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**THE IMPACT OF SUSTAINABLE HRM ON INNOVATION WITH MEDIATING  
ROLE OF CULTURAL DIMENSIONS: EVIDENCE FROM PROJECT  
MANAGEMENT EMPLOYEES IN CELLULAR COMPANIES**

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**Keywords: Cellular companies, Cultural Dimensions, Radical innovation, Incremental innovation, Sustainable HRM practices, Strategic HRM.**

**Abstract:**

In the current fast-paced competitive globalized marketplace, innovation has become almost a prerequisite for business success. Consequently, the interest is rapidly developing in supplement studies that determine the factors of innovation. Due to the growing importance of innovation, specifically in the globalized telecom industries in developing economies, such as Pakistan, there is a great potential and need for innovation in this era. There are extensive reasons to expect that the adoption of new HRM practices leads to better innovation performance. The purpose of this paper is to investigate the impact of sustainable HRM on innovation, this study took cultural dimensions of the organization as a mediator between sustainable HRM and innovation. To test the above-stated relationship, an empirical study has been conducted, data were obtained from 120 employees working in various cellular companies of Pakistan. The study concludes that sustainable HRM practices can enhance the ability of the cellular industry to bring innovation (radical or incremental), in the telecommunication sector of Pakistan. The results also reveal that the cultural dimensions of the organization partially mediate the relationship between sustainable HRM and innovation. *Although the study counts with the cross-sectorial and cross cultural limitations , its findings suggest that the telecommunication industry should focus more on sustainable HRM practices, as sustainable HRM practices have significant impact on radical and incremental innovations, and hence for sustainability of organizations through establishing innovative organizational culture.*

**1.1 Introduction**

Telecommunication enabled the social communication by providing technological foundations. In Pakistan, telecommunication industry has grown sharply in recent 10 years. Approximately, about 125 million people have cell phones. Due to cellular facilities, landline has largely been diminished. Now Pakistan has become an attractive region for foreign and domestic investments

in telecommunication industry. Due to increasing competition among cellular companies, users are enjoying advance features at reasonable rates. In the South Asian region, Pakistan has the highest mobile penetration rate. At present, there are five cellular networks working in Pakistan. Growing technological transformation in the field of information and communication technology, simultaneously leads to similar rapid evaluations and estimations in accordance to the 'Diffusion of innovation' and 'impact of innovations' (Latzer, 2009). As Rafiq and Gao (2008); Tajeddin (2011) suggested, the cellular industry in Pakistan is characterized by rapid progress and contribution in the economy, so more research regarding this industry is required (Ashraf & Khan, 2013).

A significant problem in the telecommunication field is the distinction between product and process innovations (Henten, Falch, & Tadayoni, 2004). However, another dimension about the character of innovation deals with its radical character (Henten et al., 2004). In Pakistan, similar to many developing countries, there is no authentic data available related to innovation (Wadho & Chaudhry, 2018).

Currently, innovation is considered to be one of the key factors that influence the long-term success of a company in the competitive markets of today (Naranjo-Valencia, Jiménez-Jiménez, & Sanz-Valle, 2016). In finding solutions to such problems, there is need to investigate the most important factors that are influencing the employees' innovation in their organizations. According to Wheatley and Doty (2010) studies, innovative performance relation may depend upon some organizational factors, for example HRM policies and practices (Wikhamn, 2019). Many of the researchers are also getting insight into the emerging concept of sustainable HRM, for getting sustainability in business, in order to gain competitive advantage and improved organizational performance. According to several researchers, there is urgent need to investigate the innovation ability of organizations in the context of HRM system and innovation-oriented culture (Mu Tian, Ping Deng, Yingying Zhang, 2018). To serve this purpose, current study introduces the new emerging concept of sustainable HRM and organizational cultural dimensions as predictors of innovation.

Sustainable human resource management is described by the (Ehnert et al., 2016, p. 90) as the "adoption of HRM strategies and practices that enable the achievement of financial, social and ecological goals, with an impact inside and outside of the organization and over a long-term time horizon while controlling for unintended side effects and negative feedback" (Wikhamn, 2019). The company based on sustainable HRM system would inform the candidates in the process of recruitment and selection process, that it is committed to sustainability. This act becomes a source of attraction for those who are motivated by such elements, and this act also discourages those who are not interested in providing sustainable environment. (Lopez-Cabrales &\*, 2019).

Kramer, (2014) pointed that sustainable HRM discusses the human and the social results, that enables the organization to continue for long run, that refers to sustainable organization. It also usually denotes those HRM practices, which are participating to increase positive environmental, social and human outcomes with their own importance, not only for using as mediators between strategy and financial performance (Arman, 2017). Henderson and Cockburn (1994); Galunic and Rjordan (1998) discussed in various studies about Organizational practices

related to HR such as sourcing, deployment, human competence development, are identified as influencing innovation performance at firm level (Foss & Laursen, 2012).

As previous studies explored that HR functions play major contribution to develop organizational sustainability, it is also identified from different studies, that sustainable HR practices help to develop sustainable 'culture' for organizational performance and innovation, such as 'diversity challenge' appeared in the international context, including cultural issues which affect compensation strategies. For example, setting a minimum wage rate in developing countries (Hamed et al., 2017). Furthermore, on behalf of prior quantitative and qualitative studies in the era of (1980- 2019), it can be assessed that the topic related to the impact of cultural dimensions on innovation has been emerging and becoming dynamical.

Most of the reliable academic researches continuously used the Hofstede's cultural dimensions to study the impact of national culture on innovation either for qualitative or for quantitative studies (Hamed et al., 2017).

Misra and Gergen (1993) culture shows the process of defining values of humans, and formulate significant world's frame of mind, or living structure. Similarly culture is of human actions and it is determining factor of prospect human action. It is compound of senses and relevant backgrounds, which explain, communicate, and establish the variety of our identifications and investments (Hemin Song, Yingying Zhang-Zhang, Mu Tian, Sylvia Rohlfer, 2018). Cultural dimensions are considered at organizational level in current study, and national values are not considered when an individual is responding to questions. According to McCoy, Galletta & King (2005), taking cultural dimensions at individual level may claim to the invalidity of scale, to answer this argument, almost three decades ago, recommendations have been made, that national culture dimensions can be used at organizational level instead of assuming Hofstede (1983) work (Lok, 2015).

Thus, extensive reasons prevail to think that, implementation of new and sustained HRM practices will result in better innovation performance (Foss & Laursen, 2012).

To address the calls for innovation in the rapidly changing competitive markets, specifically in the globalized telecom industry, this research contributes to explore the new concept of the sustainable human resource management as predicator of radical and incremental innovation. More specifically, if considered the outcomes of sustainable HRM, there are few researches in this field that mostly focus on sustainable HRM and organizational performance or employee performance, but this study is considering the relationship between sustainable HRM and innovation in telecommunication sector for developing economies, like Pakistan which has great potential and need for innovation.

## **2.1 Literature Review:**

An issue with the telecom sector is to differentiate between process and product innovation. This derivation is not clear, because important features of products and communication services are simultaneously developed and provided. As a result, product and process cannot be significantly separated because, it is not for all process innovations to become visible in the form of product or service to end user. However, there is possibility to differentiate

among service and network innovations (the innovation that end users experience, i.e. and the innovations that end users do not necessarily notice, i.e. network). Furthermore, another dimension about the characteristic of innovation is somehow radical innovation. For example, a new service formed on the basis of an IN product development platform is an incremental innovation, whereas in the mobile area, the application of 3G system is radical innovation. The transformation of 2G to 3G may be more or less easy. However, a complete 3G system has introduced a radically unique communication possibility (Henten et al., 2004).

Generally, there are three broad concepts related to Sustainable HRM. First theory is based on reproducing capability, which focuses on developing HR system that establishes its setting according to social, demographic and environmental pressures, to obtain long lasting results of organizational goals (Ehnert, 2009). Second theory is based on triple bottom line, which consists of economic, social and environmental results. Branoco and Rodrigues (2006) claimed that those HR practices, which are established according to triple bottom line are more sustainable in nature, due to its ability to develop image in the minds of stakeholders which is social, economic and environment friendly. Third theory regarding this concept has been developed by joining these two theories after recognizing and encouraging the concept, that HR system and economic, ecological and social consequences are related to each other (Renwick, Redman, & Maguire, 2011). According to Ehnert et al., (2014) sustainable human resource management is new emerging concept about employment relationship, and during last decade, it has obtained increased importance.

At last, discussion was started through early calls for HRM two decades ago, by Kozlowsk, HRM came to be markedly rooted in organizational strategy to expedite innovation, and nearly in the same time span Roberts (1988) claimed that all four fields of System support, structure, strategy and staffing were key to innovation success. As far as the concern with sustainable HRM, various practices were introduced as the sustainable HRM practices. From employer point of view, it is related to attracting and retaining talent, as well as for keeping healthy, motivational and productive human resources (Ehnert& Harry, 2008). The selection of skilled and efficient employees will lead to achieve organizational goals effectively (Manzoor et al., 2019). According to Anitha and Kumar (2016), training provides sustainable environment for employee's performance (Almarzooqi, Khan, & Khalid, 2019). Employee engagement enhances and promotes sustainable business as well, because it is the process by which employees feel themselves as the part of the organization and have status to influence decisions related to development of organization (Manzoor et al., 2019). According to Enhert (2009) competence-based arrangements permit the idea's transformation and convert into practices concerning sustainability (Galleli, Hourneaux Jr, & Munck, 2019). The HR practices would hold sustainability, not just for organizational effectiveness and long run financial profits, but also for moral reasons and for accountable leadership as well (Manzoor et al., 2019).

Now a days Innovation has become the most essential factor for commercial enterprises in the rapid competition of international markets (Karen & Century, 2008). According to Ericsson and charness (1997), for making innovations in

new products and services, corporations may have to strengthen their HR to develop organizational proficiencies. Innovation is a very common and desirable human competence, which demands special guidance, appropriate work environment, and compensation system, as well as target application programmes (Galleli et al., 2019). It is suggested that sustainable HRM is a next, innovative and encouraging domain for theory building, research and practice in the ground of HRM (De Prins, Beirendonck, De Vos, Segers, &Hrm, 2014). Sustainable HRM has growing importance and is gaining interest of scholars and students alike. Wickham (2019) examined that how sustainable HRM can affect the customer satisfaction and innovation (Stankevičiute&Savanevičiene, 2018). Although, the organization is responsible for results, however its competitiveness depends on the fact that how much inducement is offered by the organization to surpass the responses expected from the employees. In case of sustainable HRM system, organizations not only offer economic strength to its employees, but also make investments for its development with a view to ensure its leadership with respect to sustainability by these investments. This could be assumed that employment relationship will lead to innovation and pro activeness, which are future goals and ultimately the sustainability of organization. Sustainable HRM system serves as a driver to reinforce the commitment and involvement of employees with sustainability. According to Jabbour and Santos, (2008a) sustainable employment relationship would involve increasing employee knowledge and skills with regard to new processes and actions, as well as encouraging feedback about desirable outcomes that enables employee participation and motivation (Lopez-Cabrales&\*, 2019). Innovative firms constantly provide training to their employees for the improvement in products and services (Vimal Kumar, R.R.K. Sharma, 2017).

The proactive management and active Human Resource management becomes an important task within the organizations having sustainable HRM system, (Evans 1999, p. 327) which enables problem solving, creativity and innovation. (Ehnert, n.d.) Based on above discussion, we can develop the hypothesis:

***H1: Sustainable HRM practices have significant impact on innovation.***

In arena of workforce engagement and talent management, substantial contributions in the concern of effectiveness were also seen through many companies. However, major contribution of HR functions towards sustainability effectiveness is observed in the areas of training and development, leadership development, **multi culturalism**, ethics, and governance (Hamed et al., 2017).

According to Misra and Gergen (1993), culture shows the process of defining values of humans and formulating significant world's frame of mind, or living structure. Similarly culture is based on human actions and it is determining factor of prospect human action. It is compound of senses and relevant backgrounds which explain, communicate, and establish the variety of our identifications and investments (Hemin Song, Yingying Zhang-Zhang, Mu Tian, Sylvia Rohlfer, 2018). Hofstede (1980) claims that people transmit 'mental programs' that an individual established and strengthened by its experience, and these mental programs comprise of the national culture. After investigating the statistics from 40 nations, Hofstede (1980) determines that these 'mental programs' comprise of the following four dimensions: 1. Power distance, 2. Uncertainty avoidance. 3. Individualism and collectivism, 4. Masculinity and

Femininity. In the current study, cultural dimensions are taken at organizational level, and not at national level. According to McCoy, Galletta and King (2005) taking cultural dimensions at individual level may claim invalidity of scale. To answer this argument, recommendations have been made almost three decades ago, that national culture dimensions can be used at individual level instead of assuming Hofstede (1983) work (Lok, 2015). Furthermore, Hoecklin (1996), Hofstede (1980) provided an important structure for analysing not only the national culture, but also organizations and management as well, by considering the cultural differences. This framework is mainly helpful for understanding the person's perceptions about the organization, the strategies that are considered appropriate for controlling and organising the work arrangements, and duties and relations among employees (Sui Pheng & Yuquan, 2002). From the view point of Stock et al., (2013); Meyer (2014); Gomes et al., (2015); Ali and Park (2016), it is clear that the innovation oriented culture can be a key element for organizational innovation and as a result, firm's growth and performance as well (Mu Tian, Ping Deng, Yingying Zhang, 2018).

One objective of sustainable HRM is environmental management for sustainability of organization. One important element of Environmental Management literature is, that the outcomes cannot be achieved effectively only by making production, process, or raw materials. It also needs changes in corporate culture in the way, that organization's deeply implanted values help to support long term sustainability. Based on Ability, Motivation, Opportunity (AMO) theory, employee participation has been found to cultivate EM supportive cultures. Lucio, Pulignano, Whittall, & Ittner, (2012) pointed out that Social responsibility of Labour unions allows employee representatives to 'stretch' their roles and extend their impact (De Prins et al., 2014).

The sustainable HRM practices plays an important role in establishing positive outcomes and ensure positive changes shown by employees in their attitudes, and reactions toward their organizations. Organizations should build their sustainable HRM system carefully within its settings, and should be dynamic in bringing change to its internal and external conditions (Almarzooqi et al., 2019).

As previous studies explore that HR functions plays major contribution to develop organizational sustainability, and from different researches, it was also known that sustainable HR practices help to develop sustainable culture for organizational performance and innovation, such as 'diversity challenge' appeared in the international context, including cultural issues, which affect compensation strategies. For example, setting a minimum wage rate in developing countries (Hamed et al., 2017). Based on above literature, it can be hypothesized that

***H2: Sustainable HRM practices have significant impact on organization's Cultural dimensions.***

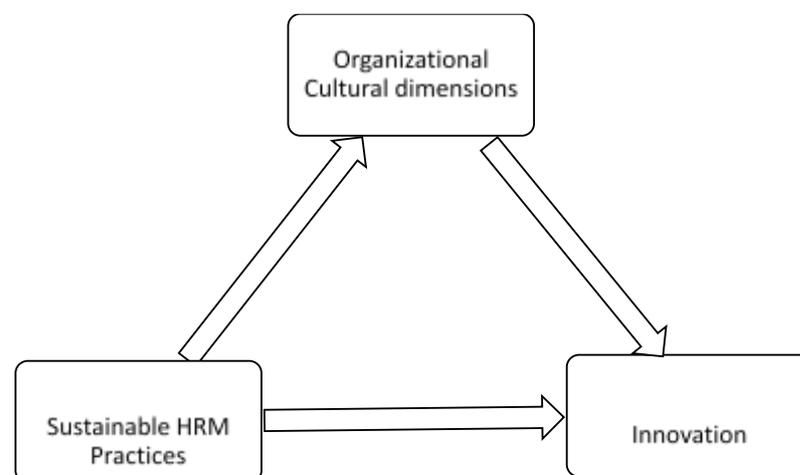
As Hoecklin (1996) opined, that mismanagement of cultural differences can be reduced. Otherwise, even with successful manager, organizations cannot work in effective way and may become frustrated during multicultural assignments. However, when managed successfully, these cultural differences will bring business to innovative practices. Rapid and improved learning opportunities in organization provides the sustainable mean of competitive edge

(Sui Pheng & Yuquan, 2002). It is easy to find that some organizations or countries within a unique cultural environment have very high innovative ability and vice versa (Mu Tian, Ping Deng, Yingying Zhang, 2018). Martín-de Castro et al (2013) and Wang et al (2012) describe that the significance of human capital is enhanced, and it encourages the workers of organization to struggle for innovation. Earlier to this, Kenny and Reedy (2006) also recommended the same view, that organizational culture induces all employees to promote innovation and share obligation (Mu Tian, Ping Deng, Yingying Zhang, 2018). According to Verspagen (2006); Rohlfer and Zhang (2016) the impact of culture on innovation due to its relativity to business and economic development is recognized as a crucial factor in global management and organizational development (Mu Tian, Ping Deng, Yingying Zhang, 2018). On the basis of above literature, it is found that cultural dimensions are correlated with sustainable HRM and innovation, so the following hypothesis can be formulated:

**H3: Organization's cultural dimensions have significant impact on innovation.**

**H4: Organization's Cultural dimensions significantly mediates the relationship between sustainable HRM and innovation.**

**Figure 1**



**Theoretical framework of the study**

### **3 Research Methodology**

#### **3.1 Research Settings and Participants**

This is an empirical study using the quantitative research method, which is based on rationalization and numbers. The aim of this study is to check the impact of sustainable HRM practices on innovation with mediating role of organizational cultural dimensions. So, variables used in this research can be appropriately measured at individual level. The target population of above study is employees

of cellular companies of Pakistan, mainly located in southern Punjab. The unit of analysis is employees of cellular companies of telecommunication industry providing their services in Pakistan, such as Telenor, Ufone, Warid, Mobilink, Zong etc. The focus of these companies is innovation in their products and services, because these companies are having intense competition with one another. The most of the respondents include Franchise sales officer, regional managers, priority services executives, and customer services officers working in Bahawalpur, Multan and Lahore regions.

### **3.2 Sample Selection**

Hair (2011) suggested that sample size should be more than 10 to 20 times of the variables accounted for study. Thus the current study sample size is 100, which can be appropriate for analysis as 3 variables are used in the current study, which include IV, DV and mediating variables. A large sample size is required to avoid the chance of non-response biasedness (Sekaran, 2003). Thus 135 questionnaires are circulated to get the required responses. Simple random probability sampling technique is used to collect data randomly, because the exact population of employees of cellular companies working in southern Punjab, Pakistan is unknown. In the current research, questionnaires adopted are in English language, which are distributed among the employees of cellular companies. These questionnaires are circulated through emails, Google docs, and paper questionnaires for data collection. Cover letter is used to explain the purpose of questionnaire, and also to ensure that the information will be used only for research purpose, and will be confidential. Reminders have been sent time to time through calls, emails and text messages for the responses. It has taken time of about 1 month for whole procedure of data collection.

### **3.3 Instrument selection**

Survey method is used for data collection, because survey method is seemingly appropriate for collecting the first hand data (Zikmund, 2000, p.167). All the instruments of variables are adopted from different previous studies. In the second part Likert scale is used for measuring the items because by Sekaran (2003), this scale is used to study how strongly disagree or agree with a specific information. A well-structured questionnaire is used in the study to measure the innovation through sustainable HRM practices and cultural dimensions.

To measure sustainable HRM, items of six HR practices are adopted to formulate sustainable HRM scale, referred by different authors in different studies related to sustainable HRM. These practices includes 1. HR Recruitment, 2. Employee training, 3. Employee Engagement, 4. Employee relations, 5. Competence development, 6. Leadership development.

Hofstede's Cultural dimensions are considered at an individual level in current study, and national values are not considered when an individual is responding to questions (Sui Pheng & Yuquan, 2002). According to McCoy, Galletta and King (2005) taking cultural dimensions at individual level may claim invalidity of scale. To answer this argument, recommendations have been made three decades ago, that national culture dimensions can be used at individual level instead of assuming Hofstede (1983) work (Lok, 2015). Twelve item scale is adopted to measure innovation used by Curado (2018), which includes questions

regarding organization’s incremental and radical innovation. Likert scale is used to answer the questions (Curado, 2018).

### 3.4 Control Variables

To test the empirical model, key variables that can influence the capability of an organization to innovate remained controlled i.e., age, gender, qualification, experience.

Table 1

*Frequencies*

	Gender	Qualification	Age	Experience
Valid	120	120	120	120
Missing	0	0	0	0

From the above table, it can be seen that there is no missing value about gender, qualification, age, and experience all respondents provide their information about these variables completely.

### 3.5 Demographic Analysis

In demographic statistics, researcher collected the information about gender, age in years and qualification in term of degree and experience in years of the respondents.

### 3.6 Sample Description

In cumulative, 135 structured questionnaires were distributed to the concerned employees of cellular companies. Returned number of questionnaires was 130, out of them 120 questionnaires were considered complete in all respects, gaining a response rate of 88%. The descriptive analysis revealed that both males and females were working in the cellular companies comprising a total of 55 males and 65 females. Maximum employees possess less than 15 years of experience in the related field. Interestingly, it was known that most of the participants hold university education degree and only 6% are those having inter level of education. Mostly these were customer service officers. 50% of the employees considering in the sample of current study are those who have 5 to 10 years of age. And on second rank 31.7% are those who have 11 to 15 years of experience, 57.5% of respondents belonging to the age group of 31-40 years of age.

## 4 Results

Results of the study are explained in the sequence in which analysis was conducted. Firstly, researcher represents the sample description, correlation among variables, validity, reliability and at last, testing of hypothesis.

### 4.1 Testing the Measurement Model

Before testing the correlation and regression analysis, various tests have been applied to obtain a reliable result. For this purpose, firstly reliability of the reflective constructs is to confirm. Some items are excluded, which are not normally distributed such as SHRM26 to SHRM37 and CD19 to CD 21 also INN10, 11. Larger sample size and change of sampling technique can be one of the reasons of this. Good thing is, all items fall under the minimum acceptable criteria of 0.4 or greater factor loading and have been included in the

questionnaire as per the guidelines provided by (Chan,2010). Values of Cronbachs alpha are above 0.8 for all scales and commonality values are above 0.5 which ensures the validity and reliability of the instrument (Rouf&Akhtar Uddin, 2018).

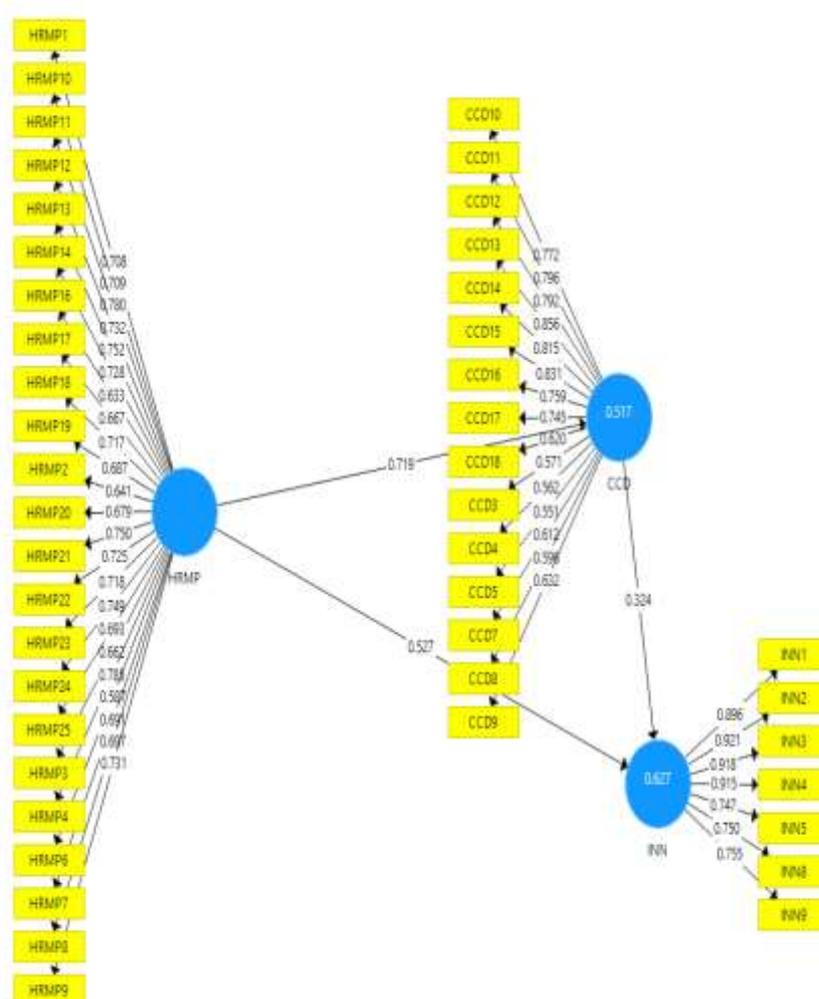
#### 4.2 Data Screening

Data screening is necessary to ensure the goodness and sufficiency of collected data which is being measured for the analysis.

The Smart PLS is mainly used for business and IT systems. That’s why this instrument is also used and test for HR social capital areas of research. An important aspect of using Smart PLS is that it not only predict normality of data but also provide chance to use data that is not normally distributed (C. Ringle et al., 2012) (Sander, 2014).

In above table some items are automatically excluded which are not normally distributed such as SHRM26 to SHRM37 and CD19 to CD 21 also INN10, 11.

**Confirmatory Factor Analysis / Reflective Measurement Model- 1**  
**Figure 2**



## **Confirmatory Factor Analysis:**

Table 4.2  
*Factor Loadings*

	No.	Missing	Mean	Median	Min	Max	SD	Kurtosis	Skewness
SHRM1	1	0	4.067	4	1	5	0.932	0.745	-0.954
SHRM2	2	0	3.975	4	1	5	0.983	-0.27	-0.702
SHRM3	3	0	3.874	4	1	5	1.066	-0.216	-0.715
SHRM4	4	0	3.832	4	1	5	1.11	-0.533	-0.632
SHRM5	5	0	3.235	3	1	5	1.09	-0.556	-0.206
SHRM6	6	0	4.235	4	1	5	0.923	2.393	-1.462
SHRM7	7	0	4.303	4	1	5	0.751	2.286	-1.17
SHRM8	8	0	4.067	4	1	5	1.027	0.13	-0.938
SHRM9	9	0	4.034	4	1	5	1.152	0.16	-1.036
SHRM10	10	0	3.983	4	1	5	1.188	0.082	-1.033
SHRM11	11	0	3.916	4	1	5	1.058	-0.529	-0.607
SHRM12	12	0	3.966	4	1	5	1.084	0.128	-0.894
SHRM13	13	0	4.042	4	1	5	0.982	-0.416	-0.678
SHRM14	14	0	4.017	4	1	5	0.979	0.479	-0.851
SHRM15	15	0	4.084	4	1	5	0.816	2.236	-1.099
SHRM16	16	0	4.076	4	1	5	1.014	-0.355	-0.791
SHRM17	17	0	4.193	5	1	5	0.964	0.513	-1.026
SHRM18	18	0	4.16	4	1	5	0.935	0.109	-0.889
SHRM19	19	0	4.185	4	1	5	0.916	0.615	-1.042
SHRM20	20	0	4.059	4	1	5	1.048	0.263	-0.963
SHRM21	21	0	3.798	4	1	5	1.009	-0.364	-0.528
SHRM22	22	0	3.958	4	1	5	0.982	0.119	-0.777
SHRM23	23	0	3.992	4	1	5	1.008	0.057	-0.83
SHRM24	24	0	3.908	4	1	5	1.069	-0.21	-0.733
SHRM25	25	0	4.05	4	1	5	0.96	1.506	-1.141
CD1	26	0	4.067	4	2	5	0.707	-0.034	-0.386
CD2	27	0	4.109	4	2	5	0.754	-0.826	-0.304
CD3	28	0	4.109	4	1	5	0.838	2.151	-1.165
CD4	29	0	4.008	4	1	5	0.93	1.256	-1.032
CD5	30	0	4.05	4	1	5	0.897	0.881	-1.021
CD6	31	0	3.042	3	1	5	1.48	-1.471	-0.152
CD7	32	0	4.244	4	1	5	0.879	0.911	-1.102
CD8	33	0	3.966	4	1	5	0.97	0.749	-0.94
CD9	34	0	3.975	4	1	5	0.957	0.355	-0.824
CD10	35	0	4.017	4	1	5	0.86	0.312	-0.675

### 4.3 Factor loading

The Factor loading analysis tells that how much an indicator is consistent with its construct or variable or it presents the reliability of indicator. Generally if the statistical value of indicator is  $> 0.5$  than indicator is acceptable otherwise it should be removed from analysis. According to C. Ringle and Spreen, (2007) Outer loadings having value more than 0.6 are acceptable if the criteria of convergent reliability is fulfilled (Sander, 2014).

In above table 14 out of 37 indicators of Human recourse management practices are excluded. From organizational cultural dimensions 6 variables out of 21 are excluded and from Innovation 4 out of 11 indicators are excluded for further analysis.

Data analysis used in this study included confirmatory factor analysis (CFA) to test the discriminant validity of all used measures and mediation testing of hypotheses following Baron and Kenny’s (1986) four conditions, confirmed through hierarchical regression.

#### 4.4 Reliability and Validity of variables

Table 3  
*Reliability and Validity*

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CD	0.927	0.938	0.937	0.502
SHRM	0.954	0.956	0.958	0.5
INN	0.824	0.924	0.873	0.559

##### 4.4.1 Cronbach's Alpha

Usually the reliability coefficient of Cronbach’s Alpha lies among 0 to 1. Hair et al.,(1998) suggest that if Cronbach’s alpha is equal or above than 0.8 than it indicates a good scale, if it is 0.70 than it is acceptable but if it is 0.6 than can be used for exploratory research (Rouf&Akhtar Uddin, 2018). Results in above table shows that the Cronbach’s alpha coefficients of all three variables are more than 0.8 so it is meant that the scales of all three variables are good that can produce satisfied results.

##### 4.4.2 Composite reliability

Composite reliability as a test for convergent validity in a reflective model is used as alternative of Cronbach’s alpha test. It would be considered as necessary for reliability measure because Cronbach’s alpha might be underestimate or the overestimate the scale for reliability. In Table 4.4 It can see that all values lies above than 0.8 and less than 1 that is considered as valid and reliable scale of measurement.

##### 4.4.3 Average Variance Extracted (AVE)

The acceptable results of average variance extracted value is 0.5 or above. Convergence validity explains that (AVE) of the specific values lies between 0 to1. According to C. Ringle and Spreen (2007), if this value is equal to 0.5 it means that the 50% of the items of scale represent the construct (Sander, 2014). In table 4.3 the values of SHRM and INN are above than 0.5 and CD has its AVE equal to 0.5 from this requirement is fulfilled.

#### 4.5 Discriminant Validity

Table 4  
*Discriminant Validity*

	Organizational Cultural Dimensions	Sustainable HRM	Innovation
Organizational Cultural Dimensions	0.809		
Sustainable HRM	0.719	0.787	
Innovation	0.703	0.76	0.748

#### 4.6 Discriminant validity test

Mackinnon (2008) claims that for establishing discriminant validity, AVE's root square should be greater than the correlation of constructs with other scales in structural model. The correlation among inter constructs represents that each construct share greater variance by its own measures (Rouf&Akhtaruddin, 2018).

In short, a result less than 0.85 shows discriminant validity prevails among constructs and the result more than 0.85 show that scales of two variables overlap each other and constructs are chances to measure same thing. Than discriminant validity cannot be claimed among them. Above values confirms the discriminant validity among constructs.

**Figure 3** Structural Model

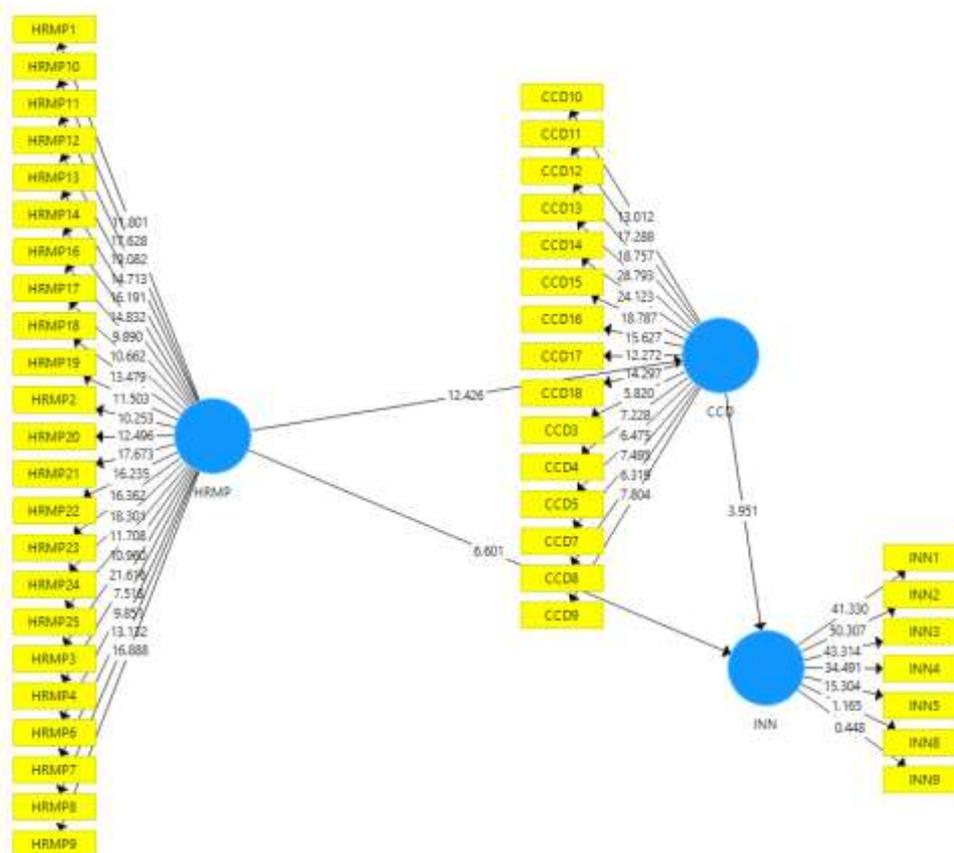


Table 4.3  
Direct Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
Sustainable HRM -> Innovation	0.527	0.531	0.08	6.601	0
Sustainable HRM -> Cultural Dimensions	0.719	0.721	0.058	12.426	0
Cultural Dimensions -> Innovation	0.324	0.325	0.082	3.951	0

#### 4.6.1 Direct effect

##### **H1: Sustainable HRM practices have significant impact on innovation.**

The t- value of Human Resource Management Practices (SSHRM) and Innovation (INN) is 6.601, which is above 2.57( $\alpha=0.01$ ; two-tailed test) and p-value is significant at more than 99% therefore RQ.1 has been answered through H1 confirming the positive significant impact SSHRM on innovation.

##### **H2: Sustainable HRM practices have significant impact on cultural dimensions.**

The t- value of hypothesize path of Human Resource Management Practices (SSHRM) and (OCD) is 12.426 that is above 2.57( $\alpha=0.01$ ; two-tailed test) and p-value is significant at more than 99%. Therefore RQ.2 has been answered through H2 confirming the significant positive effect of sustainable HRM on Organizational Cultural Dimensions.

##### **H3: Cultural dimensions have significant effect on innovation.**

The t-value of Organizational cultural dimensions (OCD) and innovation (INN) is 3.951 and p- value is significant t more than 99%. Therefore RQ.3 has been answered through H3 confirming the significant positive effect of organizational cultural dimensions on innovation.

Table 4.4

##### *Indirect Effect*

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
Sustainable HRM -> Organizational Cultural Dimensions -> Innovation	0.233	0.233	0.058	4.027	0

#### 4.6.2 Indirect effect

##### **H4: Cultural dimensions significantly mediates the relationship between sustainable HRM practices and innovation.**

The t-value of organizational cultural dimension (OCD) and innovation (INN) is 4.027 and p value is significant at 99%. Therefore, the indirect or mediating effect of Sustainable HRM on innovation is significantly exist and hypothesis is accepted. Which means that there is positive but partial mediating effect among sustainable HRM and innovation according to above results.

#### 4.6.3 Variance Explained

Table 7

*Variance Explained*

	R Square	R Square Adjusted
Organizational Cultural Dimensions	0.517	0.513
Innovation	0.627	0.621

**4.6.4 Variance Explained**

R square value tell us summation of independent variable. Table explained R square value is .517so the variance explained in dependent variable (innovation) by independent variable (cultural dimensions) is 51.7%. Because data is collected from simple random sampling method and sample size is very small so this can be minimized with large sample size and by using more advance techniques of probability sampling.

**5 Discussion**

The aim of the study was to explore the effect of sustainable HRM on innovation, as well as mediating effect of organization’s culture. The study examines that sustainable HRM has not only a positive significant effect on innovation, but also on cultural dimensions as well. It is also observed that cultural dimensions have partial mediating effect between sustainable HRM and innovation. This study extracted four key elements.

First, consistent with the previous researches (Sanz-Valle & Jiménez-Jiménez, 2018) , (Laursen, 2013) , (Wikhamn, 2019), this study finds that Sustainable HRM has positive direct effect on innovation. This relationship was tested by taking 6 sustainable HRM practices, and 2 types of innovation (radical and incremental). However, this study is different from previous studies in a way that it considers cellular companies for the first time in this relevance. Prior studies applied this analysis in Hotel Industry for product and service innovation.

Secondly, for current study, sustainable HRM practices have positive and significant effect on organization’s culture. As described earlier by Mu Tian, Ping Deng, Yingying Zhang (2018) individuals of a specific cultural environment are inevitably affected by that cultural environment in which they live, at both organizational and national levels. It is largely recognized observation that organizational and national cultures are two most relevant levels of investigation for cultural studies (Mu Tian, Ping Deng, Yingying Zhang, 2018). In this study, 4 cultural dimensions are took into account as in Hofstede’s studies, but these dimensions are considered at the organizational level, not at the national culture. Most of the scholars and writers studied the effect of culture on sustainable HRM or culture is considered as moderator in lots of studies, but there is little literature on how sustainable HRM can affect the culture. In a study by Hau, Chow, & Liu, n.d. The organizational effectiveness depending on HR systems with an appropriate culture and aligning with business strategy. In current study, it is found that sustainable HRM system has strong effect on organization’s culture for achieving innovation and sustainability.

Thirdly, through current study it is analysed that the organization’s cultural dimensions have positive significant impact on innovation as well. The study results are also in line with the previous studies discussing the relationship

between culture and innovation by (Mu Tian, Ping Deng, Yingying Zhang, 2018)

In particular, studies addressing the distinct role played by cultural dimensions in different innovation processes, including new product development Jassawalla and Sashittal (2002), service innovation Kenny and Reedy (2006) also recommend the same view that organizational culture induces all employees to promote innovation and shared obligation (Mu Tian, Ping Deng, Yingying Zhang, 2018).

Fourthly, the study discussed cultural dimensions through the lens of mediation as a four-dimensional construct, for the first time in telecommunication sector of Pakistan and found out that organizational culture established through sustainable HRM system has positive effect on organization's incremental and radical innovations. As in the previous study of Yesil and Kaya (2013) considered that there is positive relationship between organizational culture and organizational performance, and hence it also has effect on strategy execution for innovation (Vimal Kumar, R.R.K. Sharma, 2017).

Finally, the researcher asserted detailed discussion, recommending several theoretical, practical implications related to the study.

## **6 Theoretical and Practical implications of the study**

The contribution of this study is many fold. As it introduces sustainability rationale into HRM literature related to the Pakistan to broaden the relatively scarce research in this field. According to many authors and researchers, sustainable HRM is not only important for organizations, but it also have a great impact on society, environment and economy, and ultimately for organization's sustainability. So there is a great need to explore the theoretical concepts, and also practical implementations of this concept, this research provides a contribution to this aspect.

Another contribution of this study is that it has introduced the concept of incremental and radical innovation as an outcome of sustainable HRM in telecommunication industry of Southern Punjab, Pakistan. Prior studies have taken other dimensions of innovations, like open innovation.

Current study extended the literature by providing the evidences regarding the importance of establishing organizational culture through sustainable HRM for innovation.

Telecommunication industry should focus more on sustainable HRM practices as it has significant impact on innovative performance and hence for sustainability of organization through establishing sustainable and innovative organizational culture. As the telecommunication industry is 3<sup>rd</sup> largest fast growing industry in Pakistan, so for creating innovative organizational culture and to enhance innovative performance, there is need to promote sustainable human resource management practices.

As in this competitive era, there is need to introduce new strategies not only for innovation in products, service and technological innovation, but also for survival of organizations because fostering the sustainable human resource system plays a survival strategy itself due to increasing awareness of employee welfare.

## **7 Limitations and Future Research**

Even though this study has more significance relative to other studies, the research also have some limitations. Firstly, in terms of geographical boundary. The empirical settings of the study were limited only to southern Punjab Pakistan. Whereas, there may prevail a generalizability issue of results to the countries across the boundaries especially in developed countries. The following research design and limitations also open up various future directions for further research. Firstly, it was difficult to collect data from all over the country for an individual due to time and cost constraints. Thus, future studies can engage group work to collect data from all over the country for larger sample size to authenticate the results. Moreover, the same study could not only be conducted on various other sectors of telecommunication industry other than cellular companies, but also on other sectors of economy as well. Secondly, Current study uses only outcome (innovation,) there are many other outcomes of sustainable Human resource management that should be considered in this study. Thirdly, Innovation is very vast and diverse phenomenon, therefore it cannot be limited to only incremental and radical innovation. More areas of innovation such as open innovation should be included in this context.

Furthermore, in this study researcher only analyses the basic relationships between sustainable HRM taken as independent, innovation taken as dependent and cultural dimensions as mediator variable, but analysis should be done in more precise way by taking into account one to one relationship of all sustainable HRM practices with each and every dimension of culture to check which practice has more impact on a specific dimension of culture. Future researches can also introduce different potential mediators or moderators to investigate the hidden benefits that can be explored in the field of sustainable HRM to offer fresher insights.

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