3	3.84	1.15	.886		
	KT	KT1	3.83	0.98	.753	.604	.820
		KT2	3.63	0.99	.766		
		KT3	3.86	1.16	.811		
	KI	KI1	3.39	1.10	.771	.567	.797
		KI2	3.42	1.09	.730		
		KI3	3.59	1.15	.758		
	KAP	KAP1	3.74	0.98	.741	.596	.815
		KAP2	3.86	0.96	.853		
		KAP3	3.68	1.01	.716		
Innovation		I2	3.97	1.05	.931	.741	.934
		I3	3.93	1.07	.807		
		I4	3.94	1.06	.936		
		I5	3.93	1.05	.817		
		I6	3.98	1.12	.803		

C2. Discriminant Validity

Criterion specified by the author [55] applied to estimate the discriminant validity. As per Table V, model meets the criterion and hence, discriminant validity holds true.

Table - V
Discriminant Validity

	CR	**AVE**	**KI**	**I**	**KA**	**KT**	**KAP**
KI	.797	.567	**.753**				
I	.934	.741	.527	**.861**			
KA	.872	.696	.499	.484	**.834**		
KT	.820	.604	.551	.565	.514	**.777**	
KAP	.815	.596	.576	.554	.516	.574	**.772**

The measures were used to determine the fit indices such as χ^2/df, GFI, CFI, TLI, NFI and RMSEA. The details were shown in Table VI showed that measurement model is a good fit. Hence, all the fit indices stated had met the specified criterion and the result of confirmatory factor analysis state that model is acceptable for structural model.

TABLE VI
Fitness index for measurement model

χ2	df	χ2/df	GFI	CFI	TLI	NFI	RMSEA
191.634	109	1.758	.898	.962	.953	.918	.060

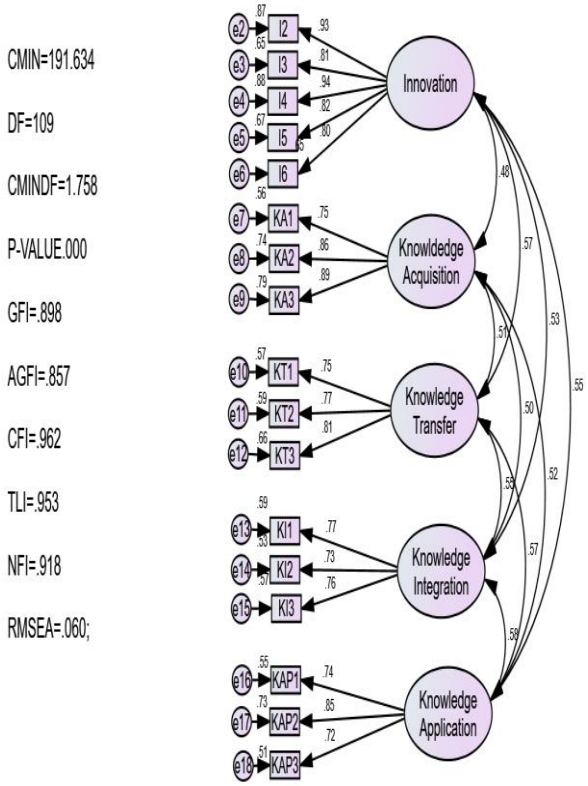

Figure 2: Measurement model

D. Structural model assessment

The proposed hypothesis was tested with the help of structural equation model depicted in Table VII. All the p- values reflected in Table VII are less than .05 except knowledge acquisition. Proposed hypothesis H2, H3 and H4 were supported by the findings of the study except hypothesis H1.

TABLE VII
RESULT OF HYPOTHESIS

	Estimates	S.E.	C.R.	P-value	Result
I← KA	.158	.088	1.789	.074	Not Supported
I← KT	.317	.112	2.835	.005	Supported
I← KI	.191	.097	1.962	.049	Supported
I← KAP	.280	.116	2.409	.016	Supported

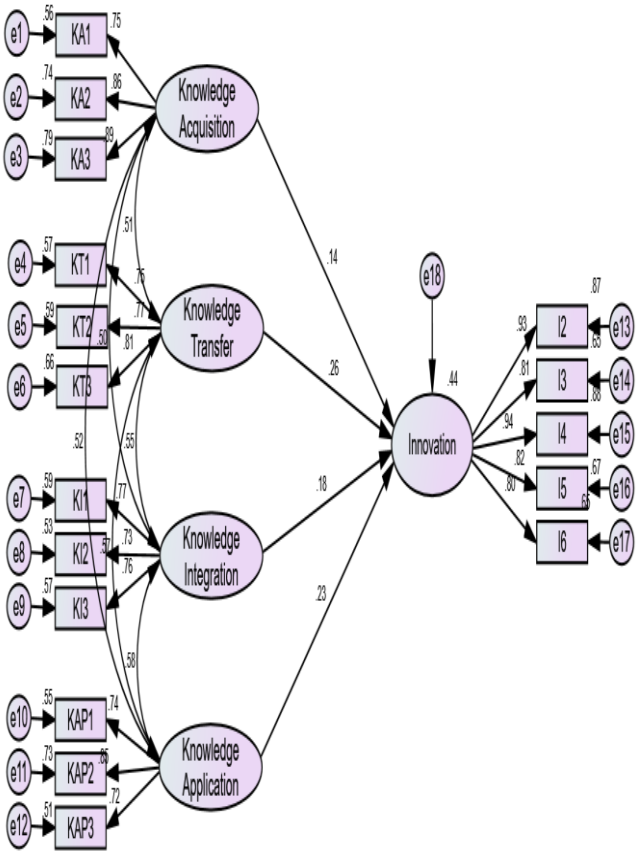

Figure 3: Structural model with path estimates

V. DISCUSSION AND CONCLUSION

Based on the literature, the study proposed the relationship between component of knowledge management process and innovation by way of a structural model. The probability of getting a critical ratio as large as 7.6804 in absolute value is less than 0.001. In other words, the regression weight for knowledge management process in the prediction of innovation is significantly different from zero at the 0.001 level (two-tailed).

To get the better insights with respect to relationship of knowledge management process and innovation; the research analyses the relationship between the component of knowledge management process and innovation.

In summary, the findings indicate that all the component of knowledge management process have positive influence on innovation except knowledge acquisition.

Knowledge transfer is found to be most powerful indicator of innovation among the component of knowledge management process. Knowledge transfer process plays key role in enhancing the organisational effectiveness [26]. Further, knowledge management has the quick response ability to threats [7]. The potential of knowledge as resource is acknowledged when efficiently and effectively recognized and managed through knowledge management processes [28]. Improvement in knowledge management process is linked to knowledge management application [27]. The aim of transferring knowledge is to enhance competencies and deliver customized solutions [12]. Effective knowledge transfer refers to the generation and application of knowledge in organization [44]. Knowledge sharing is a most important component of knowledge management system [46]. Managers need to be proactive by identifying the worth of knowledge transfer while adoption and dissemination of their innovation [43]. The next important predicator is knowledge application. Innovation is the application of knowledge and new ideas [57]. It is essential for the firm to acknowledge the factors affecting knowledge application capabilities to address issues and enhance decision making [60]. Knowledge application referred to the usage of knowledge for creating framework in order to address the issue and challenges of firm [60]. Knowledge acquisition is found insignificant to innovation may be because of respondent may not be able to link it directly with innovation. However, the finding of this study is not confirming the literature and not endorsed by the respondent of nationalised bank in India. Firms ability get affected by external knowledge acquisition particularly in dynamic environment [40]. Next, the knowledge integration that have the significant influence on innovation. Knowledge integration transform raw data into actionable knowledge [49]. Author argued that the effective knowledge integration lead to innovation and competitive advantage [47].

The data recommend that managers in Indian nationalised banks need to recognize these components of knowledge management process that impact the innovation. Knowledge transfer is an important determinant affecting innovation. Another important aspect needs to be considered by managers of Indian nationalised bank is that assess the employee's intension and endorse flexibility as a means of inspiring employees to transfer knowledge. Knowledge management is impacting the innovation, then creation of new knowledge may drive firm in new business in more profitable way [16]. It plays an essential job in confirming that knowledge is mandatory in the innovation procedure is accessible and available [8]. Innovation is essential for survival in highly competitive and dynamic environment [34]. It is the base for sustainability and competitiveness [28] and hence, organizational performance is improved by adopting a systematic knowledge management process [37].

The conclusion of this study contributes to literature in several way. Firstly, it highlights the component of knowledge management process to facilitate the knowledge management in Indian nationalised banks. Finding of this study describe that all the component of knowledge management process except knowledge acquisition, have significant positive influence on innovation. Secondly, these results also validate the knowledge-based view in context of Indian nationalised bank.

PRACTICAL IMPLICATION

This study will assist the managers, top level management and practitioners of knowledge management in banking industry by providing the innovative idea and component of knowledge management process. The findings recommend that the knowledge management practices considered by management in order to enhance employees' knowledge management abilities. There is a need of assessment of knowledge transfer ability of employee and their communication skills. This assessment will provide the sound base with regards to interest of concerned department to implement it. Further, top level management support these practices to enhance the innovation in firm. Additional significant implication of the findings is that branch managers and above authorities should develop controlling action plan to enhance the employee's knowledge acquisition, knowledge transfer, knowledge integration and knowledge application abilities.

LIMITATION AND FUTURE SCOPE

The finding of this study is restricted to nationalised banks of India and based on the respondent who are employed in Lucknow. This study has the cross-sectional design and future scope of the study can be based on longitudinal design. Most of literature are originate from the western perspective, hence future studies can be undertaken on other segment of commercial bank such as state bank of India and associates, private banks, foreign banks operated in India.

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