CONTINGENCY FRAMEWORK VIS-À-VIS INTERNAL KNOWLEDGE SHARING AND PRODUCT INNOVATION IN ENGLISH LANGUAGE INSTITUTE: A CASE STUDY

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ABSTRACT: *Current study focused on the moderating affect of Length of Service (LOS) and Gender on the relationship between Internal Knowledge Sharing (IKS) and Product Innovation (PI) in higher educational institutions (HEIs). IKS is being studied with two possible dimensions Knowledge Donating (KD) and Knowledge Collection (KC). Data for the present study was collected from English Language Institute (ELI) of King Abdulaziz University, Jeddah KSA. Optimum sample size of 230 respondents was worked out through G*Power software. Due to insufficient information, 15 questionnaires were discarded and total sample size for the study was 215. A modified Instrument for collection of data, which was used, had 12 items - 8 for capturing the dimensions of IKS and 4 for capturing PI. SPSS with an adds-on package developed by Dr Andrew Hayes was used to analyse the collected data. Structural relation between IKS and PI was found to be positive likewise, relation between IKS with its dimensions KD and KC was also positive. Furthermore, the results also indicated that Gender strongly moderated the relation between IKS and PI but LOS has a weak moderating affect on the study variables at low levels. but has stronger moderating affect at high levels of LOS. Outcomes of the study will provide guidelines to the policy makers of HEIs to frame such policies, which should encourage IKS among pedagogical staff for improving PI, eventually affecting all the stakeholders in an educational organization.*

Keywords: Internal Knowledge sharing, Positive Innovation, , Moderator, Gender, Length of service, Pedagogy

1. INTRODUCTION

In recent times, organizations that effectively and efficiently manage and make use of knowledge have more likelihood to grow and prosper than those who do not. Knowledge-driven economies are now running the affairs of the world they have the power to innovate and consequently mould public opinion in a matter of days, not weeks or months. Organizations economic sustainability relies heavily on innovation, which is mainly driven by knowledge acquired through different sources within and without the organization. The same principles of knowledge and innovation applied to product and service organizations may apply to educational institutions with *mutatis mutandis*. The present study will attempt to explore how IKS in an educational context affects the PI in Middle Eastern culture using moderating framework.

Internal Knowledge Sharing:

The main source of the prospective societies will be knowledge and knowledge workers will be dominating the work places. According to [2, 14], knowledge sharing refers to the provision of task information and knowledge to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures. These authors stress that knowledge sharing can occur via written correspondence or face-to-face communications through networking with other experts, or documenting, organizing and capturing knowledge for others. It is important to distinguish different processes of knowledge sharing (donating and collecting). In the pioneering work on Knowledge sharing [20] proposed splitting knowledge sharing into "knowledge donating–communicating to others what one's personal intellectual capital is; and knowledge collecting–consulting colleagues to get them to share their intellectual capital." Before embarking upon discussing Internal Knwoledge sharing let us first distinguish between knowledge transfer and knowledge sharing. Knowledge transfer is the movement of knowledge between units, departments, divisions or organizations whereas; Knowledge sharing is the movement of knowledge between individuals. In an educational environment, the individuals are mainly students, teachers and administrators. Hence, it can be said that knowledge sharing is individualistic in nature and takes place within an organization. Various definitions of Knowledge Sharing have been presented in the literature but the most appropriate is the one given by [19] who treat KS as bi-dimensional process where staff members share and exchange their tacit (embedded in the minds of the people) and explicit (articulated, objective, captured and has a more tangible format) knowledge. Therefore, every day interaction among the staff members of an organization new knowledge is continuously being created. The two extremes of knowledge sharing are the sources (donators) and recipients (collectors) of knowledge. Donating means giving so donating knowledge according to [5, 2 and 7] is the willingness and eagerness of individuals in organizations to give and share their knowledge with other staff members. Donating of knowledge may take place through listening, talking to others, and helping other staff members to solve their office chores quickly and with ease. Collecting means to get something (tangible or intangible) and collecting of knowledge according to [19] normally takes place through observation; listening or practicing to encourage them to share their intellectual capital. [7] is of the view that knowledge collection represents the gaining of information and knowledge from internal as well as external sources of information. [6, 21] have briefly summed up the purposes of donating knowledge and collecting knowledge as:

a) to convert tacit knowledge to explicit knowledge which the entire group of individuals own.

b) to consult staff members with the required knowledge and seeking knowledge out.

Innovation:

One of the most quoted sayings of Peter Drucker regarding research is "Publish or Perish" likewise it can be said about organizations that "Innovate or Perish." Only the organizations investing in innovative technology will sustain in the present competitive global environment. *Product innovation* is the route by which an organization creates and develops latest products, which are harbingers of organizational success. Product innovation in the educational paradigm means not just updating but also creating new courses, research projects, teaching material, training programs, and programs of study. [4] described innovation as the creation of new ideas, products, and processes, which have synergistic effects on performance. [12] were of the view that product innovation is the lynch pin for the success or failure of an organization. [11] remarked that in order to raise educational performance universities have to bank on product and process innovation. An important result emerged from a study by [3] that learning outcomes and enhanced provision of education can be an outcome of effective process Innovation. Hence the need emerges to study the model in an educational environment. To put it concisely it can be argued that process innovation entails acquiring, developing, and then implementing new processes via new technology, supportive management, and enhancing capacity building of the human resource. Sawasn, [16] dealt with the relation between transformational leadership and process innovation mediated through knowledge sharing.

The Relation between Knowledge and Innovation:

Knowledge and innovation complement each other; knowledge always precedes innovation. If knowledge base is strong it is always reflected in product or service innovation.Results of the previous studies has shown that KS is a critical enabler for process innovation. For instance, [17] highlighted that Innovation can be predicted through the creation of knowledge. [15] studied the relationship of KS vis-a-vis Product Innovation within higher educational institutions and proved that KS is an antecedent of Innovation. [18] discussed the effect of organizational justice on knowledge sharing in Chinese telecommunications sector.

Contingency Framework:

Although previous studies have established the link between KS and innovation, few of these throw light on the contingency framework viz-e-viz the relation between knowledge and product innovation. [10] studied the moderating role of absorptive capacity on the relation of subjective well-being, knowledge sharing and individual innovation behavior. After going through the relevant literature the authors could not find a study addressing the issue at hand, hence the rationale for the current research emerges. Such a research is conducted first time in KSA and will certainly have a watershed effect on the educational establishments in the regional states in employing the proposed model in toto.

Theoretical framework:

When the strength of the relationship between two variables is dependent on a third variable, moderation is said to be occurring. In the current study the third variable, or moderator (gender), interacts with IKS in predicting PI if the regression weight of PI on IKS varies as a function of Gender. The same is posited for LOS.

Conceptual framework:

Figure 2 has three causal paths that are pointed towards the outcome variable, in the current study it is Product Innovation. If path C is found to be statistically significant then the effect of moderator on the relation between the predictor (in our case IKS) and the outcome relation (PI) is established.

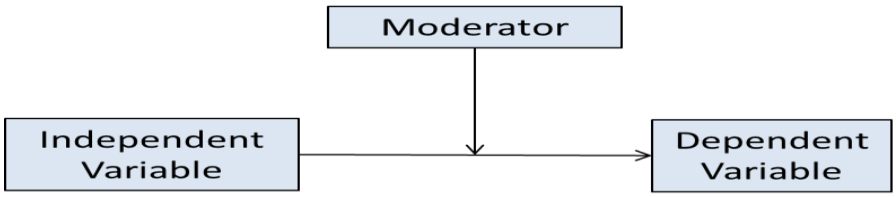

Figure 1: Conceptual Diagram

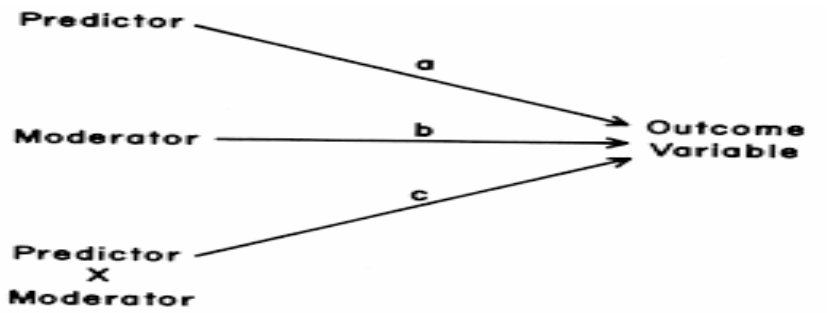

Figure 2: Statistical Diagram: Source [1]

1.1. Research Hypotheses:

Based on the foregoing discusssion following five hypotheses are framed.

a. *H1a: KD is positively related to PI*
b. *H1b: KC is positively related to PI*
c. *H2: IKS will have positive impact on PI*
d. *H3: Gender has a moderating affect on the relation between KD, KC and PI*
e. *H4: LOS has a moderating affect on the relation between KD, KC and PI*

2. METHODS AND MATERIALS

2.1. ***Study Design/Sample/Study Setting/Data Collection:*** Current study is a cross-sectional quantitative study. Data were collected from 215 teachers working in ELI King Abdulaziz University, Jeddah KSA. On the first day of every working week for 5 consecutive weeks the author collected the data and remained in the premises for any queries. The head of the institutions and respondents were assured of their anonymity and briefed about the purpose of the study. Two hundred and thirty self-administered questionnaires were distributed but during scrutiny and coding 15 questionnaires were found to be incomplete and were discarded hence, response rate was 93%. To determine the sample size, four characteristics play a pivotal role (alpha (α), effect size (q), the power of the test (1-β) and sample size (n) if we are in know of only three characteristics the fourth can be worked out. To avoid cumbersome calculations, new software is used for calculating optimum sample size and for this purpose G*Power was used. This process in statistical parlance is known as power analysis. Optimum sample size of 230 respondents was worked out through G*Power software using power analysis and is given in Figure 4 attached at Appendix 'A'.

2.2. ***Instrument:*** Data was collected through a very effective twelve items modified instrument developed by [15] using eight items by [19] covering the aspects of KD and KC. Items 1, 3, 5 and 7 represent KD and items 2, 4, 6, 8-represented KC whereas items 9 – 12 represent PI. For eliciting, the responses of the respondents five-point Likert scale was used ranging from 1-strongly disagree to 5-strongly agree the questionnaire is appended at Appendix 'A'.

2.2. **2.3. *Analysis:*** SPSS ver 20 was used for the analysis of the collected data and drawing the conceptual framework. Moderator effect of Gender and LOS are studied through a technique developed by [8], which is an additional adds-0n tool in SPSS.

3. RESULTS

3.1. ***Sampling Description:*** Out of the 2i5 returned questionnaires, 164 (76.3%) i.e three fourths of the respondents were Female teachers, whilst 51 (23.7%) were from male teachers. More than 80% of the teachers had Length of Service more than seven years and the mean length of service is approximately 14.75 years.

3.2. ***Reliability:*** [13] was of the opinion that 'α' value of 0.70 and above is acceptable. Cronbach's alpha is an indication of strong item homogeneity and suggests that sampling sphere was captured adequately. Reliability is also known as internal consistency; it is a measure of how well the scale is actually measuring what it is intended to measure. For the present study the range of Cronbach's Alpha for the three scales ranged from 0.71 to 0.80 are given in Table 2. The values of Cronbach's alpha exhibit a strong inter-item homogeneity.

3.3. ***Descriptive and Inferential Statistics***: All study variables have means greater than 3 as shown in Table3 which according to the Likert Scale points towards the fact that respondents somewhat agree with the statements of the items in the study variables. Regarding inferential part the means of all the study variables were tested against the test value=3 and the p-values for all the variables were less than 0.01, meaning thereby that if we apply these results to a big population than the mean of all the study variables will be significantly different from 3(i.e. larger than 3).

Table 1: Sampling Characteristics of Respondents

Sampling Characteristics		Count	%	Remarks
Gender	Male (1)	51	23.7%	Three fourths of the respondents are female
	Female (2)	164	76.3%	
LOS	1 to less than 7 years (1)	36	16.7%	Mean (14.75 years)
	7 to less than 14 years (2)	86	40.0%	
	14 & above (3)	93	43.3%	

Table 2: Showing Internal Consistency of Study Variables

Scales	No of Items	Cronbach's 'α'
Knowledge Donation	4	0.71
Knowledge Collection	4	0.75
Product Innovation	4	0.80

Table 3: Descriptive and Inferential Statistics (t-test) for Study Variables

	Test Value = 3							
	Mean	S. D	t	df	Sig.	Mean Difference	95% CI	
							Lower	Upper
Knowledge Donation	3.4489	.8125	8.101	214	.000	.4488	.3397	.5581
Knowledge Collection	3.5852	.8724	9.835	214	.000	.5851	.4679	.7025
Product Innovation	3.3042	.8494	5.250	214	.000	.3041	.1900	.4183
IKS	3.5211	.7597	10.057	214	.000	.5211	.4190	.6232

3.4. ***Relations between Study Variables:*** Correlation among the study variables are depicted in Table 4 and Figure 3. Since p-values among all correlations are less than 0.01 hence the correlations are highly significanct. The results and diagrams shown in Table4 and Figure 3 substantiate research hypotheses H1a, H1b and H2. Regarding the dimensions of IKS both, have highly significant correlations with IKS and with PI. Tables 5-8 and Figure 4 address research hypotheses 3 & 4. Though both moderators-Gender and LOS have exhibited significant prediction capability since the p-values given in Table 5 and Table7 are less than 0.01 and 0.05 respectively. But in order to see whether both demographic variables Gender and LOS moderate the relation between IKS and PI the interaction terms have to be looked into. Interaction terms in both the cases are significant as can be seen in Table 3 and Table 5 which is an indication that both Gender and LOS act as moderator between IKS and PI. Figure 4 is in fact presents the scatter plots as well as the interaction plots for Gender and Pl. Simple regressions lines of PI on IKS at conditional values of Gender and LOS are depicted to facilitate visual interpretation. As the lines cross or intend to cross it gives an indication of the moderating relations among the study variables. The left hand scatter/interaction plot in Figure 4 shows Gender as the moderator variable and the lines are not parallel so an interaction effect is exhibited and the same is supplemented by a significant interaction effect shown in Table 5 with p-value < 0.01. As the line for females is steeper so it has more contribution in the moderation effect, which is supplemented by the significant effect of Gen=2(i.e. females) in Table 6. The right hand scatter plot in Figure 4 shows LOS as the moderator variable and here also the lines intersect each other hence, there is a clear indication of LOS as a moderator between IKS and PI. Moreover, the effect of LOS as a moderator is significant at all levels as is shown in Table 8 where all levels of the moderator are significant at a 0.01 level of significance.

Table 4: Showing Correlation among the Study Variables (N=215)

		PI	IKS	KD
Internal Knowledge Sharing	Correlation	.683**		
	Sig. (2-tailed)	.000		
Knowledge Donation	Correlation	.696**	.798**	
	Sig. (2-tailed)	.000	.000	
Knowledge Collection	Correlation	.642**	.794**	.587**
	Sig. (2-tailed)	.000	.000	.000

PI = Product Innovation

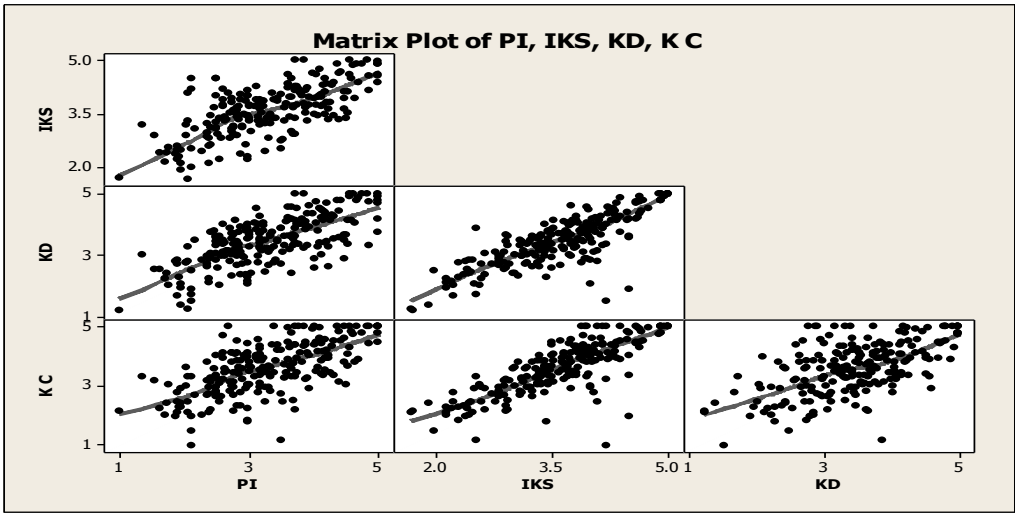

Figure 3: Showing Scatter Matrix with Lowess Smoother

Table 5: Gender as a moderator between IKS and PI

	coeff	se	t	p	LLCI	ULCI
Constant	3.5590	.8549	4.1631	.0000	1.8738	5.2441
Gender	-1.7244	.5276	-3.2686	.0013	-2.7643	-.6844
IKS	-.4261	.2947	-1.4460	.1497	-1.0070	.1548
Int_1	.6585	.1674	3.9326	.0001	.3284	.9886

*Int_1 = IKS * Gender, Dependent Variable = Product Innovation*

Table 6: Conditional effect of X on Y at values of the moderator (Gender)

Gen	Effect	se	t	p	LLCI	ULCI
1.0000	.2324	.1400	1.6602	.0984	-.0435	.5084
2.0000	.8909	.0919	9.6959	.0000	.7098	1.0720

Values for dichotomous moderators are the two values of the moderator.

Table 7: LOS as a moderator between IKS and PI

	coeff	se	t	p	LLCI	ULCI
constant	2.6646	.8910	2.9904	.0031	.9081	4.4211
LOS .	-1.0149	.4401	-2.3062	.0221	-1.8823	-.1474
IKS .	.2864	.2247	1.2746	.2039	-.1566	.7294
int_1	.2367	.1131	2.0929	.0376	.0138	.4596

*Int_1 = IKS * LOS, Dependent Variable = Product Innovation*

Table 8: Conditional effect of X on Y at values of the Moderator (LOS):

LOS	Effect	se	t	p	LLCI	ULCI
1.1952	.5693	.1008	5.6483	.0210	.3706	.7680
1.9953	.7587	.0598	12.6905	.0150	.6408	.8765
2.7955	.9480	.1156	8.2012	.0000	.7201	1.1759

Values for dichotomous moderators are the two values of the moderator.

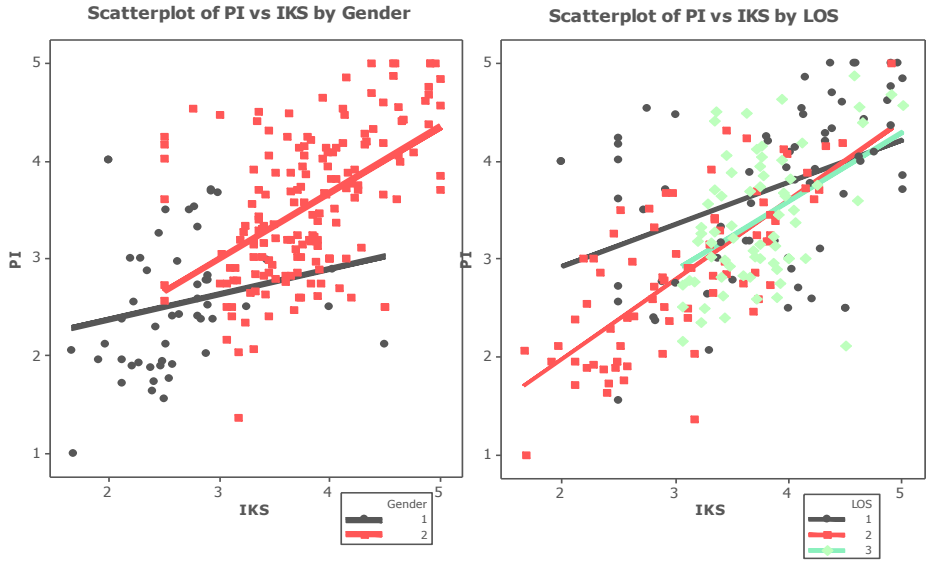

Figure 4: Showing Moderator Effect of Gender and LOS

4. CONCLUSION:

Present research explored the contingency framework, taking Gender and Length of Service as the moderating variables in the relation between IKS and PI seperately. It was found that Gender strongly moderated the relation between IKS and PI but LOS has a weak moderating affect on the study variables at low levels but stronger moderating affect at high levels of LOS. Results of the present study somewhat matched with [9] which investigated the relationships between knowledge sharing behaviour and the demographic variables gender, age, organisational tenure and professional tenure. The results of the research will provide guidelines for both academia and management to formulate such policies in educational institutions, which encourage IKS among the pedagogical staff, which in turn can positive effect product innovation.

5. Limitations:

- Data was collected from one institute, which somewhat mars the generalizability of the findings. In order to generalize the findings of the research data from more universities and teachers should be included in future studies.
- More contingency framework shall be developed to generalize the findings of the study specially the

joint effect of Age, Gender and LOS on the relation between IKS and PI.

- Alongwith quantitative data collection technique, qualitative techniques shall also be used for supplementing the quantitative results.

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Appendix'A'

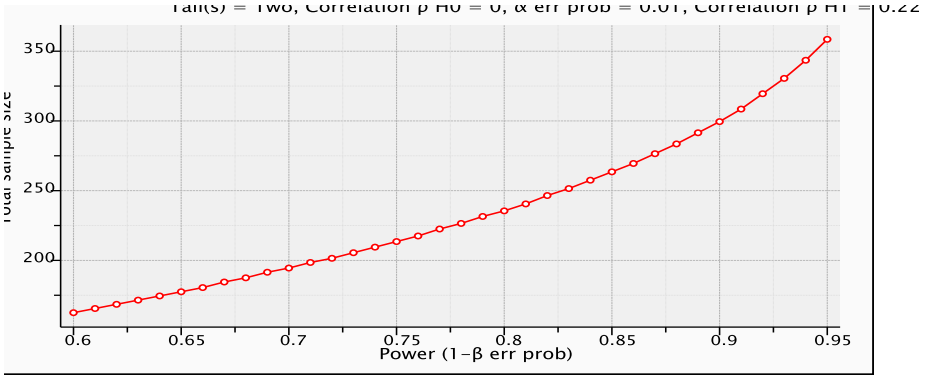

Figure 4: Optimum Sample Size using G-Power

Questionnaire

Gender: Male ◯ Female ◯ Length of Service: ▭

S.No	*Items*	*Strongly Disagree*	*Disagree*	*Neutral*	*Agree*	*Strongly Agree*
1	Knowledge sharing with colleagues is considered normal thing in my department	◯	◯	◯	◯	◯
2	I share any information I have with colleagues within my department when they ask for it.	◯	◯	◯	◯	◯
3	When they have learned something new, my colleagues within my department tell me about it	◯	◯	◯	◯	◯
4	I share my skills with colleagues within my department when they ask me to.	◯	◯	◯	◯	◯
5	When they have learned something new, colleagues outside of my department tell me about it.	◯	◯	◯	◯	◯
6	I share information I have with colleagues outside of my department, when they ask me to.	◯	◯	◯	◯	◯
7	Knowledge sharing with colleagues is considered normal thing outside of my department.	◯	◯	◯	◯	◯
8	Colleagues outside of my department tell me what they know when I ask them about it.	◯	◯	◯	◯	◯
9	Our university is always delivering new courses for members of staff.	◯	◯	◯	◯	◯
10	Our university constantly emphasizes development and doing research projects.	◯	◯	◯	◯	◯
11	Our university often develops teaching materials and methodologies	◯	◯	◯	◯	◯
12	Our university is developing new training programmes for staff members	◯	◯	◯	◯	◯