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HRM practices and Innovation synergy: An intra-organisational perspective

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Abstract:

This paper examines an aspect of employees' perceptions towards HRM practices and innovation. Approaches towards innovation (open vs closed) and degree of innovativeness (radical vs incremental) and organisational climate (structure, performance, knowledge and culture) are central pillars of this paper. The paper considers whether employees in different departments have different perceptions. The data was collected using questionnaires from 129 employees in a telecommunication company in Amman-Jordan which was then analysed using hierarchal multiple regression. The findings noted that HRM practices and specifically in HPWs, motivation and communication demonstrated significant impact on radical innovation and open innovation. However, hygiene factors were significant for open innovation and not significant for radical innovation. Organisational climate (structure, performance, knowledge and culture) imposed a significant impact on both radical innovation and open innovation. The results observed no significant role of departments, and the various HRM practices do not differ based on the departments as a result of the reduced impact of the hierarchical model.

Keywords: Innovation, intra-organisational, HRM, HPWs, Organisational climate.

Introduction

Every business has a source of competitive advantage, yet, with fierce competition and rapid changes in technology competitive advantage will degrade through time (Van de Ven, 1986). In response to that, innovation has been recognised by scholars to be a source of competitive advantage, renewal and survival for the firms (Damanpour, 2010; Bednall et al. 2018; Shipton et al. 2017). A great deal of interest among innovation scholars pointed towards the role of human resources, arguing that organisational capacity to innovate lies on human resources, their skills, knowledge and capabilities (Jiménez-Jiménez and Sanz-Valle; 2008). To attain and acquire skilled human resources, research on human resource management (HRM) has extensively emphasised that a bundle of practices are likely to impose greater impact on employees.

Human Capital is often cited as a prime source of innovation (Baron and Kreps, 1999) and the Human Resource systems and practices of firms are an obvious mediating factor in these processes. Renewed attention is currently being paid to the impact of HRM systems and the processes on Innovation. Sometimes these are concerned with specific aspects of HRM as Gloet and Terzioski (2004) focus on the influence of Knowledge Management Practices on organisational Innovation, with manufacturing companies being urged to pay more attention to Human Resource Management issues and the processes associated with them (Gloet and

Terziovski, 2004). Some researchers have proposed that a significant feature of organisational practice that bears on propensity to innovation that is often located in the HRM domain is that of employee participation and have found that "the use of participatory practices are positively correlated with the probability of 'innovating'. (Michie and Sheehan, 1999; p 14) t This is by no means a simple, deliverable outcome as illustrated by the record of the Tannoy company in creating a formal structure of employee representation involving an interlocking structure of enforced employee participation. This is the cornerstone of its overall HRM system. This important study is one of the few long-term-oriented, descriptive accounts of the creation and progress of an organisation-wide participative structure in a major manufacturing company and describes not the anticipated smooth transmission to superior ways of working based on wholesale employee involvement but a tortuous and intermittently confrontational process that eventually led to mixed outcomes. (Hughes and Weir, 1985)

This aspect of employee participation is reviewed in several overviews (Wilkinson et al, 2010). It is important to note that employee participation implicates both performance outcomes and employee well-being more generally and works through changes in organisational process that takes time to involve and often require related changes in recruitment, selection and training and development systems. It cannot simply be bolted-in to existing hierarchical systems assuming that changes in process will occur automatically.

The significant mediating factors are related to organisational trust and where high levels of trust exist between employees and managers around such issues as working hours, positive benefits of flexible working for issues like childcare. This permits flexible use of time for school runs for example, increased employee effort and higher levels of motivation may be achieved. (Shagvaliyeva, S. and Yazdanifard,R. (2014); Possenrieg and Plantenga, 2011).

Some researchers propose management compensation as a source of improved organisational performance leading to innovation (Gerhart, B., and Milkovich, G. T. 1990) and some look to labour flexibility (Arvanitis, 2005) while others broaden this focus with a more holistic take on innovation outcomes. Thus Guthrie asks for "management practices giving employees skills, information, motivation, and latitude and resulting in a workforce that is a source of competitive advantage." (Guthrie, 2001, 181).

These connections are by no means new in economic theories of business growth and product development.. Schumpeter (1934) emphasises the significance of innovation in the activities of entrepreneurship and on the role of 'creative destruction' in promoting innovation and constantly re-invigorating the business cycle. The classic study of Burns and Stalker (1961) sees the origin of innovative cultures in the structural organisation of the company and its inbuilt tendencies

towards either open and 'organismic' that tend to be flexible and facilitate evolutionary change when faced with new challenges. On the other hand more closed and formalised bureaucratic systems that operate predictably but rigidly, seeking to adjust aspects of their environment rather than to change themselves.

A comprehensive and authoritative overview of the literature (Laursen and Foss, 2003, 2013) surveys 19 strong studies in the *New HRM Practices Literature* and provides a clear model of the forces and process linking HRM practices with innovation. This still concludes that "despite substantial progress made in the pertinent literature - t the precise causal mechanisms underlying the HRM innovation links remain poorly understood." (Laursen and Foss, 2013, p 1).

Therefore, the call for 'more fine-grained' studies of these relationships and more understanding of the interactions and compounding and contradicting effects between sets of practices in the understanding of how HRM acts as a mediating set of practices between organisational processes and innovation outcomes. This study is a contribution to this fine graining, reporting through empirical findings linking employee perceptions of HRM practices that may promote innovation.

Furthermore, current studies fail to consider a broader set of HRM practices and their likely impact on innovation. Some HRM practices are considered in this paper that have not been considered before. A major contribution of this research is the shift in the perspective.While extant studies looked at the HRM-Innovation link from a macro-level, this study seeks to explore the black box of HRM by considering employees' perception of HRM practices. Moreover, innovation strategy in respect to open innovation and the degree of newness are considered. To the best of our knowledge no study has looked the HRM-innovation relationship as addressed in the study framework. Figure (1) presents the study model and hypothesised relationships framework.

Theoretical Background and Hypotheses Development

High Performance Work Practices:

High Performance Work practices (hereafter referred to as HPWs) apply across a range of areas, including approaches to work organisation, employment relations, management and leadership, and organisational development (Armstrong, 2020; Guest, 2011). The research into

organisational performance offers a myriad of studies confirming that HPW (widely labelled 'best practices') is a driver for organisational performance (e.g. Lepak, Smith and Taylor, 2007; Way, 2002; Combs et al., 2006; Delaney and Huselid, 1996; Boxall and Purcell, 2011).

HPWs seek to identify a distinctive set of Human Resource Management practices (HRM) that can be successfully applied and are appropriate for all organisations. These sets of practices are associated with higher levels of engagement, involvement, performance and commitment. HPWs consist of extensive training, sharing information, selective hiring, employment security, self-managed teams, compensation and rewards which are argued to be linked with organisational performance (Pfeffer 1994; 1998; Boxall and Purcell, 2011; Boxall and Macky, 2009; Fu et al. 2015).

Huselid (1995) found that recruiting, training and development are associated with lower rates of turnover and enhanced productivity. These result in positive impact of HPWS on performance (Becker and Huselid, 1998; MacDuffie, 1995; Fu et al. 2017; Khoreva and Wechtler, 2018; Boxall and Macky, 2009). The interactions of different elements of the HPWs fall into a framework identified in the HRM studies as: the ability, motivation and opportunity framework (AMO) (Boxall and Purcell, 2003). Scholars have used the AMO framework to study and explain the impact of HPWS on performance (Boxall and Macky, 2009; Fu et al. 2015). AMO refers to the functional components of HRM systems, such as recruitment, training and appraisal. Ability refers to employees' capacity to perform effectively and can be developed through practices such as training and recruitment. Motivation develops employees' level of commitment and involvement at work. It is noted that motivation can be developed by practices such as rewards and compensation. Opportunity is about allowing employees to contribute openly and in a flexible manner which can be promoted by practices such as communication and employee development (Boxall and Purcell, 2003).

Recently, a stream of studies linking HPWs with performance have looked at the impact of HPWs upon innovation (Fu et al. 2015; Shipton et al. 2017; Zhao et al. 2012). HPWs can enhance levels of motivation when employees receive rewards and motivation. This can provide an opportunity to pursue their ideas and implement them through new products and services. Furthermore, HPWs can enlarge employees' capacity towards learning and use of knowledge (Shipton et al. 2006). Jiménez-Jiménez and Sanz-Valle (2008) found that HRM can influence innovation. In the U.K., Shipton et al. (2006) found that HRM can promote innovation. Similarly, Camelo-Ordaz (2011) confirmed the pattern concluded by work on HRM and innovation found that HRM can influence social and human capital in organisations, along with promoting innovation. Fu et al. (2015) found that HRM can promote employees innovative work behaviour and as a result develop innovation performance.

Therefore, we hypothesise the following:

Hypothesis 1a

Employees have positive perceptions in relation to HPWs promoting open innovation.

Hypothesis 1b

Employees have positive perceptions in relation to HPWs promoting radical innovation.

Motivation and Communication

Notionally, innovation is a mean to adapt to changes in the surrounding environment by offering new products and services (Damanpour, 2010; Wallace et al. 2016). Responding to changes is made through communicating new trends, threats and opportunities in the market. Employee communication is a catalyst through which ideas are shared and having a motivation to share ideas, knowledge and participate with innovation is fundamental. The exchange of ideas requires time in order to develop new products or services and whatever approach is used to allow innovation to be implemented (internally-closed or using open sources and channels). As this is a multifaceted process, innovation requires employees to develop and relationships assist the implementation and introduction of new products and services, which can be developed through communication (Damanpour, 2010; Jiang et al., 2012).

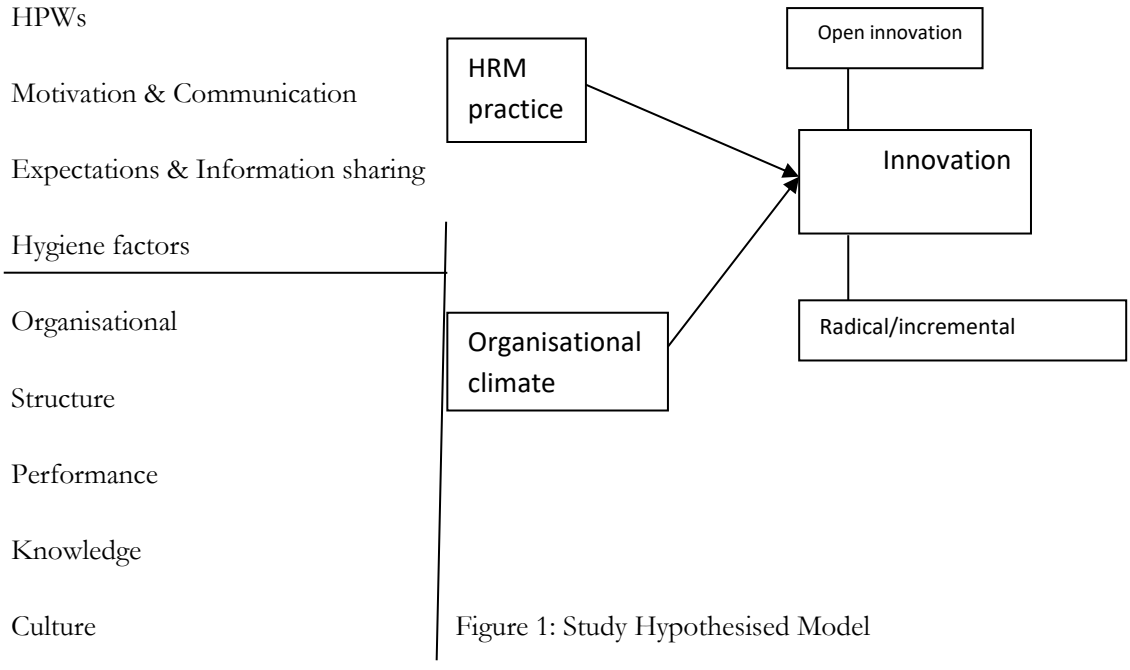

Figure 1: Study Hypothesised Model

Motivation and communication allow employees' innovativeness to be improved by enhancing their proactivity levels. Moreover, effective communication, coupled with motivation is indispensable for new ideas to be implemented and attain support (Lee et al. 2019). The literature suggests a number of practices related to motivation and communication. Employees are

expected to be more productive when these practices are implemented since they are likely to be more engaged and committed to organisational tasks (Zhou et al. 2013). Communication can allow for a breadth of roles to be expanded and self-efficacy (Lee et al. 2019).

In their study, Perdomo-Ortiz et al. (2009) found that motivation is significant for innovation. Similarly, Bednall et al., (2018) examined the impact of motivation on innovation and found that motivation and communication are significant for innovation. However, despite the availability of studies looking at the relationship between motivation and communication on innovation, there is a failure in the literature to consider the perceptions of employees in relation to motivation and communication in driving innovation. For instance, adopting an open innovative approach requires the use of networks and communication between employees within and outside the organisation, with competitors, to facilitate the sharing of information and knowledge.

Therefore, we propose the following:

Hypothesis 2a

Employees have positive perceptions in relation to motivation and communication promoting radical innovation.

Hypothesis 2b

Employees have positive perceptions in relation to motivation and communication promoting open innovation.

Hygiene Factors

Hygiene factors affect employee motivation when performing complex and high demanding tasks. This provides employees with a sense of security and confidence when introducing new ideas, facing barriers and high demands at work. When tasks that employees perform become increasingly demanding, satisfaction and motivation can assist employees cope with such characteristics of the workplace activities (Jiménez-Jiménez and Sanz-Valle, 2008). Knowledge and technology are vital resources to promote innovation; yet without motivation and involvement, the use of such resources is unlikely to be fruitful regardless of the approach the organisation is likely to adopt with promoting innovation (Lang, 2001). The use of an open innovation approach requires higher involvement and collaboration, which can be challenging if employees are not motivated or satisfied at work. The role of hygiene factors in supporting innovation comes from its ability to increase levels of commitment, proficiency and productivity at work (Cole, 2002). Hygiene factors therefore can be conceptualized as antecedent for innovation where they increase employee's capacity and willingness to innovate.

Hypothesis 3a

Employees have positive perceptions in relation to hygiene factors promoting radical innovation.

Hypothesis 3b

Employees have positive perceptions in relation to hygiene factors promoting open innovation.

Expectations and Information Sharing

Innovation can be facilitated by HRM practices that are able to search for information, transforming information into ideas, creating information pools, analysis and dissemination of relevant information that can support innovation (Alavi and Leidner, 2001; Kianto et al., 2017). Additionally, HRM can promote innovation through creating an intellectual climate within the organisation that can fuel creativity, risk taking and knowledge sharing which is seen as a pre-requisite for innovation. Expectations and sharing information are likely to increase the levels of commitment in the workplace and assist employees with identifying what requires to be achieved and completed when performing tasks (Shipton et al., 2006). This can significantly reduce the ambiguity associated with complex tasks, such as innovation. Practices like sharing information, redundancy, talent management, absence management and discipline can be categorised as expectations and sharing information. Furthermore, expectations and sharing information can shift the process of learning, level of performance, knowledge and information from an individual level to high exchange dyadic relationships with supervisors at the organisational and collective level. This can promote innovation through impacting employees' awareness in relation to information and required tasks (Kianto et al., 2017).

Hypothesis 4a

Employees have positive perceptions in relation to expectations and information sharing promoting radical innovation.

Hypothesis 4b

Employees have positive perceptions in relation to expectations and information sharing promoting open innovation.

Organisational Climate:

This is also referred to as organisational characteristics in which an organisational climate represents the inner environment that the organisation and its members have (Kuo, 2011, Dobni,

2008). Innovation requires a distinctive environment where it can be fostered, pursued and introduced. Organisational climate incorporates structure, knowledge, performance and culture. These characteristics of the organisation are central for innovation since they are conceptualised as a main driver for innovation (Jansen et al., 2006). Employee autonomy at work and a flexible structure are the main contributors to a supportive organisation, which in return can promote communication, reducing complex tasks and allow knowledge acquisition and sharing (Delaney and Huselid, 1996). In fact our review of the field indicates that the term "flexible" is used rather widely and has become almost a "go-to" term of approbation relating to whatever other aspects of organisational structure and enterprise processes appear positive to the author. There is identification of at least two master distinctions. Flexible can refer to the generic properties of the functioning of organisational systems and thus refer to the adaptivity of the organisation in response to sudden changes in market positioning, changes in customer or client expectations, or in raw material mix or to governmental regulation for example. This use has been well understood in the literature for a long time. But more recently, the term "flexibility" has been applied specifically to changes in the labour contract, sometimes overt or often through a type of labour contract "drift" favouring increased use of part-time. zero-hours, temporary or arms-length contracts. These facilitate a reversion to older practices such as gang-master operations that reduce the workers' protection to labour market variations and o overt abuses of employment regulation leading to Work intensification. However this may have positive as well as negative outcomes as "the apparent paradox of high job satisfaction and organisational commitment, alongside work intensification can be explained by employees trading flexibility for effort." (Kelliher and Anderson, 2010). Such changes towards flexibility do usually have positive business benefits (Thimson, 2008) as well as beneficial outcomes, in relation to gender issues for example (Hofacker and Konig, 2008)

Organisational knowledge is about the extent to which the organisation has knowledge base and channels the use and access of existing knowledge. In addition, it allows employees to obtain necessary knowledge that might not be available in the organisation which is essential for innovation (Kuo, 2011; Delaney and Huselid, 1996). A determinant success factor of innovation is the quality of products and services that employees introduce (Dobni, 2008). This is largely influenced by organisational performance, where it contributes to identifying what creates values for both the organisation and its customers. Organisational culture is conceptualised as a main hub for attaining and building an environment in the organisation that is characterised as being ambitious, creative, willing to take risk and thinks differently. Culture is widely recognised in the research on innovation to be a major source for creativity and innovation.

Hypothesis 5a:

Employees have positive perceptions in relation to organisational climate promoting radical innovation.

Hypothesis 5b:
Employees have positive perceptions in relation to organisational climate promoting open innovation.

Methodology

A total of eight scales were employed in our survey questionnaire. This includes five scales for the independent variables as follows: four scales representing HRM practices, one scale for organisational climate along with three scales for the dependent variable of innovation. These scales were administered to four different departments within a single company. For all scales, a five-point response scale was adopted to capture participants' answers, ranging from 1 (strongly disagree) to 5 (strongly agree).

HPWs Scale:

Practices included in this scale were selectied as being hiring, high compensation and rewards related to performance, appraisal, training, promotion, job design and job engagement. The scale for HPWs measures the extent to which employees perceive HPWs as a promoter for innovation. In other words, to what extent do employees perceive that performance development and acquiring more skills as beneficial for innovation. Items measuring HPWs, these= were adopted from a study by Lepak and Snell (2002). The rationale behind this is that items used by Lepak and Snell (2002) showed satisfactory statistical scores for reliability, (Cronbach's Alpha >0.8) and used in similar studies looking at the impact and perception of HRM practices(see Lopez-Cabrelas et al., 2009), which led to robust findings.

Motivation and Communication Scale:

Several practices are considered to have this effect: consideration and respect, employee development, retention management, motivation, employee relations, diversity management, grievances, communication and recognition.

For the rest of the scales measuring HRM practices, we chose to develop our own HRM scales, rather than adopting existing instruments. This is due to: (a) many of these were not ideally suited for measuring perceptions of HRM practices; (b) an apparent lack of considering an intra-organisational level; (c) a number of existing instruments lacking desirable scores for reliability and validity; (d) a tendency to have a focus for policy rather than practice; (e) existing studies tending to repetitively use the same instruments which focus on HPWs and practices from the AMO framework (such as training and recruitment) which can limit the generalisability; (f)

seeking contribution by developing measures for HRM and innovation that conceptually exists in the literature of HRM but are not articulated to measure perceptions of HRM and innovation.

This was confirmed by Shipton et al., (2017) as no previous research was known which allowed looking at broader HRM practices. In response to that, we developed items measuring motivation and communication and the scales for HRM which were based on Armstrong (2011) and existing HRM models such as Guest, Harvard, Bath and People and Storey models. Armstrong (2011) produced several points under each practice that suggest what the practice is expected to offer to employees through supporting the function of the organisation.

Organisational Climate Scale:

To assess internal drivers for innovation in addition to HRM practices, we considered organisational climate in our hypothesised model. Principally, organisational climate measures the adequacy of the internal settings and the likely role in promoting innovation. The scale for organisational knowledge, we used items developed by Kuo (2011) to measure the impact of knowledge management capability, organisational performance and organisational innovation. We adopted items to measure organisational culture from Dobni (2008), including the intention to innovate, organisational infrastructure to support innovation, employee support for innovation through knowledge, and an environment that supports and promotes innovation among employees.

Innovation Scale:

We assessed innovation using a scale measuring the awareness and willingness to innovate and the degree of innovation (radical vs. incremental). In addition, the origins of innovation (open vs. closed innovation) was also measured. We adopted items from existing studies. Items measuring innovation willingness were adopted from a study by Dobni (2008).

Participants and Procedure

To measure the perceptions of HRM practices that may promote innovation at the intra-organisational level, participants were employees from a telecommunication company in Amman-Jordan. Participation was on a voluntary basis and respondents were employees at different departments within the company. Departments were chosen based on the nature of innovation activity: HRM and Sales departments formed pre-innovation and post- innovation activities; R&D and Product development departments formed innovation-focused departments where the actual introduction of new products and services took place. A total of 280 questionnaires were distributed. Of the 280 questionnaires, 151 questionnaires were rejected resulting in a total of 129 usable questionnaires and the total response rate was 46%.

Data Analysis:

Prior to running hierarchal regression analysis, several tests were conducted to check the consistency of the scales, reliability and appropriateness of the items. Descriptive and exploratory factor analysis (EFA) using SPSS (v23) were used to check the appropriateness of the items representing different HRM practices. Results are reported below in Table (I) for the descriptive, and Table (II) for the output of EFA. The output of the EFA identified five variables with successful loadings of the items representing the independent variables, and two for the dependent variables. For origins of innovation, a higher mean score indicated open innovation and a lower score reflected a closed innovative approach. We applied the same for radical vs. incremental innovation where a higher mean score indicates more positive responses for radical innovation and a lower mean score was for incremental. Descriptives of the scales revealed that responses were high, and a positive mean resulted with more responses leaning towards open and radical innovation.

Table 1. *Scales Descriptive and Reliability coefficients*

	Mean	**Std.**	**Cronbach's Alpha**	**Median**	**Range**
HPWs	3.77	0.78	0.86	3.91	3.46-4.08
Expectations and Information Sharing	3.72	0.84	0.74	4.00	3.51-3.94
Hygiene Factors	3.71	0.98	0.84	3.88	3.48-3.94
Motivation and Communication	3.67	0.96	0.86	3.88	3.37-4.06
Organisational Climate	3.58	0.99	0.87	3.80	3.44-3.66
Origins of Innovation	3.57	0.89	0.60	4.00	3.13-3.84
Radical vs. Incremental Innovation	3.59	0.91	0.61	3.75	3.40-3.93

Table II about here

Table II: Five-Factor Solution Outcome

Item	Component				
	1	2	3	4	5
Training 1	**.450**	.105			

Training 2	**.482**	.216			
Training 3	**.538**				
Recruitment 1	**.391**				
Recruitment 2	**.488**			258	
Recruitment 3	**.623**				
Recruitment 4	**.538**				
Appraisal 2	**.497**			.097	
Appraisal 3	**.646**	.012			
Job Design1	**.507**		.204		
Job Design2	**.623**		.122		
Job Design3	**.757**				
Employee Communication 1				**.687**	
Employee Communication 2			.115	**.579**	
Employee Communication 3				**.573**	
Retention Management 1	.160			**.470**	
Retention Management 3	.275	.288		**.575**	
Retention Management 4			**.706**		
Health and Safety 1		.167	**.645**		
Health and Safety 2	.221	.110	**.710**		
Health and Safety 3	.073		**.573**		
Grievances 1		.170		**.670**	
Grievances 2		.017	.217	**.717**	
Grievances 3		.043		**.643**	
Equal Opportunity 1	.014		**.528**		
Equal Opportunity 2			**.756**		
Equal Opportunity 3			**.679**	.170	
Employee Relations 1				**.488**	
Employee Relations 2	.154	.007	.118	**.518**	
Employee Relations 3	.277	.293	.144	**577**	
Discipline 1	.026	**.507**	.207	.143	
Discipline 2	.122	**.622**			
Discipline 3		**.694**			

Sharing Information 1		**.739**	.239		
Sharing Information 2	.047	**.599**		.199	
Sharing Information 3	.132	**.632**			
Consideration Respect1	.131			**.631**	
Consideration Respect2	.259	.059		**.559**	
Consideration Respect3		.087		**.687**	
Employee Security 1	.055		**.641**		
Employee Security 2	.190		**.408**		
Employee Security 4	.258	.042	**.542**		
Organisational Culture 2	.134				**.434**
Organisational Culture 3	.297	.026			**.526**
Organisational Culture 4	.119			.163	**.589**
Organisational Performance 1			.084		**.690**
Organisational Performance 3	.243	.111	.216		**.543**
Organisational Performance 4					**.508**

Item analysis results are also reported in Table (III). This shows scores for correlations between independent and dependent variables. Confirming the observed pattern from descriptive analysis, the item-total correlation results were significant and positive for all the scales. In addition, results for reliability were significant using Cronbach's Alpha scores > 0.7. Following item analysis, we conducted hierarchal regression analysis. Two regression models were produced: one for origins of innovation (open innovation); another for radical innovation. The data inserted into the model also included the demographics of the respondents. The first block in the hierarchal model included HRM variables, organisational climate and origins of innovation, with the second block containing demographics (gender, age, department and level of education). This would give the ability to see whether demographics played a role in the significance of the HRM-innovation relationship and organisational climate.

Results

Scale Reliability

Item total correlations and reliability (Cronbach α) are as follows: The results for scale statistics for HPWs were mean= 3.77; Std= 0.78; Cronbach's Alpha= 0.86; skewness 0.213; kurtosis= 0.132. For expectations and information sharing: mean= 3.72; Std= 0.84; Cronbach's Alpha= 0.74; skewness= 0.307; kurtosis = 0.543. Regarding hygiene factors: mean= 3.71; Std= 0.98; Cronbach's Alpha= 0.84; skewness= 0.385; kurtosis = -0.211. The scale for motivation and

communication: mean= 3.67; Std= 0.96; Cronbach's Alpha= 0.86; skewness= 0.299; kurtosis = -0.098. For organisational climate: mean= 3.58; Std= 0.99; Cronbach's Alpha= 0.87; skewness= -0.245; kurtosis= -0.177. Based on the above results, it can be concluded that all the scales demonstrated overall acceptable reliability scores. Skewness values were within the satisfactory limits (± 1.00). Item total correlations were acceptable (r > 0.3).

Scale Validity

All the scales found to have acceptable scores for Cronbach's Alpha. Scales measuring innovation scored Cronbach's Alpha of 0.60 relating to origins of innovation and 0.61 for radical vs incremental innovation scale. Scales showed significant positive correlations with origins of innovation; HPWs (r= 0.590, p= 0.01); expectations and information sharing (r= 0.410, p= 0.01); hygiene factors (r= 0.549, p= 0.01); motivation and communication (r= 0.540, p= 0.01); organisational climate (r= 0.637, p= 0.01). Similarly, correlations with radical vs incremental innovation were significant and positive; HPWs (r= 0.594, p= 0.01); expectations and information sharing (r= 0.532, p= 0.01); hygiene factors (r= 0.582, p= 0.01); motivation and communication (r= 0.679, p= 0.01); organisational climate (r= 0.721, p= 0.01). Thus, Hypotheses H1a/b; H2a/b; H3a/b; H4a/b and H5a/b were supported.

Table III**.** *Correlations between HRM, Organisational Climate and Innovation.*

DV: Origins of innovation	**Scale**	**DV: Radical vs Incremental**
.590**	HPWs	.594**
.410**	Expectations and Information Sharing	.532**
.549**	Hygiene Factors	.582**
.540**	Motivation and Communication	.679**
.637**	Organisational Climate	.721**

For both models, a confidence limit of 95% (0.05) was used to observe significant variables instead of 90% (0.1). The use of the 95% (0.05) confidence limit was applied as an attempt to obtain robust and more realistic variables that may potentially have a significant impact on innovation. Results for hierarchal regression are presented in Table (IV) for origins of innovation, and Table (V) for the dependent variable of radical vs. incremental innovation.

Output from the regression models showed that HRM practices are significant for innovation, as perceived by employees.

Hierarchal Regression Results

We performed hierarchical regression analysis for both dependent variables. Our results show regression model for origins of innovation explaining 45% (42.8% adjusted) of the variation in the dependent variable. When inserting demographics into the regression model, the change in R and adjusted R was not significant. The outcome of the hierarchical regression indicates that the respondents' demographics did not increase the model's predictive capacity in any statistically significant way. Rather, the impact or potential impact of age, gender, education and department was insignificant. This is explained by the scores for R square, adjusted R and R square change along with the change in F values. When testing the significance of the dependent variables on origins of innovation, the R square was 45% (42.8% adjusted), R square change was 45%, F change was 20.131 and the value of F change was significant (F = 0.000). Considering the impact of demographics in the hierarchical regression model, the results show that the change in the R square, adjusted R square and R square change were very minimal (R square changed from 45% to 45.5%; adjusted R square changed from 42.8% to 41.8% and the change in R square was 0.004 = 0.4%). Additionally, the score of F change value was (0.310) and was insignificant (0.818). These results suggest that demographics have an insignificant effect on the relationship between HRM variables, organisational climate and origins of innovation.

Table IV: Multiple regression model: DV= Origins of Innovation

Model		**Unstandardised Coefficients**	**Standardised Coefficients**	**Sig.**
		B	Beta	
1	(Constant)	5.308		.000
	HPWs	.375	.610	.002
	Expectations Info Sharing	-.214	-.247	.058
	Hygiene Factors	.217	.388	.002
	Motivation Communication	.332	.477	.000
	Organisational Climate	.264	.420	.000
2	(Constant)	5.934		.000

	HPWs	.312	.502	.001
	Expectations Info Sharing	-.191	-.220	.099
	Hygiene Factors	.213	.326	.002
	Motivation Communication	.311	.434	.000
	Organisational Climate	.270	.429	.000
	Gender	-.294	-.053	.447
	Age	.011	.003	.966
	Education	-.239	-.047	.677
	Department	.838	.159	.143

Model Summary

Model	R	R Square	Adjusted R Square	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	.671[a]	.450	.428	.450	20.131	5	123	.000
2	.674[b]	.454	.418	.004	.310	4	120	.818

Our results showed that for origins of innovation, the significant variables to the regression model were: HPWs (B=0.610, p<0.002), hygiene factors (B=0.388, p<0.002), motivation and communication (B=0.477, p<0.000) and organisational climate (B=0.420, p<0.000). Following the insertion of demographic variables, the change in the level of significance was not remarkable: HPWs (B=0.502, p<0.001), hygiene factors (B=0.326, p<0.002), motivation and communication (B=0.434, p<0.000) and organisational climate (B=0.429, p<0.000). In confirming the observed patterns of the R square and changes in R square values following inserting age, gender, education and department, these variables were statistically insignificant for

origins of innovation: gender (B= -0.053, p<0.447), age (B= 0.003, p<0.966), education (B= -0.047, p<0.677) and department (B= 0.159, p<0.143).

Our second hierarchical regression model was for radical vs. incremental innovation. The value of the model's R square indicates that the origins of the innovation regression model explains 56.8% (55% adjusted) of the variance is within the dependent variable. Demographics had no significant impact on the dependent variable and no significant predictive capacity was obtained when inserting demographic variables. This is clearly indicated by the scores for the R square, adjusted R square, change in R square and change in the significance of F value.

The R square score changed from 56.8% (55% adjusted) to 59% (56.3%) when considering the demographic variables. The R square change went from 56.8% to 2.2%, which does not offer any meaningful significant contribution to the assimilation of the model. The F score was significant for the dependent variables (0.000) and insignificant when testing the demographics (0.093). The F change score was 32.332 for the dependent variables and 2.188 when inserting the demographics into the model.

Several variables had a significant impact on radical vs incremental innovation: HPWs (B=0.347, p<0.003), motivation and communication (B=0.453, p<0.001) and organisational specific (B=0.540, p<0.000). These variables remained significant for radical vs. incremental innovation when inserting demographic variables into the regression model. The new scores of significant impacts were as follows: HPWs (B=0.423, p<0.001), motivation and communication (B=0.453, p<0.002) and organisational climate (B=0.521, p<0.000). The demographic variables contributed insignificantly to the assimilation of the regression model: gender (B=0.085, p<0.160), age (B=0.117, p<0.078), education (B= -0.109, p<0.267) and department (B=0.100, p<0.290).

Table V: Multiple regression model: DV= Radical vs. Incremental Innovation

Model		Unstandardised Coefficients	Standardised Coefficients	Sig.
		B	Beta	
1	(Constant)	5.740		.000
	HPW	.161	.347	.003
	Expectations Info Sharing	-.028	-.033	.776
	Hygiene Factors	-.003	-.008	.947
	Motivation Communication	.194	.453	.001
	Organisational Climate	.287	.540	.000
2	(Constant)	4.605		.000
	HPWs	.168	.423	.001
	Expectations Info Sharing	-.042	-.049	.671
	Hygiene Factors	.004	.011	.932
	Motivation Communication	.194	.453	.002
	Organisational Climate	.321	.521	.000
	Gender	.463	.085	.160
	Age	.382	.117	.078
	Education	-.544	-.109	.267
	Department	.514	.100	.290

Model Summary

Model	R	R Square	Adjusted R Square	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change

1	.754[a]	.568	.550	.568	32.332	5	123	.000
2	.768[b]	.590	.563	.022	2.188	4	120	.093

Discussion

Findings from this research confirm existing studies show that HRM practices can promote innovation (see for example Shipton et al., 2006; 2017). Particularly, our research suggests that certain HRM practices are perceived as significant for innovation. Our results found that HPWs are significant for radical innovation and origins of innovation (open innovation). This is supported by previous studies on HRM and innovation such as Jiang et al. (2012). We found that hygiene factors are significant for open innovation and not just significant for radical innovation. This could be since open innovation requires motivation to communicate and effectively uses channels along with others. Additionally, hygiene factors promote a sense of satisfaction among employees (Herzberg 1959) which can reduce the complexity associated with open innovation. Motivation and communication showed significant impact on radical innovation and open innovation. This result is persuasive, since adopting radical innovation requires an intensive flow of information and collaboration within the members of the organisation. Likewise, when implementing open innovation, the challenges with acquiring new techniques and skills are minimised through communication and motivation practices (Adams et al., 2006). Organisational climate imposed a significant impact on both radical innovation and open innovation. This is coherent with existing studies on organisational climate where it underpins the capacity and dynamics that promote innovation-related activities such as: creativity, risk-taking, team-working spirit, organisational culture and performance showing the requirement to be promoted (Husiled and Delaney, 1996).

Our results found no significant impact for expectations and information sharing on radical innovation and open innovation. This might be due to expectations and perceptions of specific HRM practices or even specific processes through an innovation activity such as: the gap between them can differ from the real purposes and intended contribution of these practices; or innovation process designed by the management or the organisation, thus producing different behaviours causing confusion between HRM practices and innovation (Gibb, 2001; Sanders et al., 2008). Overall, the findings from this research appear to support Gibb's (2001) notion that a satisfactory estimation and assessment of the effectiveness of HRM practices does not necessarily indicate a happy or satisfied workforce.

The results also showed no significant role of departments, i.e. HRM practices do not differ based on the department as there was no significant impact on the hierarchical model. This is

most likely due to the existing levels of awareness and commitment to innovation among employees, regardless of their position within the organisation. In addition, innovation is a complex process and likely to entail multifaceted aspects that demand contributions and collaboration from different units of the organisation. The role of HRM in sales departments, for example, is considered that a pre-innovation and post-innovation facilitator be involved to understand customer demands and market needs, obtaining feedback and then providing this information to innovation-focused departments, such as R&D and product development departments.

Overall, the results suggest that HRM practices can promote innovation awareness and commitment among employees. To do so, a number of practices appear to be beneficial for innovation which can be implemented through an HRM strategy labelled as being innovation oriented. This is specifically in practices like HPWs, motivation and communication, and hygiene factors which can promote innovation.

Conclusions

This paper considered a wider range of HRM practices that previous studies did not cover. This paper provides a holistic view for the HRM-innovation link, along with organisational climate and its impact on innovation. A principal theoretical contribution offered in this paper is the perception of HRM practices by employees. This paper potentially considered the first attempt to combine a wide number of HRM practices and perceptions of employees to promote innovation. This contribution offers insights into exploring the black box of HRM. Additionally, the paper is concerned with the micro-level (intra-organisational level) to study the HRM-innovation link, whereas most existing studies have looked at the macro-level.

In respect to empirical contributions, this paper offers insight to managers of HRM, R&D, and innovation within organisations. The findings from this paper are expected to benefit employees who are involved in innovation activities and HRM practices. It is helpful to help reduce the gap between designed HRM practices by the management and real or actual HRM practices. This allows employees to be more effective resulting in the organisation potentially scoring higher levels of performance. This research was aware of single biased responses; hence it included a wide number of respondents from different departments. The development of new scales to measure the perceptions of HRM and innovation is introduced in this paper which can assist with adding to the literature of HRM and innovation scales for future use.

Limitations

No paper is without any limitation. This research highlights the complex and multifaceted data of the relationship between HRM practices and innovation at the intra-organisational level. The

dynamics of that interaction within the organisation is complex and further research is needed to explore this in greater depth. A further limitation is that the development of new scales to measure the perceptions of HRM practices is considered as a limitation, and further studies need to be conducted to use these scales. It was noted earlier that some researchers have suggested the potential importance of employee representation and participation as a supportive factor of technical innovation in the HRM systems. In the light of the findings of Michie and Sheehan (1999) it is unfortunate that the organisations in this study did not make explicit study of the existence of formal schemes of employee participation and representation in the survey organisations. Therefore in future studies it is recommended to include this factor in the framework. The questionnaire used in this paper contained a relatively long list of questions which might have affected the participation rates. The study looked at the intra-organisational level in considering the HRM-innovation link, with a study combining both inter- and intra-organisational levels of analysis. This enables more understanding of the synergy between HRM and innovation, thus drawing a more comprehensive conclusion for the process of innovation. This is beneficial in clarifying the differences between designed HRM practices by managers and actual implemented practices influenced by employees' perceptions so a fuller picture can be obtained.

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