HRM Practices and Organizational Innovation: A Comparative Study of Manufacturing and Service Sector of Pakistan

Review of Integrative Business & Economics Research

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ABSTRACT

The main purpose of this study is to describe the direct relationship between HRM practices (training & development and compensations) and organizational innovation. Along with that, this study also determines how knowledge management and organizational environment mediate this relationship. From the manufacturing and service sectors of Pakistan, 317 responses were gathered from respondents. Regression analysis was used to determine the direct relationship between variables, while Baron and Kenny test was applied for mediation analysis. Findings of the study demonstrated that in both sectors, the direct relationship of HRM practices (training and development and compensations) and organizational innovation is significant. Both mediators have a significant impact on the direct relationship of T&D and organizational innovation, but knowledge management has a greater impact as compared to organizational environment. The direct relationship of compensations with organizational innovation is more significantly mediated by organizational environment than knowledge management in both the manufacturing and service sectors. This study provides a direction to researchers and practitioners by discussing the factors that can improve innovation processes in organizations.

Keywords: Training and Development, Innovation, Knowledge Management, Organizational Environment

1. INTRODUCTION

Innovation and organizational change are the main areas of research from many decades (Anand, Gardner, & Morris, 2007). Organizations have always tried to identify the factors that have significant impact on the innovation and have also encouraged the behaviors that lead towards innovation (Damanpour, 1991; Galunic & Rodan, 1998).Resource based view theory suggests that employees are the main asset and their skills, abilities & knowledge is the major source of attaining competitive advantage. Skilled employees not only bring improvements in the existing products & services rather they also bring ideas for the development of new products & services (Mweru & Maina, 2016).

Researchers have argued that the organization's HRM practices must be congruent with its policies & plans, to bring innovation. Resource based view theory suggests that a firm's human resource is an important way of attaining a sustainable organizational growth and productivity (Mweru & Maina, 2016). Organization's human resource practices help organizations to motivate employees and also enhance their core

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competencies. These human resource practices cannot be easily imitated and add value to firm's processes (Donate, Peña, & Sanchez de Pablo, 2016)

Therefore the research question of this study is to determine that how HRM practices help organizations to bring innovation in products and services in both manufacturing and service sector of Pakistan. This study will help to answer this question through discussing the mediating role of knowledge management and organizational environment on the direct relationship of HRM practices and organizational innovation.

This study has three main contributions: First, This study clarifies the link of HRM practices with organizational innovation as a whole. The findings of study will help managers to understand the factors that have impact on implementation of innovation strategies. Second, this study extends the literature review on HRM practices. As literature already showed that HRM practices are indirectly linked with innovation (Hansen, Güttel, & Swart, 2019; Nieves & Quintana, 2018). This study will help to clarify that whether HRM practices have direct or indirect relationship with innovation. Third, this study describes the difference in both manufacturing and service sectors of Pakistan regarding mediating role of organizational environment and knowledge management. Manufacturing and service sector are two main sectors of Pakistan and are an important source of generating revenue. Pakistan's economy is totally reliant on these sectors as exports of Pakistan are highly dependent on manufacturing sector (Government of Pakistan, 2006-07).

2. LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

2.1 The mediating role of Knowledge Management

Knowledge management basically refers to creation, sharing, coding and usage of knowledge to improve performance of the organization. Knowledge management is a management function and it helps organizations to attain goals and to remain competitive. Knowledge management gives great emphasis on the sharing of knowledge which helps in enhancing employee's productivity (Santoro, Vrontis, Thrassou, & Dezi, 2018). Through knowledge management, knowledge becomes an asset for the organizations. Knowledge management helps organizations to generate positive results through proper implementation and usage of knowledge (Pérez-Luño, Alegre, & Valle-Cabrera, 2019).

Some organizations fail to create and implement a successful knowledge management system in the organization due to following reasons: First, employees are not willing to share their knowledge. Second, organizational culture is not suitable and does not support sharing of knowledge. Third, organizational structure is not flexible and does not promote knowledge sharing. Finally, employees are not well trained (Abdallah, 2019).

So organizations have to avoid these and to successfully implement knowledge management system, they have to adopt following principles: First, promote learning culture in the organization and make it a learning organization. Second, organizational culture should support innovation through managing knowledge. Finally, organizational structure should be flexible for knowledge sharing and implementation as well. Knowledge management helps organizations to successfully complete innovative and complex projects. Through knowledge management employees have quick access to knowledge and they are sure that knowledge is right as well. Researchers have argued that organizations which have learning culture can easily maintain sharing and implementation of the knowledge (Soto-Acosta, Popa, & Palacios-Marqués, 2017).

Innovation refers to the development of new products and services or bringing improvements in the existing products and services, through following a complete process that helps organizations to attain competitive advantage (Alves, Galina, & Dobelin, 2018). An organization's innovation ability is highly dependent on the knowledge and skills of its employees (Gomez, Salazar, & Vargas, 2016). So organizational knowledge is an important resource for the organizations which help them to use all other resources more effectively (Argote & Fahrenkopf, 2016). Knowledge management helps organizations to innovate and improve organizational performance (Mardani, Nikoosokhan, Moradi, & Doustar, 2018). HRM practices (training and compensations) help organizations to promote a learning culture in the organization and this helps in knowledge management. Knowledge management ensures that all employees have access to information and all knowledge shared with them is accurate. So on this basis following hypothesis can be formed:

H1a: *Knowledge management mediates the direct relationship between T&D and organizational innovation in manufacturing sector.*
H1b: *Knowledge management mediates the direct relationship between T&D and organizational innovation in service sector.*
H2a: *Knowledge management mediates the direct relationship between compensations and organizational innovation in manufacturing sector.*
H2b: *Knowledge management mediates the direct relationship between compensations and organizational innovation in service sector.*

2.2 The mediating role of Organizational Environment

Researchers have always emphasized on the effective utilization of resources as they consider that organizations must have proper organizational environment for this (Chen, Sparrow, & Cooper, 2016). Person-environment fit concept is considered most important in the field of research as it states that employee's job requirements and job environment must match their abilities (Seong & Choi, 2019). Person-environment fit is further classified into PJ, PO, PG and PS. Person-job fit considers that employees expertise level must match their job requirement. Person-organization fit emphasizes on matching employee requirements with the organizational goal. PG fit describes relationship of employees in group. While PS fit explains relationship between employee and supervisor. Organizations have to give importance to all of these fit because if any is missing it effects on organizational output (van Vianen, 2018). Therefore it can be assumed that organizations can bring innovation through effective utilization of resources. Organization's HR will be able to effectively use resources if they have proper organization environment. So on the basis of these arguments, we can hypothesize that:
H3a: *Organizational environment mediates the direct relationship of training and development with organizational innovation in manufacturing sector.*
H3b: *Organizational environment mediates the direct relationship of training and development with organizational innovation in service sector.*
H4a: *Organizational environment mediates the direct relationship of compensations with organizational innovation in manufacturing sector.*
H4b: *Organizational environment mediates the direct relationship of compensations with organizational innovation in service sec*tor.

2.3 Relationship between T&D and Organizational Innovation

Due to increasing competition, organizations are giving greater importance to employees and are considering them as an important source of competitive advantage. An organizations' HR practices help them to attain higher performance. Researchers have

identified that training & development and compensations have substantial impact on organizational innovation process, among all other HR practices (Lerner & Wulf, 2007; Roffe, 1999; Seeck & Diehl, 2017; Sung & Choi, 2014). So in this study, only T&D and compensations are mainly considered.

Training & development helps to improve the employee's current skills related to their job and also prepares them for future jobs. According to Goldstein"s model, all training programs start from need assessment and end on training evaluation . Training is not considered as an expenditure, rather it's an investment because trained and skilled employees will be more productive. All organizations are spending a huge amount on the training of employees to increase organization's productivity (Abuazoom, Hanafi, & Ahmad, 2019).

Some organizations give general training to employees which prepares them for future jobs along with current job while specific training is useful in current organization only. (Dostie, 2018). Training programs fail sometimes when training goals are not aligned with the organization's goals. (Børing, 2017).

So the main purpose of training programs is to enhance expertise of employees and to motivate them as well. These skilled and motivated employees will bring innovation in both products and services. It shows innovation is highly related with training of employees. Therefore following hypothesis can be formed:

H5a: *There is the direct association between T&D and organizational innovation in manufacturing sector.*

H5b: *There is the direct association between T&D and organizational innovation in service sector.*

2.4 Relationship between Compensations and Organizational Innovation

Compensations are basically rewards that are given to employees on the basis of performance of employees. Compensation practices have a direct relationship with motivation level of employees and with their performance level. Three important rewards in reward system are: First, promotions are an important way of enhancing employee performance. Employees become motivated when they are promoted and their salaries are raised as well. Second, bonuses are also another important part of reward system. Bonuses are given on yearly basis and are way of improving employee performance. Availability of organizational resources is also an important way of rewarding employees (Kianto, Sáenz, & Aramburu, 2017; Nouri, Hosseini-Motlagh, Nematollahi, & Sarker, 2018). So compensations motivate employees; promote team work and increases employee ability to innovate as well. Therefore we can hypothesize that:

H6a: *Compensations are directly related with organizational innovation in manufacturing sector.*

H6b: *Compensations are directly related with organizational innovation in service sector***.**

3. RESEARCH FRAMEWORK AND RESEARCH HYPOTHESES

The current research framework is designed as follows.

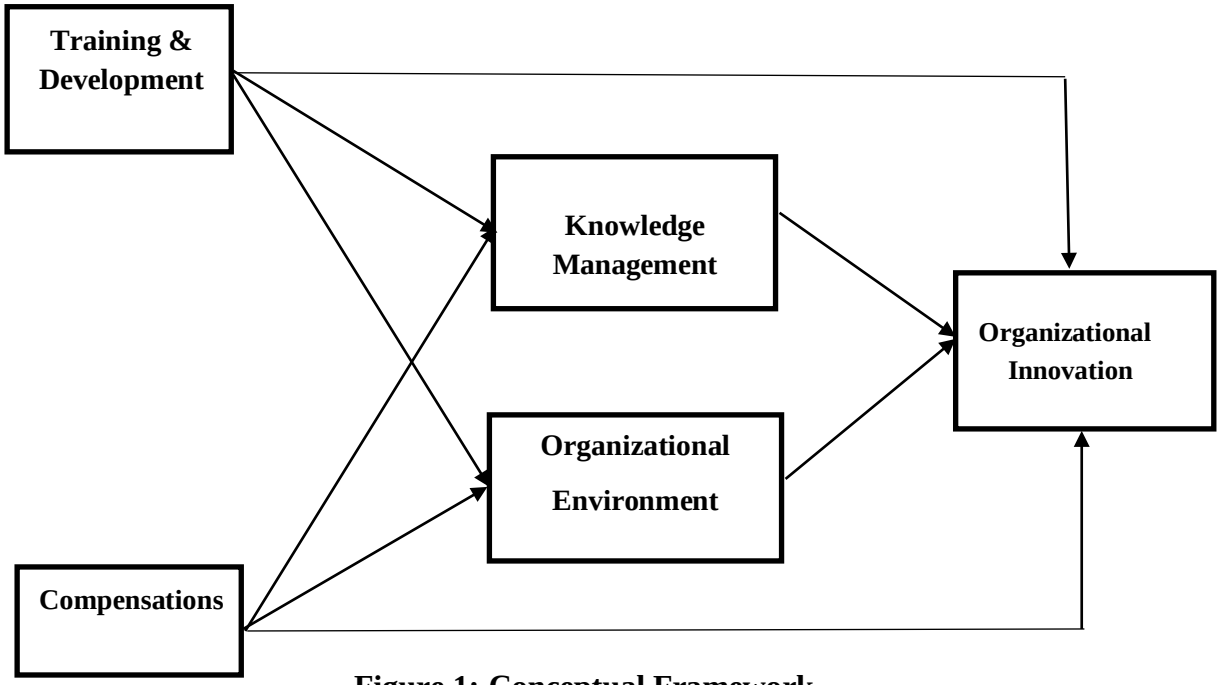


Figure 1: Conceptual Framework

4. RESEARCH DESIGN

4.1 Population and Sample. To determine the impact of HRM practices on organizational innovation, only those organizations were selected from manufacturing and service sector which were constantly focusing on bringing innovation in their products and services. By calculating population of 100,000 (Sekaran & Bougie, 2010). 384 questionnaires were distributed and 317 were received back. Manufacturing and service sector of Multan, Kabirwala, Wah-Cantt, Rawalpindi and Islamabad was selected. Questionnaire that were sent through mail were 100 and out of which 80 were received back.

City	Manufacturing Organizations	Service Organizations
Multan	Pepsi-Cola Multan	HBL, ABL, MCB, Alflah Bank cant branches. BZU, Air and Numl university, ISP
Kabirwala	Nestle, Uniliver	-
Rawalpindi	Cirin Pharmaceuticals	HBL,UBL,ABL, Alfalah, First Women Bank all branches
Islamabad	Pepsi Cola	NUST, Islamic International university

Wah cant	-	HBL,UBL,ABL, Alfalah, First Women Bank all branches

188 questionnaires were sent to manufacturing sector and 151 were received back. While 196 questionnaires were sent to service sector and 166 were received.

Sources	**Sample size**	**Responses**	**Rate of Responses**
Manufacturing Sector	188	151	80 %
Service Sector	196	166	84%
Total Questionnaire	384	317	82%

4.2 Measures.

Measures for organizational innovation were taken from (Ulusoy, Günday, Kılıç, & Alpkan, 2009) where questions were measured on 5-point Likert scale. Knowledge management serves as mediator and measures for knowledge management were adapted from (Murray & Lorne, 2004). While training & development and compensation measures were adapted from (Muchhal, 2014).

4.3 Research Variables

4.3.1 ***HRM Practices.*** HRM practices are defined as means through which organizations can enhance employees' skills and can improve performance by providing incentives (Wright, McCormick, Sherman, & McMahan, 1999).

4.3.2 ***OI.*** Organizational innovation refers to the organization's capability to convert both knowledge and ideas into new and advanced products, processes and services (Lam, 2004).

4.3.3 ***KM.*** Knowledge management refers to creation, sharing, coding and usage of knowledge to improve performance of the organization (Rubenstein-Montano et al., 2001).

4.3.4 ***OE.*** Organization environment consists of all the forces, surrounding an organization that strongly affect the way it perform its activities and manages its resources (Sharfman & Dean Jr, 1991).

5. ANALYSIS

5.1 Descriptive Statistics.

Table1: Descriptive Statistics (Manufacturing Sector)

	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
	151	1.83	4.33	3.41	0.465
CP	151	3.00	5.00	3.87	0.475
TD	151	2.89	5.00	3.98	0.410
KM	151	2.00	5.00	3.77	0.763

OE	151	2.56	4.89	3.74	0.541

Results of Descriptive Statistics showed that mean value for compensations is 3.41 which is less than 3.5. It shows neutral response from respondents which means employees were not completely satisfied with compensation practices. Mean value of training & development, knowledge management, organization environment and organization innovation is 3.87, 3.98, 3.77 and 3.74 respectively. The mean value for these variables is closer to 4.00 which show all respondents agreed with questions. Standard deviation for training is 0.47 and for compensations is 0.46.While standard deviation for knowledge management, organization environment and organization innovation is 0.41, 0.76 and 0.54 respectively. Standard deviation for all variables is less than one, which proves validity of questionnaire.

Results of descriptive analysis for service sector showed that mean value for training & development, knowledge management, organization environment and innovation is close to 4 which means all respondents agreed with questions. For compensation practice respondents showed neutral responses.

Table2: Descriptive Statistics (Service Sector)

	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
CP	166	2.83	4.33	3.42	0.439
TD	166	3.00	4.50	3.90	0.445
KM	166	3.22	4.56	3.98	0.390
OE	166	2.00	4.75	3.77	0.766
OI	166	2.89	4.44	3.76	0.497

5.2 Correlation Analysis

Table3: Correlation Analysis (Manufacturing Sector)

	CP	**TD**	**KM**	**OE**	**OI**
CP	1				
TD	.287**	1			
KM	.705**	.400**	1		
OE	.573**	.536**	.613**	1	
OI	.595**	.276**	.567**	.698**	1
**. Correlation is significant at the 0.01 level (2-tailed).					

Correlation describes relationship between all variables. Correlation analysis showed significant relationship among variables. There is positive but weak correlation between compensations and training & development. Knowledge management has positive and good correlation with compensations (r=.705) and moderate & positive relation with

training (r=.400). Correlation of organization environment with compensations, training & development and knowledge management is positive and good. Correlation of innovation with all variables is positive and good but with training & development it is positive and weak (r=.276).

Table4: Correlation Analysis (Service Sector)

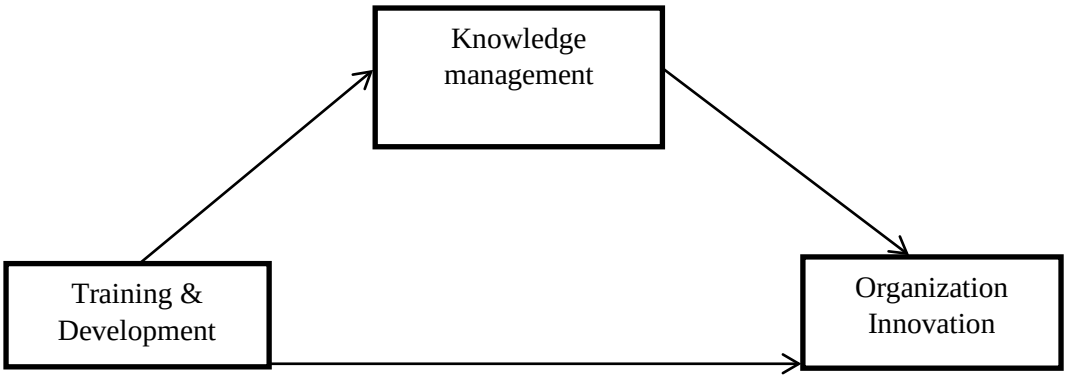
	CP	**TD**	**KM**	**OE**	**OI**
CP	1				
TD	.300**	1			
KM	.774**	.400**	1		
OE	.685**	.360**	.686**	1	
OI	.629**	.233**	.500**	.678**	1
**. Correlation is significant at the 0.01 level (2-tailed).					

Correlation of compensations with training & development is weak (r=.300). Organization innovation has good and positive correlation with compensations, knowledge management and organization environment but weak correlation with training & development. Correlation analysis shows that all variables are positively related with each other.

5.3 Regression Analysis & Baron and Kenny Test for Manufacturing Sector

Regression analysis is mostly used to calculate value of dependent variable from independent variable values.

5.3.1 Model: 1 for Regression Analysis (Manufacturing Sector)



Regression Analysis (Model: 1)

From the regression analysis, following three equation regression equations can be derived. These regression equations show direct impact of training & development on innovation and also impact of mediation. Regression equations for this model are as followed:

OI= Intercept + c (TD)……..equation 1

KM = Intercept + a (TD)……..……equation 2

OI = Intercept + b (KM) + $c^{/}$ (TD)……equation 3

Equation 1 : OI= α + β (TD)+ ε					
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.75*	
Intercept	2.52	11.059	*F Value*	83.2	
TD	0.276	8.23	*Sig*	.000	
Equation 2: KM= α + β (TD) + ε					
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.70*	
Intercept	2.65	5.92	*F Value*	28.65	
TD	0.400	7.54	*Sig*	.000	
Equation 3: OI= α + β_1 (KME) + β_2 (TD) + ε					
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.81*	
Intercept	0.623	7.53	*F Value*	75.99	
KM	0.543	4.68	*Sig*	.000	
TD	0.059	5.21			
** shows significance at 0.01 and * shows significance at 0.05					

Table5: Regression Analysis of Model-1 (Manufacturing Sector)

By putting values in above equations

OI= 2.52 + 0.276 (TD)…….....equation 1

KM=2.65+ .400 (TD) …….……equation 2

OI= .623+ 0.543 (KM) + .059 (TD)……..equation 3

Baron & Kenny Test

Baron and Kenny test is used to describe the impact of mediator on direct relationship of dependent and independent variable. According to this test, total effect should be equal to direct & indirect effect. In indirect effect, impact of mediator is also included.

Total effect = Direct Effect + Indirect Effect…….equation1

A	.400
B	.543
C	0.276
$c^{/}$	0.059

By putting values in above equation we get:

0.276 = 0.059+ 0.400 (.543)

0.276 = 0.059 + 0.217

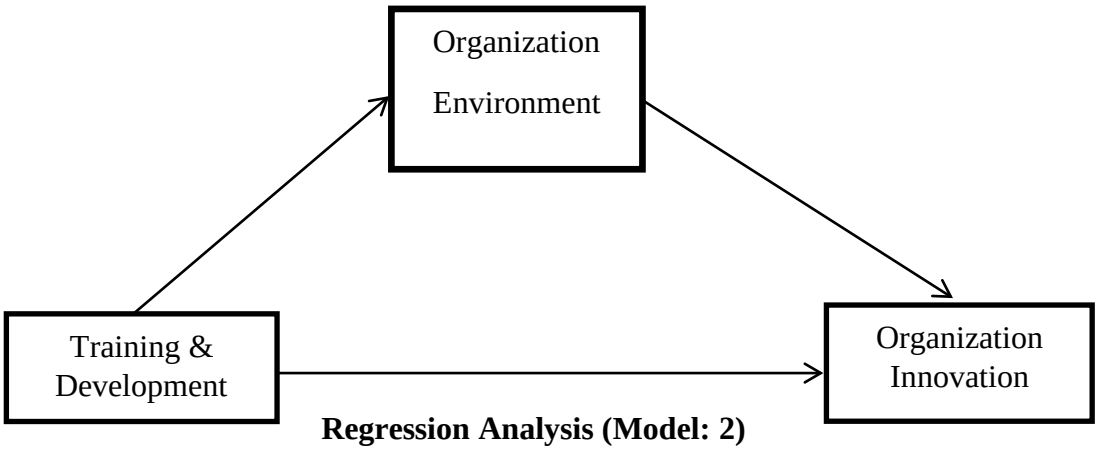
After dividing value by T.E we get

1 = 0.21+ 0.79

100% = 21% + 79%

Findings of test indicate that mediator has 79 percent impact on direct relationship of training & development and innovation. The role of mediator is significant at 99% level of significance. So the results show that direct relationship of training and innovation & impact of mediation on this relationship both are significant. That's why hypothesis H1a and H5a are accepted regarding manufacturing sector of Pakistan.

5.3.2 Model: 2 for Regression Analysis (Manufacturing Sector)



Regression Analysis (Model: 2)

Regression results for model 2 give three equations. The 1st equation describes the direct influence of training & development on organization innovation. The beta value of training & development is 0.276 and beta value for organization environment is 0.673. Regression equations for these models are as followed:

OI= Intercept + c (TD)……..equation 1

OE = Intercept + a (TD)……equation 2

OI = Intercept + b (OE) + $c^{/}$ (TD)…….equation 3

Equation 1 : OI= α + β (TD)+ ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.75*
Intercept	2.521	7.54	*F Value*	28.31
TD	0.276	4.22	*Sig*	.000

Equation 2:OE= $\alpha + \beta$ (TD) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.82*
Intercept	2.92	9.23	*F Value*	60.57
TD	0.136	10.54	*Sig*	.000
Equation 3: OI= $\alpha + \beta_1$ (OE) + β_2 (TD) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.86*
Intercept	1.437	5.82	*F Value*	109.25
OE	0.673	15.8	*Sig*	.000
TD	0.185	4.87		
** shows significance at 0.01 and * shows significance at 0.05				

Table6: Regression Analysis of Model-2 (Manufacturing Sector)

By putting values of intercept, c, a, $c^/$ and b in above equation we get:

OI= 2.521 + 0.276 (TD)……equation 1

OE= 2.92 + .136 (TD) ……..……..……equation 2

OI= 1.437 + 0.673 (OE) + .185 (TD)….……..……..equation 3

Baron & Kenny Test

By applying baron and Kenny test, we can find role of mediator.

T.E = D.E + I.E……..equation1

A	.136
B	.673
C	0.276
$c^/$	0.185

By putting values in above equation we get:

0.276 = 0.185 + 0.136 (.673)

0.276 = 0.185+ 0.091

After dividing value by T.E we get

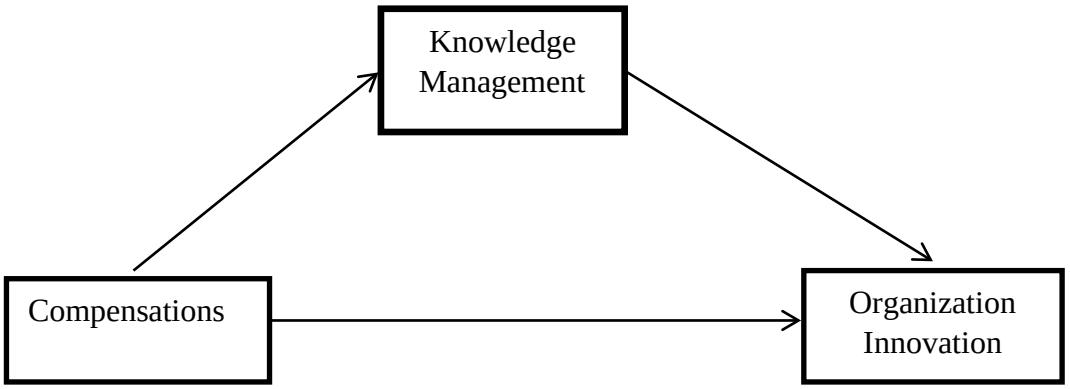
1 = 0.67 + 0.33

100% = 67% +33 %

Baron & Kenny test results show that mediator has 33 percent impact on the relationship of dependent and independent variable. It is concluded that mediator (Organization Environment) has impact on the relationship between Training & Development and Organization Innovation but direct relationship of training and innovation is highly significant. So findings suggest that hypothesis H3a and H5a are

accepted regarding manufacturing sector of Pakistan. Findings also suggest that as mediator knowledge management has more significant impact on the relationship of training & innovation as compared to second mediator organization environment.

5.3.3 Model: 3 for Regression Analysis (Manufacturing Sector)



Regression Analysis (Model: 3)

First regression equation shows impact of compensations on organization innovation. The beta value of compensations is 0.595 in equation 1. Meanwhile the Beta value of CP is 0.705 in equation 2. In regression equation 3 where the impact of mediator is included and results are significant and Beta value of compensations is 0.388. Regression equations for model are as followed:

OI= Intercept + c (CP)……..equation 1

KM = Intercept + a (CP)…….……..……equation 2

OI = Intercept + b (KM) + $c^{/}$ (CP)……equation 3

By putting values in above equations:

OI= 1.373+ 0.595(CP)…….....equation 1

KM= 1.857+ 0.705 (CP) ……..…….equation 2

OI= .653+ 0.294 (KM) + .388(CP)……..…….....equation 3

Equation 1 : OI= α + β (CP)+ ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.78*
Intercept	1.373	3.54	*F Value*	38.25
CP	0.595	9.21	*Sig*	.000
Equation 2: KME= α + β (CP) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.75*
Intercept	1.857	4.65	*F Value*	103.2
CP	0.705	8.46	*Sig*	.000

Equation 3: OI= $\alpha + \beta_1$ (KME) + β_2 (CP) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.79*
Intercept	0.653	9.84	*F Value*	102.65
KM	0.294	10.51	*Sig*	.000
CP	0.388			
** shows significance at 0.01 and * shows significance at 0.05				

Table7: Regression Analysis of Model-3 (Manufacturing Sector)

Baron & Kenny Test

By applying Baron & Kenny test, impact of mediation can be calculated.

T.E = D.E + I.E…….equation 1

A	0.705
b	0.294
c	0.595
c/	0.388

By putting values in above equation we get:

0.595 = 0.388 + 0.705 (.294)

0.595 = 0.388 + 0.207

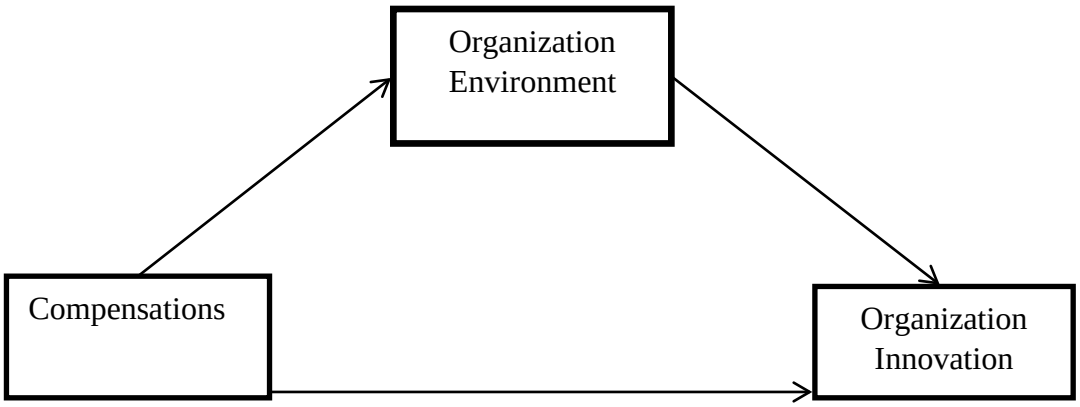
After dividing values of direct effect and indirect effect by total effect we get

1 = 0.65 + 0.35

100% = 65% + 35%

Test results prove the impact of mediator which is 35 percent. Results show that direct relationship of compensations and innovation is also highly significant. So hypothesis H2a and H6a are also accepted regarding manufacturing sector.

5.3.4 Model: 4 for Regression Analysis (Manufacturing Sector)



Regression Analysis (Model: 4)

These regression equations describe direct and indirect impact of compensations on innovation. Regression equations for this model are as followed:

OI= Intercept + c (CP)……..equation 1

KM = Intercept + a (CP)……..……equation 2

OI = Intercept + b (KM) + c/ (CP)……equation 3

Equation 1 : OI= α + β (CP)+ ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.82*
Intercept	1.373	15.51	*F Value*	39.10
CP	0.595	12.35	*Sig*	.000
Equation 2: OE= α + β (CP) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.85*
Intercept	0.560	12.84	*F Value*	81.65
CP	0.573	11.25	*Sig*	.001
Equation 3: OI= α + β_1 (OE) + β_2 (CP) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.77*
Intercept	1.162	15.22	*F Value*	35.28
OE	0.531	13.97	*Sig*	.000
CP	0.290	10.63		
** shows significance at 0.01 and * shows significance at 0.05				

Table8: Regression Analysis of Model-4 (Manufacturing Sector)

By putting values in above equations:

OI= 1.373+ 0.595 (CP)…….....equation 1

OE= .560+ 0.573 (CP) ……...……equation 2

OI= 1.162+ 0.531 (OE) + .290 (CP)…….....equation 3

Baron and Kenny test

To estimate impact of mediator, Baron and Kenny test is used
Total effect = Direct effect + Indirect effect…….equation 1

a	0.573
b	0.531
c	0.595
c/	0.290

By putting values in above equation we get:

0.595 = 0.290 + 0.573 (.531)

0.595 = 0.290 + 0.304

After dividing both values by Total effect we get:

1 = 0.48 + 0.52

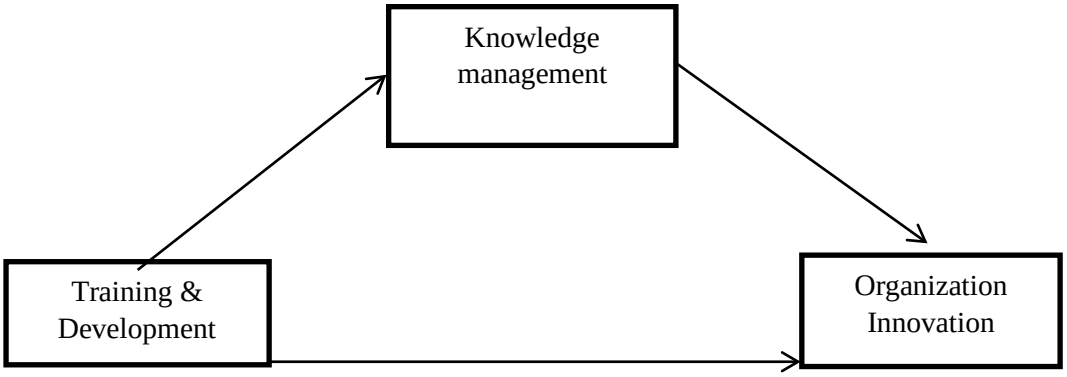
100% = 48% + 52%

Results show that impact of mediator exists between the relationship of compensation and innovation. So hypothesis H4a and H6a are accepted regarding manufacturing sector. Findings also suggest that organization environment has more significant impact on the relationship of compensations and innovation as compared to other mediator knowledge management.

5.4 Regression Analysis & Baron and Kenny Test for Service Sector

These tests are applied to find role of mediators in service sector of Pakistan.

5.4.1 Model: 1 for Regression Analysis (Service Sector)



Regression Analysis (Model: 1)

From the regression analysis, following three equation regression equations can be derived. These regression equations show direct impact of training & development on innovation and also impact of mediation. Regression equations for this model are as followed:

OI= 2.742 + 0.233 (TD)…….....equation 1

KM=2.730+ .365 (TD) …….equation 2

OI= .078+ 0.479 (KM) + .058 (TD)……..equation 3

Equation 1 : OI= α + β (TD)+ ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*0.77*
Intercept	2.742	8.233	*F Value*	9.405
TD	0.233	7.067	*Sig*	.000

Equation 2: KM= α + β (TD) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*0.70*
Intercept	2.730	10.892	*F Value*	25.216
TD	0.365	15.022	*Sig*	.000
Equation 3: OI= α + β_1 (KME) + β_2 (TD) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*0.71*
Intercept	0.078	12.76	*F Value*	27.636
KM	0.479	17.97	*Sig*	.001
TD	0.058	16.59		
** shows significance at 0.01 and * shows significance at 0.05				

Table9: Regression Analysis of Model-1 (Service Sector)

Baron & Kenny Test

Baron and Kenny test is used to describe the impact of mediator on direct relationship of dependent and independent variable.

Total effect = Direct Effect + Indirect Effect…….equation1

A	0.365
B	0.479
C	0.233
c/	.058

By putting values in above equation we get:

0.233 = 0.058+ 0.365 (.479)

0.233 = 0.058 + 0.172

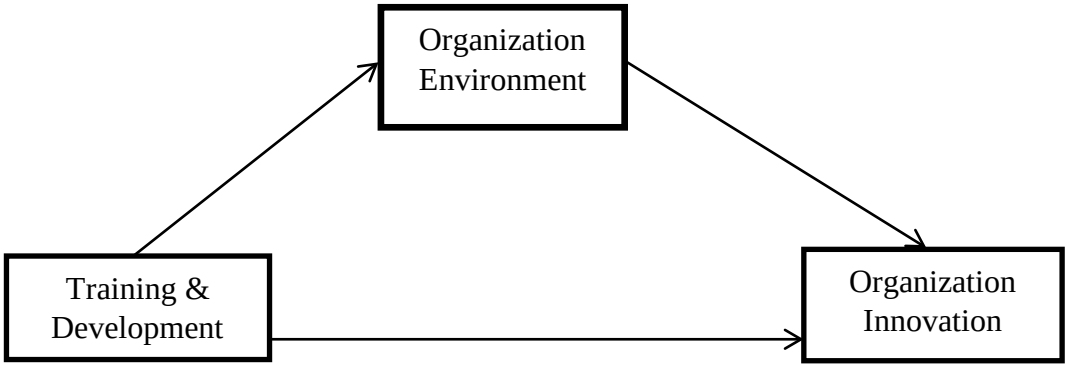
After dividing value by T.E we get

1 = 0.25+ 0.75

100% = 25% + 75%

Findings of test indicate that mediator has 75 percent impact on direct relationship of training & development and innovation. Role of mediator is significant at 99% level of significance from which it is concluded that mediator (knowledge management) play an important role between Training & Development and Organization innovation. So hypothesis H1b and H5b are accepted regarding service sector of Pakistan.

5.4.2 Model: 2 for Regression Analysis (Service Sector)



Regression Analysis (Model: 2)

Regression results for model 2 give three equations. Regression equations for these models are as followed:

OI= Intercept + c (TD)……..equation 1

OE = Intercept + a (TD)……equation 2

OI = Intercept + b (OE) + c$^{/}$ (TD)…….equation 3

Equation 1 : OI= α + β (TD)+ ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*0.78*
Intercept	2.742	8.233	*F Value*	9.405
TD	0.233	9.067	*Sig*	.000
Equation 2: OE= α + β (TD) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.81*
Intercept	2.704	5.022	*F Value*	10.51
TD	0.150	6.89	*Sig*	.001
Equation 3: OI= α + β_1 (OE) + β_2 (TD) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.77*
Intercept	1.537	5.638	*F Value*	71.75
OE	0.600	9.479	*Sig*	.000
TD	0.140	11.18		
** shows significance at 0.01 and * shows significance at 0.05				

Table10: Regression analysis Model-2 (Service Sector)

By putting values of intercept, c, a, c$^{/}$ and b in above equation we get:

OI= 2.742 + 0.233 (TD)……equation 1

OE= 2.704+ .150(TD) …….equation 2

OI= 1.537 + 0.600 (OE) + .140 (TD)…..……..equation 3

Baron & Kenny Test

By applying baron and Kenny test, we can find role of mediator.

T.E = D.E + I.E……..equation1

a	0.150
b	.600
c	0.233
c/	0.140

By putting values in above equation we get:

0.233 = 0.140 + 0.150 (.600)

0.233 = 0.140+ 0.09

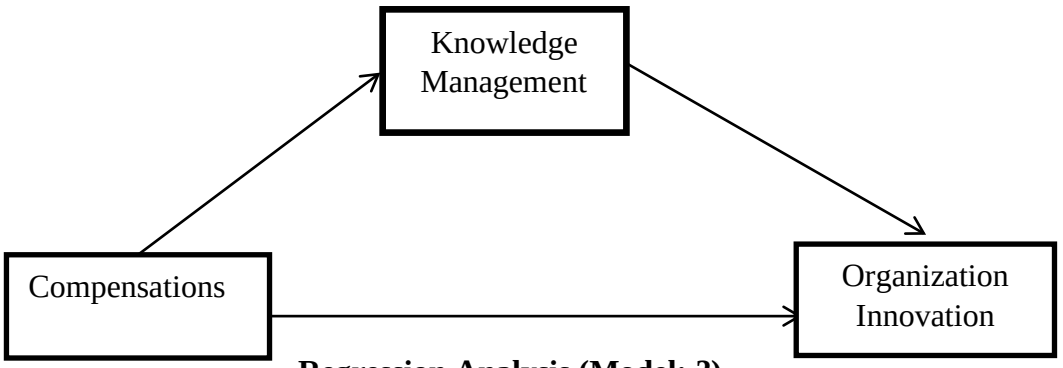
After dividing value by T.E we get

1 = 0.60 + 0.40

100% = 60% +40 %

Baron & Kenny test results show that mediator has 40 percent impact on the relationship of dependent and independent variable. Findings prove existence of mediation which shows hypothesis H3b is accepted.

5.4.3 Model: 3 for Regression Analysis (Service Sector)



Regression Analysis (Model: 3)

Regression equations for model are as followed:

OI= Intercept + c (CP)……..equation 1

KM= Intercept + a (CP)……equation 2

OI = Intercept + b (KM) + c/ (CP)…….……equation 3

Equation 1 : OI= α + β (CP)+ ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.71*
Intercept	1.338	5.637	*F Value*	105.549
CP	0.626	10.274	*Sig*	.000
Equation 2: KM= α + β (CP) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.70*
Intercept	1.629	10.754	*F Value*	244.81
CP	0.774	15.647	*Sig*	.000
Equation 3: OI= α + β_1 (KM) + β_2 (CP) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*0.70*
Intercept	1.255	4.639	*F Value*	52.595
KM	0.040	6.169	*Sig*	.000
CP	0.595	4.15		
** shows significance at 0.01 and * shows significance at 0.05				

Table11: Regression analysis Model-3 (Service Sector)

By putting values in above equations:

OI= 1.338+ 0.626(CP)…….....equation 1

KM= 1.629+ 0.774 (CP) …….equation 2

OI= 1.255+ 0.040 (KM) + .595(CP)……..….....equation 3

Baron & Kenny Test

By applying Baron & Kenny test, impact of mediation can be calculated.

T.E = D.E + I.E…….equation 1

a	0.774
b	.040
c	.626
c/	.595

By putting values in above equation we get:

0.626 = .595 + 0.774 (.040)

0.626 = 0.595+ 0.031

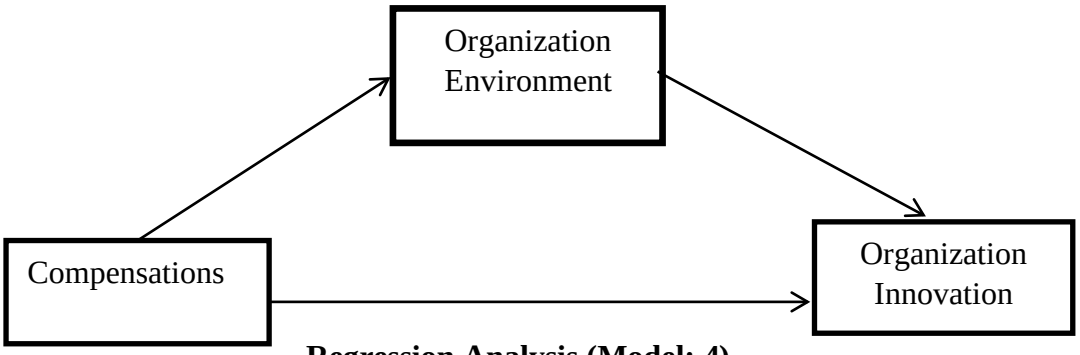
After dividing values of direct effect and indirect effect by total effect we get

1 = 0.95 + 0.5

100% = 95% + 5%

Test results prove existence of mediator but direct relationship of compensations is more significant than impact of mediator which is knowledge management. So hypothesis H2b and H6b are accepted regarding service sector of Pakistan.

5.4.4 Model: 4 for Regression Analysis (Service Sector)



Regression Analysis (Model: 4)

These regression equations describe direct and indirect impact of compensations on innovation. Regression equations for this model are as followed:

Equation 1 : OI= α + β (CP)+ ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.75*
Intercept	1.338	5.637	*F Value*	105.549
CP	0.626	10.274	*Sig*	.000
Equation 2: OE= α + β (CP) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*.81*
Intercept	0.310	10.043	*F Value*	1338.125
CP	0.685	11.753	*Sig*	.000
Equation 3: OI= α + β_1 (OE) + β_2 (CP) + ε				
Variable	*Coefficient*	*T- value*	R^2_{adj}	*0.77*
Intercept	1.492	6.703	*F Value*	78.007
OE	0.487	3.591	*Sig*	.000
CP	0.280	6.251		
** shows significance at 0.01 and * shows significance at 0.05				

Table12: Regression analysis Model-4 (Service Sector)

OI= 1.338+ 0.626 (CP)…….....equation 1

OE= .310+ 0.685 (CP) ……equation 2

OI= 1.492+ 0.487 (OE) + .280 (CP)…….....equation 3

Baron and Kenny test

To estimate impact of mediator, Baron and Kenny test is used

Total effect = Direct effect + Indirect effect…….equation 1

A	0.685
B	0.487
C	0.626
c/	0.280

0.626 = 0.280 + 0.685(.487)

0.626 = 0.280 + 0.35

After dividing both values by Total effect we get:

1 = 0.45 + 0.55

100% = 45% + 55%

Baron and Kenny test results indicate that both mediators Knowledge Management and Organization Environment play an important role between Compensations and Organization Innovation. As mediator organization environment has more significant impact as compared to knowledge management. So hypothesis H4b regarding service sector is also accepted.

6. CONCLUSION & DISCUSSION

The main purpose of this study was to find direct relationship between human resource management practices and organizational innovation and how this relationship is mediated by knowledge management and organizational environment. In this study two dimensions of human resource management practices are discussed which are training & development and compensation practices. Findings suggest that direct relationship of training & development and innovation exists. This relationship is also mediated by knowledge management and organization environment in both sectors. Findings of Baron & Kenny test describe that direct relationship of training and development with organizational innovation is significant.

Both mediators have impact on this direct relationship of training & innovation but knowledge management has greater impact as compared to organizational environment in manufacturing sector of Pakistan. It means that through giving proper training to employees, organizations in manufacturing sector can enhance process of innovation. This process can become more rapid if organizations also focus on knowledge management in the organizations.

Findings also prove that second dimension of human resource management practice which is compensation has also significant impact on organizational innovation. Organizational environment has more impact on this direct relationship as compared to knowledge management. It means that organization can bring innovation by giving compensations and positive working environment to employees. So it shows that in manufacturing sector direct relationship of training & practices and organizational environment exists and this relationship is mediated by both mediators which are knowledge management and organizational environment.

In service sector, the situation is also similar. Direct relationship of training and

organizational innovation is more mediated by knowledge management as compared to organizational environment. In case of compensations, direct relationship is more mediated by organizational environment. So it shows that service sector can bring innovation through implementing human resource management practices. This process of innovation becomes more rapid by addition of knowledge management in organizations and by giving positive working environment to employees. Results support our all hypothesis.

Previous studies support these results as well. As in study of (Tan & Nasurdin, 2011), where many human resource practices were studied but only training and appraisal had significant impact on the innovation. The study also proves that knowledge management has significant impact on process of innovation.

Training and development has significant impact on innovation because it enhances skill level of employees. ESADE survey (2005) showed that organizations are spending larger portion of investment on employees because they have realized training programs are way of attaining higher performance. Later (Stolovitch & Keeps, 2007), revealed that organizations spend a lot on training programs to attain competitive advantage. While data collection it was observed that both manufacturing and service sectors are giving training to employees and they are getting significant results. Compensation practices are also an important way of increasing motivational level of employees and it increases their interest level of employees at work. It was highly observed during data collection that employees who are satisfied with their wages try to perform better than others and try to bring innovation even in their routine tasks. Through giving compensations and creating positive working environment for employees both manufacturing and service sector can bring innovation.

7. Study Contributions

Some contributions of this study are : First, Current study helps to explain in detail impact of human resource management practices on organization innovation in manufacturing & service sector of Pakistan. Secondly, it provides a direction to researchers by discussing the factors which can improve innovation process in the organizations. Third, this study provides a new direction to researchers to discuss how human resource practices can reduce employee absenteeism and turnover by providing them positive organization environment in manufacturing and service sector. Lastly, study explains the significance of human resource management practices in Pakistan.

8. Limitations of the Study and Future Recommendations

This study has few limitations as in this study only manufacturing and service sector of Pakistan are studied and other sectors are not considered. In this study questionnaires are used as data gathering tool while other methods can also be considered.

Future research can be extended by considering cultural aspects as the part of variables of study. Current study only included manufacturing and service sector of Pakistan other sectors can also be studied and comparison can be made between other sectors as well. There are many other data gathering tools which can also be adopted by other researchers. Accuracy of results can be improved by making the study longitudinal. Data will be gathered twice which will make results more valid. Dimensions of organizational innovation can also be added in future studies.

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