

High Commitment Work System and Innovative Work Behavior: The Mediating Role of Knowledge Sharing

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Abstract

In this modern and competitive era, organizations for their endurance and success rely on the innovative ideas. For today's managers it becomes imperative to look for those ways and means through which they could innovate and this research is very much highlighting the said aspect. This study empirically examines and explores the impact of high commitment work system on innovative work behavior and addresses the role of knowledge sharing as a mediator. Basically, it provides a mechanism through which high commitment work system fosters innovative work behavior in telecommunication sector companies of Pakistan. Using the findings of this research, telecommunication companies, particularly mobile network companies can transform and bring novelty in their services to proliferate in a competitive market. All the established relationships are theoretically explained, empirically tested and supported through literature review. Results revealed that all three variables of the study exhibit positive relationship. All four established hypotheses are accepted and the relationship between high commitment work system and innovative work behavior partially mediated by knowledge sharing behavior.

Keywords: high commitment work system, knowledge sharing, innovative work behavior.

1. Introduction

The success and the survival of organizations in this contemporary and competitive business environment depends upon their ability to innovate (Eslami & Nakhaie, 2011). Management scholars argued that to be responsive and adaptive to uncertain and

fluctuating business environment, organizations, exclusively technology-driven organizations, need to be creative and consistently innovate (Gumusluoglu & Ilsev, 2009). Research has revealed that such innovation is often a function of the imagination, aptitudes and creativity of employees of the organization (Prieto & Perez-Santana, 2014). Individuals as employees bring their own set of values, perspectives, and attributes in to their organizational lives. This realization has promoted increased attention to principles of HRM which might be used for the promotion of novelty and creative ideas in work organizations. Along these lines De Jong & Den Hartog (2010) stress the kinds of strategies that organizations need to employ in order to encourage its employees to act like entrepreneurs and exhibit innovative behaviors. Therefore, it is imperative to learn more about the factors that move employees to behave in ways that are innovative.

Jarzabkowski & Whittington, 2008; Messersmith & Guthrie (2010) found that HRM practices and organizational innovation are positively associated with each other as these systems and practices significantly influence the attitudes and motivation of employees (Shipton et al., 2006). Gilbert et al. (2011) argued that an employee's behavior and performance could be predicted by his/her degree of commitment which is required by innovation seeking organizations. In this regard researchers believe that organizations can influence the behavior of employees and the interactions among them by implementing effective HR practices (Chen & Huang, 2007). Accordingly, this study put emphasis on a set of HR practices that conform to the paradigm of high commitment work systems. Therefore, from this research it would be clear that organizations seeking to implement an innovation strategy will require a high degrees of employee commitment, a key predictor of employee's behavior and performance. This study contributes towards the academic literature by providing the insights to the vital role of knowledge sharing and complementary HR System (HCWS) in bringing up innovative work behaviors or in other words innovation. The mediating role of knowledge sharing in the relationship of high commitment work system and innovative work behavior is a value addition to the literature.

Moreover, according to Milkovich (1987) high commitment work systems have the potential to significantly influence innovative work behaviors on the part of employees. Innovative work behaviors involve the generation of novel ideas, the promotion of novel ideas and especially efforts in the implementation of such ideas. In our view each of these appears to involve knowledge circulation or what has been called knowledge sharing. Researchers have argued that organizations which foster employees' knowledge diffusion will be more innovative than those that do not. They also note that when it comes to innovations this often calls for the surfacing and manipulation of tacit knowledge, material that an employee has learned informally and that he or she applies intuitively. Thus, knowledge sharing provides the foundation for innovative work behavior (Hansen, 1999). Such sharing also contribute in the development of organization's core capabilities and to promote its competitiveness (Chuang, 2004).

In previous studies researchers have identified that practices which HR performed are positively related with the performance of the firm and individuals i.e. (Singh, 2004; Wright et al., 2004; Tzafrir, 2007; Vlachos, 2009; Jones et al., 2010; Osman et al., 2011; Nadarajah et al., 2012; Llego, 2013). But according to Jiang et al., (2012) limited studies

have been conducted to explore the effect of HRM systems on innovative work behavior of employees Jiménez-Jiménez & Sanz-Valle (2008), Schimansky (2014) have claimed that weaker empirical evidence has been found in which HR practices/systems have any influence on innovative work behavior of employees. This is reflecting the research gap which needs to be filled to identify the nature of the mediating mechanisms which are involved. This would be helpful in answering that how HR systems could facilitate and shape the innovative work behaviors of employees (Gong et al., 2009). Some scholars represent this weakness as a “missing link” relative to our understanding of cause and effect.

Our research attempts to provide more complete picture of the relationship between the features of “(HCWS)” and “(IWB)” through knowledge sharing. More specifically it provides evidence for the nature of both the direct and indirect relationships between work policies and practices and their impact on employees work related innovative behavior. Thus this study would provide beneficial insight to the practitioners for promoting innovative work behavior. Moreover, this study would be helpful in understanding the importance of HR systems and guide managers to use these practices for achieving organizational productive outcomes.

In the rest of the paper, firstly an overview of the telecom industry of Pakistan will be provided wherein innovation is felt to be very important to a company’s success. We will then provide a review of research designed to support our hypotheses. In doing so, we will make use of a conceptual framework thought to be helpful in explicating how work systems might have their effects on worker innovation linked behaviors. After describing the study’s design and methods we will go on to point out why we feel our research represents a contribution.

IT (information technology) and telecom industries have revolutionized the world and emerged as the fastest growing sectors and most demanding industries in terms of innovation. In Pakistan, over the past few years telecom industry has made the most significant contributions to the economy. According to PTA (Pakistan Telecommunication Authority) 2014-2015 report, Rs. 465 billion has been generated by this sector. From 1994, till now this sector grew by 80 percent. In the last four years the growth has been almost 100 percent. To succeed in a dynamic business environment companies must continue to innovate so that new telecommunication plat forms would be established hat have potential value to consumers.

2. Literature Review

2.1 Componential Theory of Creativity

Amabile (2013) has explained the fundamental components of this theory. She described that creativity or a person’s creative response comprised of four components including (i) “domain relevant skills” (ii) “creativity relevant processes” (iii) intrinsic task motivation (iv) “social environment”. All the expertise, talent, abilities, which is relevant to a particular job and required to do it well represents domain relevant skills. Creativity relevant processes are related to a person’s personality traits i.e. tolerance, risk taking and independence in taking decisions for solving problems. Persons with intrinsic motivation

can do challenging tasks. They consider their work interesting and did by applying full of their capabilities just for personal satisfaction but not for any extrinsic rewards. The theory consider this third component a key for creativity and creative response because persons with inner motivation are highly committed which lead towards innovative work behavior. Last component of this theory is social environment which provides a person extrinsic motivation, in the form of compensation, rewards, etc. the social environment of an organization may ruin the creative process due to its political system, inequality, harassment, and favoritism. Thus the theory provide support to the framework of this study in a way that when persons having domain relevant skills and relevant creative processes they will be highly committed towards their job and when the social environment of the organization is conducive people will share their ideas with each other which make a space for knowledge sharing and boost innovativeness and creative ideas.

2.2 Innovative Work Behavior

In literature innovation has been defined differently. However most studies describe it as the implementation of useful new and potentially revenue generating ideas by companies. De Jong and Den Hartog (2010) and Scott and Bruce (1994) described in their study that employees` innovative behavior positively effects the innovativeness of a firm. Therefore, it seems reasonable that innovation oriented organizations should always consider their employees an important asset as they are the source of providing innovative/creative ideas for the endurance of the firm. As pointed out by Mr. Stephane Dufour, Swisscom`s strategy and innovation head, “employees can and should contribute innovative ideas. The challenge is to enable every employee to also make a contribution toward improving operational processes” (Fuchs, 2011). And his organization take up the challenge by launching “Future 2.0” which is an innovation oriented scheme.

According to West (1990) innovative work behaviors “the intentional generation, promotion and realization of new ideas within a work role, workgroup or organization in order to benefit role performance, the group or the organization”. Innovative work behavior is often associated (or confused) with the creative behavior that refers to bringing into existence novel ideas (or creative behaviors). IWBs aside from implication/generation of ideas, did recombination or importantly, implement those ideas so as to contribute to the effectiveness of the organization or its business processes, services or products (Shalley et al., 2004).

Researchers have defined innovative work behavior, in terms of three or four prototypical behaviors. For purposes of our research we will focus on three key behaviors. As implied, one “idea generation” in which employees generate new ideas or propose original solutions to business related problems or improvement to products or services. The second set relates to “idea promotion”. Here an employee would advocate or “champion” new and novel ideas relating to the company`s services, products and operations. As noted above a third set of behaviors reflect efforts at “idea implementation”. This includes activities designed to turn ideas into reality, This often takes the formwork on creating operational versions or a realistic prototype or model that

can be used within an organization or introduced to customers for their consideration (Asmawi et al., 2015).

2.3 High Commitment Work Systems

There is an increasing consensus to consider HR practices a part of system if we hope to understand and predict their potential impact on strategic organizational outcomes (Huselid, 1995; Lepak et al., 2006). An HR system is defined as configuration or bundle of planned HR activities aimed at achieving a certain goal where those practices are designed and intended to complement each other to have their positive effects (Prieto & Perez-Santana, 2014). The predicted effect would stem from the synergies that are created. And this effect would be greater than any summation of the impact of the individual practices if they were introduced separately.

The literature on high commitment work systems (HCWS) tends to focus on those HR practices which are thought to have an effect on increasing the levels of commitment felt by employees toward their job and the efforts they put into their work Appelbaum (2000) and Huselid (1995) argued that most of the empirical studies have found that HCWS and improved job performance are positively related with each other. This probably explains the wide degree of support for this approach to managing people at work on the part of both researchers and practitioners (Watson, 1999).

More specifically HCWS might include the implementation of HR practices designed with the employee in mind; These would include efforts to recruit individuals with mission critical skills, support for employees by investing in training and development, the establishment and use of an internal labor market, policies that encourage participation and result in engagement, and performance management programs (including reward structures) that are progressive and supportive of employee professional growth and aspirations (Allani et al., 2003; Laursen & Foss, 2003; Wright & Kehoe, 2008).

Xiao & Björkman (2006) performed a detailed factor analysis study which included some of the practices noted above. They also had data on reactions to policies or practices covering domains like job security, behavioral appraisals, the use of overarching goals or those promoting egalitarianism etc. These authors went on to use social exchange theory in order to better understand the potential positive impact of these various practices. In brief, they reason that these have their effects because employees come to feel that they are appreciated or valued by their and they have the experience of a company culture as one that supports social justice. Based on “norms of reciprocity” employees, in turn, feel obliged to such good will in the form of increased commitment to their work and toward achieving organizational goals.

2.4 Knowledge Sharing

In a contemporary global economy, knowledge acquisition and knowledge management are considered to be vital capabilities of an organization. In particular being able to leverage a reservoir of tacit knowledge is an unseen competitive edge as it is seen as difficult to imitate (Tidd, 2001). Therefore, it is not surprising to see that organizations

are giving more attention to the management of this asset. This is thought to involve several knowledge related activities including conception, adoption, coding, sharing, and exploitation. However knowledge sharing is most important among all of these activities, this is because knowledge sharing causes an organization's employees to personally gather, recreate, recombine and utilize knowledge. According to Darroch & McNaughton (2002) knowledge sharing has the potential for enriching the employee's competencies as well. In turn this increases the organization's capabilities and can facilitate innovation.

In this regard knowledge sharing can be thought of as involving the transfer of skills, wisdom, expertise among employees (Tsai, 2002).

Importantly knowledge sharing implies volitional behavior on the part of individuals. It relies on their intention and attitude to share (Shahzadi et al., 2015). But because this is not just a one way activity it often involves the realization of mutual benefits for the parties involved including new knowledge creation and potential for innovation (Mehrabani & Shajari, 2012).

To elaborate, knowledge sharing implies both the donation and collection of knowledge. Knowledge donation involves sharing knowledge, expertise and skills with others, whereas knowledge collection involves receiving knowledge from others. One has to consult others in order to learn what they know. These reflect the active processes of KS. Both are on interpersonal communication. Similarly for knowledge creation and dissemination both the processes are equally needed. Simply stated the significance of employee knowledge-sharing (KS) behaviors can only be understood by recognizing that it is embodied in individuals and what they will or will not do in the workplace. For that reason, it falls to the organization to stimulate and shape knowledge-sharing behaviors on the part of its employees.

2.5 High Commitment Work System and Innovative Work Behavior

Even when employees are committed a company must still find ways to direct their efforts; when it comes to expecting innovative work behaviors employing the right incentive and reward structures will be important.

As pointed out in order to compete well in the global market place organizations must constantly innovate. Toward this goal research has found that innovative work behaviors of employees positively influence the innovativeness of an organization (De Jong & Den Hartog, 2010; Scott & Bruce, 1994). Accordingly Chen & Huang (2007) argue that an internally consistent system of HRM practices will play a significant role by way of shaping the behavior, attitudes and skills of employees. (Lepak, et al., 2006), have noted that firms which embrace the right combination of commitment-inducing human resource management policies and practices also benefit from resulting innovation.

According to Appelbaum (2000) certain HR practices have the capacity to enhance employee capabilities, increase motivation and provide the opportunity to achieve desired outcomes. This ability, motivation and opportunity (AMO) perspective does assume that the company hires capable employees, but once on board if employees are positively motivated and provided with the opportunity it is likely they will come up with novel ideas. Thus AMO theory promotes two fundamental assumptions. First, it states

that, “performance is a function of the employees’ abilities, motivation and opportunity to participate” .Secondly, the practices which HR performed have the potential to leverage these AMO factors (i.e. ability of employees, their motivation and giving them opportunities) and as a consequence produce increased performance (Boselie, 2010). In the case when an organization found its employees able and identified their ability of creativity, would expect innovativeness and benefit as a result (Hult et al., 2004).

High commitment work practices can direct employee motivation toward innovation by offering performance based rewards and fair compensation (Boselie, 2010; Guest, 1997;Wright & Kehoe, 2008). More recently it has been clear that in many cases innovations are the outcome of effective team work. This implies that organizations must also attend to and design team based appraisal and reward systems. (Beugelsdijk, 2008), “By introducing individual rewards, [an organization] might erode the crucial feeling of we-ness which is argued to be necessary for both knowledge sharing and innovations”.

To recap, high-commitment work systems elevate employees’ motivation to do their work well. By also setting expectations and rewards for innovation, and providing opportunities for the display of innovative behavior, will also result in increased innovativeness at the level of the firm (Jiménez-Jiménez & Sanz-Valle, 2011).He et al. (2017) have studied the relationship between department high performance work systems and the creative performance of employees by taking data from 74 departments of china. They found a positive relationship between department high performance work systems (DHPWS) and the creative performance of employees while organization citizenship behavior (OCB) partially mediates this relationship. Perspective taking serves as a moderator between department high performance work systems and organization citizenship behavior. So that our first hypothesis is:

- **H₁:** There will be a positive relationship between the use of the goal directing features of a high commitment work system and innovative worker behavior.

2.5 High Commitment Work System and Knowledge Sharing

High commitment systems create loyalty and reciprocity and hence a willingness to engage in pro social behaviors, knowledge sharing being a key one

As described knowledge sharing is an activity that is highly depended on the individuals involved. It also requires a willingness and intention to both exchange knowledge to create new ideas (Nonaka & Takeuchi, 1995).Clearly a person would share knowledge when he/she is willing to collaborate and perceive every employee in the organization as his/her team. According to Casimir et al. (2012) employees that have knowledge are reluctant to share it with others because they think they will lose their own value by sharing their specific knowledge with others. They sometime try to hide their knowledge and avoid to share their expertise and skills.

From the perspective of strategic HRM, the specific practices which have been performed by HR provide people the motivation to share and manage their knowledge by promoting the right company culture and values. As suggested by Argote et al. (2003), knowledge sharing is highly influenced by the prevailing incentive and reward structure of the firm

and especially by demonstrated appreciation for such activities. Employees are likely to share knowledge if they see the benefits to them and to their company for doing so.

High commitment work systems basically provide a context where employee will see such benefits as they get to help work colleagues out and learn from doing so. High levels of trust, feelings of employment security and feeling empowered at work have been found to be positive in stimulating knowledge sharing (Jiménez-Jiménez & Sanz-Valle, 2011). In this way, knowledge sharing comes to be seen as an aspect of good organizational citizenship, something that a highly committed employee is likely to do. Here high commitment work system plays crucial role as it motivates pro social behavior. So that our second hypothesis of the study is:

- **H₂:** There will be a positive relationship between the motivational features of a high commitment work system and knowledge sharing generally.

2.6 Knowledge Sharing Across Boundaries and Innovative Work Behavior

Literature supports that those organizations which stimulate knowledge sharing across internal and external organizational boundaries are well performers and innovators (Ashley et al., 2011; Howell & Annansingh, 2013; Zhou & Li, 2012).

Popadiuk & Choo (2006) argued that new (innovative) idea generation is often entails recombining external and internal knowledge into novel forms (Koruna, 2004). Whereas in idea promotion, employee does not only transmit information but also need to translate it into a convincing and understandable form to other members or teams (Caniëls et al., 2014). While in idea application, employees integrate and co-ordinate different and dissimilar information with other teams or individuals or teams, in order to routinize the innovation (Tucker et al., 2007). All this implies that knowledge sharing in the context of interactions with different and disparate parties (not just immediate coworkers) holds the greater potential for uncovering new ways of doing things. Organizations that encourage or facilitate employee contacts with other department, business units, suppliers, even customers are likely to see this result in innovations when employees are committed to the wellbeing of the firm Radaelli et al. (2014) argue that in such context knowledge sharing activates process involving “cognitive elaboration and re-elaboration” that enable the individuals to recreate their knowledge and mobilize their innovative behaviors.

- **H₃:** There will be a positive relationship between knowledge sharing across organizational boundaries and innovative work behavior.

2.7 Knowledge Sharing As a Mediator between High Commitment Work System and Innovative Work Behavior

Michaelis et al. (2015) studied the relationship between high performance work systems (HPWS) and productivity of employees by considering knowledge exchange and combination as a mediator. They tested their model on Germany’s junior organizations and found that knowledge is a key mediator which plays an important role between (HPWS) and employees productivity. Afsar (2016) have filled an important research gap by studying the relationship between person organization fit and innovative work behavior by taking knowledge sharing as a mediator. He has taken data from the nurses of government hospitals of Thailand by means of questionnaire and found a positive

relationship between person organization fit and innovative work behavior while the knowledge sharing behavior found to be a partial mediator between these two variables. Kim & Park (2017), by using social exchange theory as a base for their study, tried to find the relationship between “employee work engagement, organizational procedural justice, knowledge sharing and innovative work behaviors” by taking data from Korean employees. Their results depicted a positive relationship between “employee work engagement, organizational procedural justice, knowledge sharing and innovative work behaviors”. They also explain that employees’ engagement in work increases the level of knowledge sharing and ultimately by sharing knowledge employees’ behavior of work related innovativeness enhances. However, this study is based on the belief that high commitment work system fosters employees innovative work behavior through the mechanism of employee’s knowledge sharing behavior. Thus the presence of high commitment to company goals as induced by progressive HRM policies and practices is not enough. Such commitment might well produce worker loyalty. But it still needs to manifest itself in knowledge sharing if innovation is to occur in the workplace.

Accordingly, our fourth hypothesis of the study is:

- **H4:** Knowledge sharing will mediate the relationship between high commitment work system and innovative work behavior.

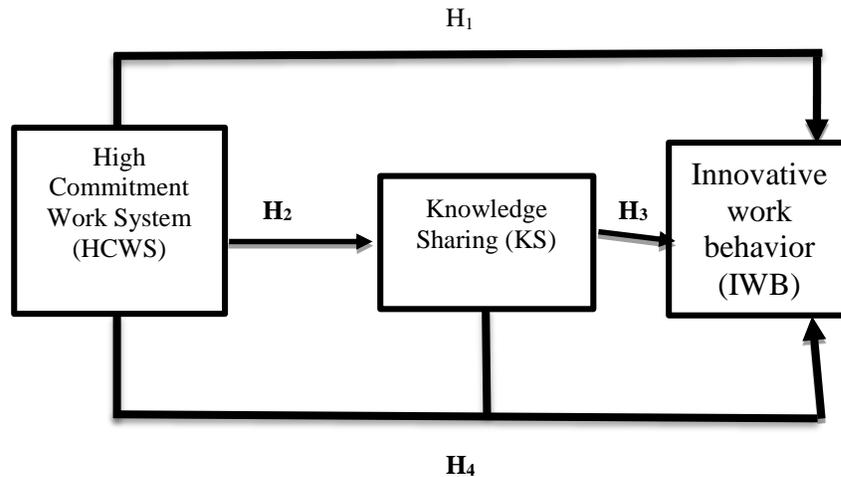


Figure 1: Correlation of Hypotheses

In the above figure, HCWS is linked with IWB representing the H₁, HCWS is related with KS representing H₂, KS is related with IWB delineating H₃. Finally HCWS is indirectly related with IWB through KS.

3. Research Methodology

3.1 Data and Sample

Data was gathered from employees of mobile network companies operating in a capital city of one of a Pakistan's province. Out of 225 survey questionnaires 170 were got filled representing 75.5% response rate. Respondents were managerial level employees of various departments of telecom sector companies, mainly middle management including: assistant managers, deputy managers, team leaders, supervisors, project leaders, business analyst, HR heads, knowledge workers who are involved in IWB activities and consultants of various departments like finance, marketing, HR etc. .

Non-probability proportionate quota sampling technique was used. The purpose of using non-proportionate quota sampling was to entail more representation of the target population which is big and have more users (Sedgwick, 2012). Data has been collected from the employees of Mobilink, Ufone, CM Pak, Telenor and Warid. As described above out of 225 survey questionnaires 170 were got filled representing 75.5% response rate. Out of these 170 questionnaires 49 responses was collected from Mobilink, 27 from Ufone, 33 from CM Pak, 47 from Telenor and 14 from Warid.

3.2 Research Measures

To measure the High commitment, Xiao and Bjorkman (2006) scale has been adopted. Hoof and Ridder (2004) developed scale used for measuring knowledge sharing. Innovative work behavior was measured through the scale taken from the study of Janssen (2000).

To establish the discriminant and convergent validity of the scales exploratory factor analysis (EFA) has been used. After Factor Analysis 7 items were excluded from the scale for further data analysis. The items with less factor loadings (< 0.40) have been excluded. Final scale for data analysis included 13 items measuring high commitment work system (HCWS), 9 items measuring innovative work behavior (IWB) and 5 items measuring knowledge sharing (KS). To check the internal consistency of the scales, there liability test was performed that yielded the desired level of Cranach's Alpha value.

Finally for data analysis procedure of regression has been followed. Moreover, hypothesis involving mediation was tested following three steps procedure by Warner (2012) and mediation's significance was checked through Sobel's test (Warner, 2012). For additional verification mediation has been also checked using PROCESS v 2.15 (Hayes, 2011). Before applying regression analysis, the data was subjected to test the assumptions of normality, multicollinearity and heteroskedasticity. The data met all the assumptions.

4. Results

The demographic categories of the respondents included company name, gender, education, and years of experience with the organization. Out of 178 there respondents having experience up to 5 years and 10 years were 44% and 56% respectively. Qualification wise 49% were holding bachelor degree or less, while 51% were holding master degree or above. Males and females' representation was 86% and 14% respectively.

To check the internal consistency of scales reliability measures has been used. In this regard Cronbach's Alpha (C- α) value of all the variables has been found as .866 of HCWS, .857 of IWB and .763 of KS showing that all the measures are reliable and internally consistent(Hair et al., 2009).

Table 1 shows below the mean, standard deviation, and reliabilities with significant correlations at $p < .01$:

Table 1: Mean, Standard Deviation, Correlation and Reliabilities

Variable	Mean	S.D	1	2	3
High Commitment Work System	3.7705	.57671	(.866)		
Innovative Work Behavior	3.7917	.58740	.433**	(.857)	
Knowledge Sharing	3.5056	.67937	.322**	.376**	(.763)

$n=178$, $p < .01$, ** Correlation is significant at the 0.01 level (2-tailed). *Reliability value is given in small brackets.*

4.1 Mediation Analysis

Table 2 shows that approximately 19 % of the variance in IWB is explained by HCWS ($R^2 = .187$, $p < .05$). Moreover, regression coefficient of HCWS is also significant ($\beta = .441$, $t = 6.373$, $p < .05$, showing a positive relation between HCWS and IWB ($R = .433$, $p < .05$). Hence hypothesis 1 of the study is supported. Below table shows regression results predicting innovative work behavior from high commitment work system:

Table 2: Regression Results: Predicting Innovative Work Behavior (IWB) from High Commitment Work System (HCWS) Model 1

Variable	B	Std. Error	t	p-value
Constant	2.129	.264	8.065	.000
HCWS	.441	.0696	.373	.000
R = .433^a R² = .187 F = 40.612***				

Dependent variable: IWB, a: $p < 0.05$, F is significant at .001

Table 3 shows that approximately 11 % of the variance in KS is explained by HCWS ($R^2 = .104$, $F = 20.389$, $p < .05$). Moreover, regression coefficient HCWS is significant ($\beta = .380$, $t = 4.515$, $p < .05$), indicating a positive relation between HCWS and KS ($R = .322$, $p < .05$). Hence hypothesis 2 of the study is supported. Below table shows regression results predicting knowledge sharing from high commitment work system:

Table 3: Regression Results: Predicting Knowledge Sharing from HCWS – Model 2

Variable	B	Std. Error	t	p-value
Constant	2.074	.321	6.470	.000
HCWS	.380	.0844	.515	.000
R = .322^a R² = .104 F = 20.389***				

Dependent variable: KS, a: $p < 0.05$, F is significant at .001

Table 4 illustrates that regression coefficient of KS is significant ($\beta = .228$, $t = 3.809$, $p < .05$), showing a positive relationship between KS and IWB ($R = .376$, $p < .05$). Hence hypothesis 3 is also supported.

Moreover, regression analysis has been performed to predict IWB from both HCWS through KS using Warner (2012) three step procedure and then Sobel’s test has been performed for validating the mediator’s significance. Approximately 50% of the variance in IWB is explained by HCWS and KS, where KS is a mediating variable ($R^2 = .250$, $F = 29.120$, $p < .05$). Moreover, regression coefficient of HCWS is significant ($\beta = .355$, $t = 5.033$, $p < .05$). These two variables (HCWS and KS) perform a significant job for predicting variance in IWB. Hence hypothesis 4 is supported.

Table 4: Regression Results Predicting Innovative Work Behavior (IWB) From Knowledge Sharing (KS) - Model 3

Variable	B	Std. Error	t	p-value
Constant	1.656	.283	5.852	.000
HCWS	.355	.070	5.033	.000
KS	.228	.060	3.809	.000
R = .500^a R² = .250 F = 29.120***				

Dependent variable: IWB, $p < 0.05$, F is significant at .001

If the direct relationship between explanatory and outcome variable is insignificant and the indirect relationship through mediated variable is significant then it is considered as full mediation. If there is significant direct relationship between explanatory and outcome variable and the indirect relationship through mediation is also significant then it is considered as partial mediation (Warner, 2012).

Following the above literature, in present research knowledge sharing (KS) partially mediates the relationship between explanatory (HCWS) and outcome variable (IWB).

Figure 1 shows that the mediation analysis has partitioned the total effect of HCWS on IWB ($c = .441$) into a direct effect ($c' = .355$) and a mediated effect ($ab = .380 * .228 = .109$). It shows that mediation through KS is statically significant. The total effect is the summation of both effects.

Figure 1 below shows unstandardized path coefficients for the HCWS/KS/IWB mediation analysis:

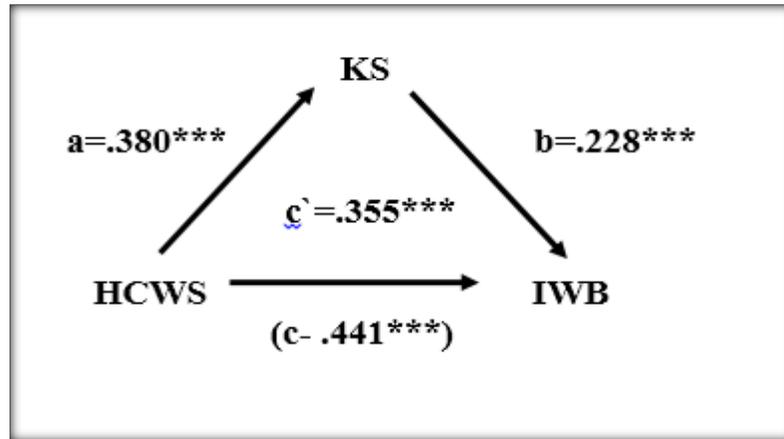


Figure 1: Unstandardized Path Coefficients for High Commitment Work System, Knowledge Sharing and Mediation Analysis

Sobel test examines the “a” and “b” coefficients of mediation in the Figure 1. The $H_0: ab = 0$. For generating statistics of z test, (SE_{ab}) is required. The following formula is used to test the $H_0: ab = 0$:

$$z = \frac{ab}{SE_{ab}}$$

The value of ab will be significant when the value of z would be greater than +1.96 or less than -1.96.

In Table 5, Sobel test results has been presented. z critical value=2.909 or 2.911 at CI 95 % or $p < .05$ which is greater than +1.96, showing H_0 is rejected. It means mediation exist, thus KS is mediating the relationship between HCWS and IWB in the present research.

Table 5: Sobel Test

Input	Test	Test Statistic	Std. Error	P-value
a 380	Sobel test	2.90967849	0.02977649	0.00361801
b 228	Aroian test	2.86887306	0.03020001	0.00411937
S _a 084	Goodman test	2.95227614	0.02934685	0.00315441
S _b 060				

Input	Test	Test Statistic	P-value
t _a 4.515	Sobel test	2.91135509	0.00359865
t _b 3.809	Aroian test	2.87051339	0.00409806
	Goodman test	2.95399121	0.00313693

Process v2.15 by Hayes (2011) has also been used to confirm the KS role as a mediator. Process boasts up data (1000) by default. It also provides the results for unstandardized path coefficient. Additionally Process gives us the direct and indirect effect sizes which are very important to explain the effect and magnitude of mediation. Kappa- Squared for indirect effect table shows the effect of mediation. The effect can be deduced as: Effect value .01= Small, .09 = Moderate & .20 = Large (Preacher & Kelley, 2011).

Table 6 shows almost the similar results, as obtained through 3 step regression procedure above(c= .4410 ***, a=.3796***, b= .2278*** and c`=.3545***). LLCI and ULCI values against unstandardized coefficient a, b, c and c` does not have 0 in between the LLCI and ULCI values, showing significant relationships among the variables. Indirect mediated effect is .0865and is significant provides similar results as calculated above. Hence all the hypotheses of the study are verified and supported by this method too. Moreover, Kappa – squared value for indirect effect = .0893 (or .09 approximately) which depicts that the indirect or mediated effect is moderate (Preacher & Kelley, 2011). Table 6 shows below the regression results for mediation through process v 2.15

Table 6: Regression Results for Mediation

Variable	B	SE	Sig.	LLCI	ULCI
Model without mediator					
Constant	2.1288	.2640	.0000	[1.6079	2.6497]
HCWS→IWB (c)	.4410	.0692	.0000	[.3044	.5776]
$R^2_{\text{HCWS} \rightarrow \text{IWB}} = .1875$					
Model with mediator					
Constant	1.6562	.2830	.0000	[1.0977	2.2148]
HCWS→KS (a)	.3796	.0841	.0000	[.2137	.5455]
KS→IWB (b)	.2278	.0598	.0002	[.1098	.3458]
HCWS→IWB (c')	.3545	.0704	.0000	[.2155	.4936]
Indirect effect (a x b)	.0865			[.0345	.1708]
$R^2_{\text{HCWS} \rightarrow \text{KS}} = .1038$					
$R^2_{\text{KS, HCWS} \rightarrow \text{IWB}} = .2497$					
$F_{\text{HCWS} \rightarrow \text{IWB}} = 40.6116^{***}$					
$F_{\text{HCWS} \rightarrow \text{KS}} = 20.3887^{***}$					
$F_{\text{KS, HCWS} \rightarrow \text{IWB}} = 29.1203^{***}$					

Dependent variable: IWB, P<0.001 ***, P<0.01**, P<0.05*

Kappa- Squared values for indirect effect in table 6 shows the effect of mediation. The effect (strength) can be recognized as: .01= Small, .09 = Moderate and .20 = Large(Preacher & Kelley, 2011).

Following table 7 shows below Preacher and Kelly (2011) kappa- squared for indirect effect:

Table 7: Preacher and Kelley (2011) Kappa- Squared for Indirect Effect

Effect	Boot SE	Boot LLCI	Boot ULCI
.0893	.0323	.0344	.1674

5. Discussion and Conclusion

First four hypotheses examined the direct impact of explanatory variable “high commitment work system (HCWS)”on outcome variable “innovative work behavior (IWB)”. Regression analysis revealed significant relationship between them. These results are in line with the componential theory of creativity as higher the commitment level of employees higher their innovativeness will be. This research empirically validates the research study of Schimansky (2014). Second of the hypotheses investigates the positive relationship of high commitment work system on knowledge sharing. The results revealed positive causal relationship between the variables and supported by theory of creativity. As per the componential theory of creativity people with intrinsic motivation and expertise would share their knowledge with others either they are working individually or in a team environment for making their project productive. The finding is consistent with the study of Hislop (2003) and Iqbal et al. (2015) in which knowledge sharing behaviors is predicted by HRM practices. But in this case a specific system named high commitment work system containing some particular HR practices predicted knowledge sharing behavior of employees.

Third hypothesis depicted the positive causal relationship between knowledge sharing and innovative work behavior. Radaelli et al. (2014) in their study examined the relationship between KS and its related outcome (innovative behavior) in health care organization and used some other mediating variable as well. They found support for the direct effect. Fourth and final hypothesis was the central hypothesis of this research which is related to the mediator (KS) role in the direct relationship. Three step regression, Sobel test and PROCESS v2.15 has been performed to validate the relationship. Thus found that knowledge sharing partially mediates the relationship and supports the logical discussion made in the literature review of this study.

This study concludes that HR practices forming a committed environment by providing such system nurture knowledge sharing and promote innovation. HCWS promoted practices focuses on boosting up employees commitment towards their work, each other and organization. It makes them motivated to share their knowledge, ideas or skills with each other by promoting open communication, participation opportunities, social equality, and team work based appraisals and rewards etc.

This research explicates that knowledge sharing by employees perform a key intervening role in this relationship of high commitment work system and innovative work behavior. This study reveals that high commitment work system facilitates knowledge sharing

behavior of employees, which in turn fosters innovative work behavior within an organization, as knowledge sharing by employees actually plays vital role in recombining, translating and creating new knowledge and novel ideas.

6. Implications

From this study, organizational leaders and experts may evolve some ideas for promoting innovative work behavior within an organization. It highlights the importance of application of human resource systems in achieving a certain outcome. It guides HR managers that how HR practices in combination can play significant role in achieving desired outcome.

It guides the managers of telecom sector companies and other innovation oriented companies in this region that how HR practices forming high commitment work system positively influence knowledge sharing and innovative work behavior of employees within the organization. Predominantly it guides telecom sector organizations that how they can improve their organizational practices, productivity and the performance of their employees by keeping in consideration their role of HRM practices, promoting innovative work behaviors and knowledge sharing at work place.

It provides new insights to the management that HR systems should be designed according to the organizational goals. Modifications in the HRM practices can proliferate the performance and positively influence desired organizational outcome.

It provides researchers new avenues to research or explore this research facet further. In addition to Pakistani context this study has much significance, as in Pakistan, most of the organizations do not consider HRM as an important driver to the organizational outcomes. Decision makers working in innovation oriented organization in Pakistan may use it as a guide.

7. Limitations

Although this research has numerous research implications and contribute to the current literature but still it has certain limitations. Due to ease in accessibility to the respondents and time constraint non-probability proportional quota sampling followed by convenience sampling is used for data collection. The sample is collected non-randomly, so that all the participants do not get equal chance to participate this may limit to some extent the generalizability of the findings and results of this research. The time and resources constraint has made researcher restricted to the telecom companies (mobile network) operating in a country's specific region only which can limit the scope of the study. This study only considered mobile network companies representing telecom sector, and did not consider land line and internet service providing networks. In view of time constraints, the proposed research is a cross-sectional study and the data collected through such design to some extent may hamper the ability to make causal relations.

8. Future Directions

In future, researchers can work on exploring the influence of different moderating conditions for the variables and their respective relationships considered in this research. As there could be many other facets that may impact the relationship between high

commitment work system and innovative work behavior. Moreover, researchers can increase the validity of these findings by incorporating different control variables in this study and other potential variables. In addition, longitudinal study may be conducted for more efficient and reliable results.

Further the practices included in this study are general representation of used variables in the study. There could be many other practices or bundle of practices and items that can be included according to the culture and the country or the industry context. To generalize and counter validate the results of the study, the same study can be performed in innovation oriented sector other than telecommunication.

REFERENCES

- Afsar, B. (2015). The impact of person-organization fit on innovative work behavior: The mediating effect of knowledge sharing behavior. *International Journal of Health Care Quality Assurance*, 29(2), 104–122.
- Allani, N., Arcand, M., & Bayad, M. (2003). Impact of Strategic Human Resources Management on Innovation. Paper presented at the *12th International Conference on Management of Technology*. [Online] Available: http://guillaumegronier.com/cv_documents/_CDRom_CONFERE/communications/32.Allani.pdf (March 31st, 2017).
- Amabile, T. M. (2013). *Componential theory of creativity* (working paper No. 12-096). [Online] Available: <http://www.hbs.edu/faculty/Publication%20Files/12-096.pdf> (March 21st, 2017).
- Appelbaum, E. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. New York, US: Cornell University Press.
- Argote, L., McEvily, B., & Reagans, R. (2003). Introduction to the special issue on managing knowledge in organizations: Creating, retaining, and transferring knowledge. *Management Science*, 49(4), 5–8.
- Ashley, C. E., Carnes, E. C., Phillips, G. K., Padilla, D., Durfee, P. N., Brown, P. A., and Carter, M. B. (2011). The targeted delivery of multicomponent cargos to cancer cells by nanoporous particle-supported lipid bilayers. *Nature Materials*, 10(5), 389–397.
- Asmawi, A., Rahim, M. F. A., & Zainuddin, M. N. (2015). A study of leadership styles and organizational commitment in a Malaysian private university. *Advanced Science Letters*, 21(6), 1944–1947.
- Beugelsdijk, S. (2008). Strategic human resource practices and product innovation. *Organization Studies*, 29(6), 821–847.
- Boselie, P. (2010). High performance work practices in the health care sector: A Dutch case study. *International Journal of Manpower*, 31(1), 42–58.
- Caniëls, M. C. J., De Stobbeleir, K., & De Clippelaar, I. (2014). The antecedents of creativity revisited: A process perspective. *Creativity and Innovation Management*, 23(2), 96–110.

- Casimir, G., Lee, K., & Loon, M. (2012). Knowledge sharing: Influences of trust, commitment and cost. *Journal of Knowledge Management*, 16(5), 740–753.
- Chen, C. J., & Huang, J. W. (2007). How organizational climate and structure affect knowledge management—The social interaction perspective. *International Journal of Information Management*, 27(2), 104–118.
- Chuang, S. H. (2004). A resource-based perspective on knowledge management capability and competitive advantage: An empirical investigation. *Expert Systems with Applications*, 27(3), 459–465.
- Darroch, J., & McNaughton, R. (2002). Examining the link between knowledge management practices and types of innovation. *Journal of Intellectual Capital*, 3(3), 210–222.
- De Jong, J., & Den Hartog, D. (2010). Measuring innovative work behaviour. *Creativity and Innovation Management*, 19(1), 23–36.
- Eslami, N., & Nakhaie, H. (2011). Effects of human resource management activities to improve innovation in enterprises. *International Proceedings of Economics Development and Research*, 12, 518-522. [Online] Available: <http://www.iacsitp.com/show-8-6-1.html> (April 19th, 2017).
- Fuchs, B. (2011). Transforming lead user innovations into new corporate ventures: A matter of information asymmetry? *International Journal of Entrepreneurship and Innovation Management*, 14(1), 80–95.
- Gilbert, C., De Winne, S., & Sels, L. (2011). The influence of line managers and HR department on employees' affective commitment. *The International Journal of Human Resource Management*, 22(8), 1618–1637.
- Gong, Y., Huang, J. C., & Farh, J. L. (2009). Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of Management Journal*, 52(4), 765–778.
- Guest, D. E. (1997). Human resource management and performance: A review and research agenda. *International Journal of Human Resource Management*, 8(3), 263–276.
- Gumusluoglu, L., & Ilsev, A. (2009). Transformational leadership, creativity, and organizational innovation. *Journal of Business Research*, 62(4), 461–473.
- He, C., Gu, J., Liu, H. (2017). How do department high-performance work systems affect creative performance? a cross-level approach. *Asia Pacific Journal of Human Resources*, 2(2), 1–25.
- Hoof, B. V. D., & Ridder, J. A. D. (2004). Knowledge sharing in context: The influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management*, 8(6), 117–130.
- Hislop, D. (2003). Linking human resource management and knowledge management via commitment: A review and research agenda. *Employee Relations*, 25(2), 182–202.

- Hansen, M. T. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly*, 44(1), 82–111.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2009). *Análise multivariada de dados*. Bookman Editora.
- Hayes, A. F. (2011). *My macros and code for SPSS and SAS*. [Online] Available: <http://afhayes.com/spss-sas-and-mplus-macros-and-code.html> (September 11th, 2017).
- Howell, K. E., & Annansingh, F. (2013). Knowledge generation and sharing in UK universities: A tale of two cultures? *International Journal of Information Management*, 33(1), 32–39.
- Hult, G. T. M., Hurley, R. F., & Knight, G. A. (2004). Innovativeness: Its antecedents and impact on business performance. *Industrial Marketing Management*, 33(5), 429–438.
- Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38(3), 635–672.
- Iqbal, S., Toulson, P., & Tweed, D. (2015). Employees as performers in knowledge intensive firms: Role of knowledge sharing. *International Journal of Manpower*, 36(7), 1072–1094.
- Jarzabkowski, P., & Whittington, R. (2008). A strategy-as-practice approach to strategy research and education. *Journal of Management Inquiry*, 17(4), 282–286.
- Jones, D. C., Kalmi, P., Kato, T., & Makinen, M. (2010). *HRM practices and firm performance: Evidence from finnish manufacturing* (Working Paper No. W-485). [Online] Available: <https://aaltodoc.aalto.fi/bitstream/handle/123456789/12423/isbn9789526010656.pdf?sequence=1> (April 20th, 2017).
- Jiang, J., Wang, S., & Zhao, S. (2012). Does HRM facilitate employee creativity and organizational innovation? A study of Chinese firms. *The International Journal of Human Resource Management*, 23(19), 4025–4047.
- Jiménez-Jiménez, D., & Sanz-Valle, R. (2008). Could HRM support organizational innovation? *The International Journal of Human Resource Management*, 19(7), 1208–1221.
- Jiménez-Jiménez, D., & Sanz-Valle, R. (2011). Innovation, organizational learning, and performance. *Journal of Business Research*, 64(4), 408–417.
- Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behavior. *Journal of Occupational and Organizational Psychology*, 73(3), 287–302.
- Kim, W., & Park, J. (2017). Examining structural relationships between work engagement, organizational procedural justice, knowledge sharing, and innovative work behavior for sustainable organizations. *Sustainability*, 9(2), 1–16.

- Koruna, S. (2004). Leveraging knowledge assets: Combinative capabilities–theory and practice. *R&D Management*, 34(5), 505–516.
- Laursen, K., & Foss, N. J. (2003). New human resource management practices, complementarities and the impact on innovation performance. *Cambridge Journal of Economics*, 27(2), 243–263.
- Lepak, D. P., Stewart, J., Takeuchi, R. (2006). Emerging perspectives on the relationship between HRM and performance. In R. J. Burke & C. L. Cooper (Ed.), *The human resources revolution: why putting people first matters*(pp. 31-54). Amsterdam, Netherlands: Elsevier.
- Llego, B. (2013). The relationship between human resource practices and firm performance case study: The Philippine firms empirical assessment. *International Journal of Economics and Management Engineering*, 7(8), 2368–2372.
- Michaelis, B., Wagner, J. D., Schweizer, L. (2015). Knowledge as a key in the relationship between high-performance work systems and workforce productivity. *Journal of Business Research*, 68, 1035–1044.
- Mehrabani, S. E., & Shajari, M. (2012). Knowledge management and innovation capacity. *Journal of Management Research*, 4(2), 164–177.
- Messersmith, J. G., & Guthrie, J. P. (2010). High performance work systems in emergent organizations: Implications for firm performance. *Human Resource Management*, 49(2), 241–264.
- Milkovich, G. T. (1987). *A strategic perspective on compensation management*.(CAHRS Working Paper 87-01). [Online] Available: <http://digitalcommons.ilr.cornell.edu/cahrswp/444> (January 19th, 2017).
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford, UK: Oxford university press.
- Nadarajah, S., Kadiresan, V., Kumar, R., Nissa, N., Kamil, A., & Yusoff, Y. M. (2012). The relationship of HR practices and job performance of academicians towards career development in Malaysian private higher institutions. *Procedia - Social and Behavioral Sciences*, 57, 102–118.
- Osman, I., Ho, T. C.F., Galang, M. C. (2011). The relationship between human resource practices and firm performance: An empirical assessment of firms in Malaysia. *Business Strategy Series*, 12(1), 41–48.
- Prieto, I. M., & Perez-Santana, M.P. (2014). Managing innovative work behavior: The role of human resource practices. *Personnel Review*, 43(2), 184–208.
- Popadiuk, S., & Choo, C. W. (2006). Innovation and knowledge creation: How are these concepts related? *International Journal of Information Management*, 26(4), 302–312.
- Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods*, 16(2), 93–115.

- Radaelli, G., Lettieri, E., Mura, M., & Spiller, N. (2014). Knowledge sharing and innovative work behaviour in healthcare: A micro-level investigation of direct and indirect effects. *Creativity and Innovation Management*, 23(4), 400–414.
- Singh, K. (2004). Impact of HR practices on perceived firm performance in India. *Asia Pacific Journal of Human Resources*, 42(3), 301–317.
- Schimansky, S. (2014). The effect of a high-commitment work system on innovative behavior of employees. Paper presented at the 3rd IBA Bachelor Thesis Conference. [Online] Available: http://essay.utwente.nl/65249/1/Schimansky_BA_MB.pdf (April 19th, 2017).
- Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*, 37(3), 580–607.
- Sedgwick, P. (2012). Proportional quota sampling. *British Medical Journal*, 345 [Online] Available: e6336. doi: <https://doi.org/10.1136/bmj.e6336> (February 5th, 2016).
- Shahzadi, I., Hameed, R. M., & Kashif, A. R. (2015). Individual motivational factors of optimistic knowledge sharing behavior among University academia. *The Business & Management Review*, 6(1), 134–145.
- Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of Management*, 30(6), 933–958.
- Shipton, H., West, M. A., Dawson, J., Birdi, K., & Patterson, M. (2006). HRM as a predictor of innovation. *Human Resource Management Journal*, 16(1), 3–27.
- Tzafrir, S. S. (2007). The relationship between trust, HRM practices and firm performance. *The International Journal of Human Resource Management*, 16(9), 1600–1622.
- Tidd, J. (2001). Innovation management in context: Environment, organization and performance. *International Journal of Management Reviews*, 3(3), 169–183.
- Tsai, W. (2002). Social structure of “coopetition” within a multiunit organization: Coordination, competition, and intraorganizational knowledge sharing. *Organization Science*, 13(2), 179–190.
- Tucker, A. L., Nembhard, I. M., & Edmondson, A. C. (2007). Implementing new practices: An empirical study of organizational learning in hospital intensive care units. *Management science*, 53(6), 894–907.
- Vlachos, I. P. (2009). The effects of human resource practices on firm growth. *International Journal of Business Science and Applied Management*, 4(2), 17–34.
- Wright, P. M., Gardner, T. M., Moynihan, L. M. & Allen, M. R. (2004). *The relationship between HR practices and firm performance: Examining casual order* (CAHRS Working Paper #04-06). Retrieved from Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies.

- Warner, R. M. (2012). *Applied statistics: From bivariate through multivariate techniques: From bivariate through multivariate techniques*. Newcastle, UK: Sage.
- Watson, W. (1999). *Work USA 2000: Employee commitment and the bottom line: Study of employee attitudes and opinions*. Bethesda, MD: Watson Wyatt.
- West, M. A. (1990). The social psychology of innovation in groups. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work: Psychological and organizational strategies* (pp. 309-333). Oxford, England: John Wiley & Sons.
- Wright, P. M., & Kehoe, R. R. (2008). Human resource practices and organizational commitment: A deeper examination. *Asia Pacific Journal of Human Resources*, 46(1), 6–20.
- Xiao, Z., & Björkman, I. (2006). High commitment work systems in Chinese organizations: A preliminary measure. *Management and Organization Review*, 2(3), 403–422.
- Zhou, K. Z., & Li, C. B. (2012). How knowledge affects radical innovation: Knowledge base, market knowledge acquisition, and internal knowledge sharing. *Strategic Management Journal*, 33(9), 1090–1102.