MEDIATING EFFECT OF JIT SYSTEMS ON THE RELATIONSHIP BETWEEN HRM PRACTICES AND OPERATIONAL PERFORMANCE OF JORDANIAN COMPANIES

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ABSTRACT

The purpose of this study is to examine the role of Human Resources Management (HRM) practices in predicting firms' operational performance as well as analyze the mediating effects of Just in Time (JIT) systems on the relationship between human resources management (HRM) practices and operational performance. In order to achieve this objective, the following analyses were used: multiple regression analysis was used to assess the direct impact of HRM practices on operational performance; hierarchical multiple regression analysis was used to assess the mediating effect of JIT on the relationship between HRM practices and operational performance. The results of data analyses show that the following HRM practices have a significant effect on the operational performance of organizations, whether JIT is a mediator or not: manufacturing and human resources fit team activities, and interaction facilitation. The other studied HRM practices were not found to have a significant effect on operational performance.
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Keywords: JIT, HRM, Operational Performance.

INTRODUCTION

The intense competition in the current marketplace has forced firms to reexamine their methods of doing business (Fullerton and McWatters 2001; Isa and Keong 2008a). Achieving high operational performance has been considered the best way to compete, survive, and gain market share in the hyper-competitive and ever-changing world market. (Arrfou et al., 2016) Management philosophies, such as Just in time (JIT), Total Quality Management (TQM), and supply chain management, have been used to respond to competitive forces by enhancing business performance and improving organizational effectiveness. (Lau, 2000; Kannan & Tan, 2001).

JIT is a philosophy aimed at minimizing total costs by pursuing continuous improvement, and unlocking of the full potential of an organization's HR (Power & Sohal, 2000a). Researchers have noted that the use of JIT enables companies to be more efficient, effective, and more responsive to customer needs as JIT is based on the philosophy of demand-pull and lean manufacturing (Olhager, 2002; Isa & Keong, 2008a). In some cases, companies following JIT principles have been recognized for outstanding performance (Spear, 2002) which is usually achieved by improving the company's operational performance.

As JIT production is based on the idea of producing the necessary items in the necessary quantities at the necessary time, and eliminating all sources of waste in operations, (Matsui, 2007) researchers have emphasized that lean methods, including JIT, could help organizations

improve their processes and operational performance (Romano et al., 2009; Bortolotti, et. al. 2013).

Prior research has noted that human resource management (HRM) can play a key role for improving firms' operational performance. Scholars have noted that human resources are a key resource for organizations and that organizational performance largely depends on the firm's ability to create specific competitive advantages by developing and implementing appropriate HRM practices. Such practices include selection based on best fit with the company's culture, employee empowerment to foster teamwork, and adequate training to acquire necessary technical skills required by for the job (Jalil et al., 2014). In particular, researchers have noted that effective HRM practices can improve the firm's operational performance by increasing employees' motivation and productivity (Jones et al., 2006; Jail et al., 2014)., researchers have noted that HRM practices such as training could help make the profound changes required to successfully implement JIT systems (Gupta et al., 2000; Bonavia & Marin-Garcia, 2011).

Previous research has often studied the relationships between two of these systems at a time; studying HRM practices and JIT implementation, HRM and OP, and JIT and OP. Very few studies have investigated the relationship among the three variables together, especially the direct and indirect effect of HRM on OP in the presence of JIT. Researchers have the need for more attention HRM practices' impact on operations management in order to 1) generalize the findings across countries and industries (Ahmad & Schroeder, 2003) and 2) analyze the effect and importance of the human variable on the success of JIT (Power & Sohal, 2000a). In addition, prior research has been mainly carried out in the English-speaking world and in developed countries, creating a need for research in other countries with different cultures. As our research developed in Jordan, this study provides a more well-rounded understanding of these relationships in a previously unexplored context. In addition to that, the findings of this study could help managers respond to competitive forces and enhance business performance by better managing people, and improving operations and processes by through JIT system implementation.

Trying to fill this gap, this article examines the role of HRM practices in predicting firms' operational performance. We are also interested in analyzing the mediating effects of JIT on the relationship between HRM practices and operational performance. The remainder of this article is structured follows. The second section is devoted to the description of the proposed hypotheses. The third section explains the applied methodology. The fourth section describes the obtained results. The fifth section includes discussion of the study. Finally, the last section is devoted to conclusions.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The need to adapt to the rapidly changing environment in the global market means that HRM should play a more vital role in firm performance improvement (Islam & Siengthai, 2010). Resource-based view theory notes that competitive advantage of firms depends on the effective and efficient application of their resources (Rumelt, 1984; Wernerfelt, 1984). In order to have the potential of achieving sustained competitive advantage, a firm's resources must be a) valuable, b) rare among that firm's competitors, c) imperfectly imitable, and d) not substitutable without great effort for other resources (Barney, 1991).

Human resources are considered a firm's key internal resource, able to contribute to the development of competitive advantages in any organization (Beh & Loo, 2013). HR policies can,

if properly configured, provide a direct and economically significant contribution to firm performance (Singh, 2016). Many scholars have pointed out a positive relationship between HRM practices and business performance (Islam & Siengthai, 2010); HRM practices include training and development, selection, teamwork, incentives, HR planning, performance appraisal, and practices related to employee's security, (Abdullah, et al., 2009; Beh & Loo, 2013; Kariithi & Ogutu, 2016; Singh, 2016; Uzondu, 2013).

In particular, it is stated that HRM practices (e.g. employees' opportunities to participate, receive appropriate information or pertinent rewards) could improve firms' operational performance by enhancing employees' productivity (Jones, et. al., 2006; Uzondu, 2013). Specific studies on the impact of HRM practices on the operational performance of firms showed that there is a positive and significant relationship between effective HRM practices and operational performance of organizations (Jalil, et al., 2014; Rahman et al., 2010; Trivedi & Raval, 2015; Uzondu, 2013). In particular, the especially effective HRM practices included recruitment and selection, performance appraisal, involvement and communication, and employee relationship.

According to these observations, the following hypothesis is proposed:

H_1: There is a positive relationship between the use of HRM practices and the operational performance of firms.

Researchers have emphasized that the success of JIT is not only related to cultural, structural, or environmental factors, It also stems from planned management actions, which can be fostered through effective HRM (Gupta et al., 2000). Particularly, researchers have noted that education and training, a cooperative environment, rewards and incentives for employees, open communication, job design, and worker involvement (Gupta et al., 2000; Martínez-Jurado et al., 2014; Pau, 2016) are HRM practices that could play a key role to implement and maintain a JIT system. For instance, JIT requires relevant changes in the management of operations related to the production system and those changes are only possible if employees have received adequate training (Bonavia & Martin-Garcia, 2011).

Continuous improvement requires employee involvement in order to generate new ideas and increase their involvement in decision-making. HRM practices should ensure that employees can easily communicate their ideas as a part of the daily processes (Gupta et al., 2000).

In the light of these considerations, the following hypothesis is proposed:

H_2: There is a positive relationship between the use of HRM practices and the implementation of JIT systems.

The relationship between the implementation of JIT systems and operational performance is well established in the literature. JIT is aimed at minimizing manufacturing costs by producing only what is immediately required, which potentially leads companies to reduce their inventories, manufacturing costs, lead time, and also improves their products (Gupta et al., 2000). As a consequence, the implementation of JIT systems could improve the operational performance of firms.

In practice, different studies have shown that JIT philosophy could improve the operational performance of organizations by:
1. Reducing the level of inventory and the number of layers in various functional areas (Claycomb et al.,1999; Wang et al., 2007).
2. Exhibiting more advanced design and logistical links with suppliers (Toni & Nassimbeni, 2000).
3. Reducing costs for buyers and logistics costs for suppliers (Dong et al., 2001);
4. Lowering inventory levels, and achieving greater customer responsiveness (Fullerton & McWatters, 2001);

5. Strengthening supply chain linkages (Green & Inman, 2005);
6. Reducing lead-time (Ward, 2006); and
7. Enhancing the efficiency and overall production performance, as well as reducing Direct costs and improving the product's quality (Beshtawi, 2007).

Taking these considerations into account, the following hypothesis is formulated:

H₃: There is a positive relationship between the implementation of JIT systems and the operational performance of firms.

As we stated above, researchers have noted that HRM practices are useful ~~to~~ in meeting the JIT requirements for an organization's culture. The use of some HRM practices, such as training, communication, rewards, and job design, can help companies successfully implement JIT systems (hypothesis 2). In addition, we have found that implementing JIT systems can reduce operational costs, helping companies achieve various benefits, which can positively affect operational performance (hypothesis 3).

Because HRM practices can help ~~to~~ in the implementation of JIT systems (hypothesis 2) and that implementation of JIT systems can improve an organization's operational performance (hypothesis 3), then the implementation of HRM practices can have a positive effect on an organization's operational performance by utilizing JIT systems. According to these observations, we hypothesized the following:

H₄: The relationship between the use of HRM practices and the operational performance of firms is mediated by the implementation of JIT systems.

Hence, we hypothesize that the use of HRM practices directly (hypothesis 1) and indirectly (hypothesis 4) affects firms' operational performance.

Theoretical Framework

This study developed a research framework as shown in figure (1). The proposed study model is based on a set of variables and proposed relationships between these variables, which can be reviewed as follows:

Study Variables

Dependent Variable: Operational Performance

Independent Variable: HRM Practices consist of manufacturing and HR fit practices, behavior and attitude practices, team activities, interaction and facilitation practices, incentives to meet objectives, training on job skills, training in multiple functions, communication of strategy practices, and feedback on performance).

Mediator Variable: Just in Time
Direct Impact: The direct impact of HRM Practices on Operational performance. Indirect impact (the mediating role of Just in time). The mediating role of Just in time on the relationship between HRM Practices, and Operational performance. This study's research model looks at the relationship between all the variables and dimensions within the proposed model. It examines how HRM practices affect Operational Performance as well as the impact of the mediating role,

just in time, on the relationship between HRM Practices and Operational performance Figure (1) illustrates the proposed model which contains the following
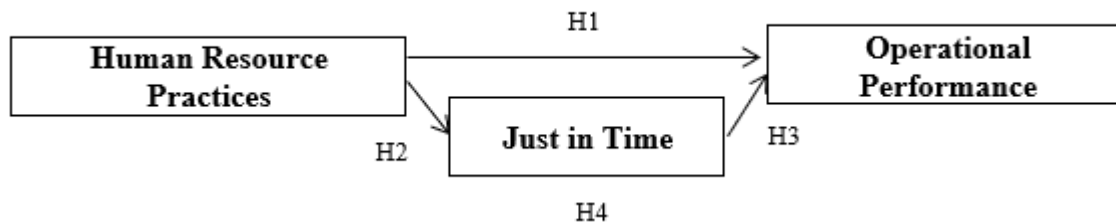

FIGURE 1
RESEARCH MODEL

METHODOLOGY: DATA AND MEASURES

Data was collected via questionnaire, which was designed based on literature review and modified by a committee. The questionnaire was developed to measure the implementation of the three variables: HRM practices implementation, JIT systems implementation, and operational performance. The questionnaire was distributed to 300 managers from 46 industrial companies out of the 66 listed in the Amman Stock Exchange Annual Report (Amman Stock Exchange Annual Report, 2015 & Securities Depository Center, 2015); therefore, the study covered 70% of listed companies. A total of 181 questionnaires returned and only 171 questionnaires were valid for further analysis. The responses were coded against SPSS 20 for further analysis.

The variables were measured via questionnaire, which was divided into three parts: independent variable (HRM), mediator (JIT), and dependent variable (Operational Performance). Respondents were asked to provide their opinions on each item by using the 5-Point Likert scale with values ranging from 1 (strongly disagree) to 5 (strongly agree).

The implementation of HRM practices was measured using the scale developed by Ahmad et al. (2003), which includes nine groups of HRM practices measured by 45 items. Group 1 covers manufacturing and HR fit practices. Group 2 reflects behavior and attitude practices. Group 3 includes team activities. Group 4 pertains to interaction and facilitation practices. Group 5 appertains to incentives to meet objectives. Group 6 includes training on job skills. Group 7 involves training individuals in multiple functions. Group 8 highlights communication of strategy practices. Finally, group 9 comprises those practices related to feedback on performance.

The implementation of JIT was measured by nineteen items adapted from Sakakibara et al. (1993); Matsui (2007) and Mackelprang & Nair (2010); Bortolotti et al. (2013) and Chen & Tan (2011).

Content validity, face validity and construct validity were used to test the validity of the questionnaire. Extensive literature review and interviews with academic experts have been used to confirm content validity. A panel of judges has been used to confirm face validity.

Principal component analysis with Varimax rotation has been used to confirm construct validity (Hair et al., 1998). All items' factor-loading values were more than 50%, therefore construct validity is assumed (Hair et al. 1998). Cronbach's Alpha was used to confirm the reliability of the tool. Results show that Cronbach's Alpha values for all scales are more than 70%, therefore reliability is confirmed (Nunnally, 1978).

RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive statistics as mean and standard deviation were used to describe the studied variables. Table 1 shows that the means for HRM practices range between 3.76 and 3.98 with standard deviation range between 0.633 to 0.8610. The mean of JIT implementation is 3.83 with standard deviation 0.532 and the mean for operational performance is 3.92 with standard deviation 0.646.

Bivariate Pearson correlation coefficient (r) was used to test the relationships between variables. Table 2 shows that the relationships among HRM practices are medium to strong, with r ranging between 0.160 and 0.843. It also shows that the relationships between HRM practices and JIT are medium to strong, with r ranging from 0.267 to 0.825. The relationship between HRM variables and OP are medium to strong, with r ranging between 0.223 and 0.797. Moreover, the correlation between JIT and OP constructs is very strong (r =0.847).

Table 1
MEANS AND STANDARD DEVIATION AND CORRELATION MATRIX OF VARIABLES

No.	Variables	N. of Items	Mean	Std. D.	1	2	3	4	5	6	7	8	9	10
1	Manufacturing and human resources fit	5	3.96	0.645										
2	Behavior and attitude	5	3.77	0.657	0.843*									
3	Team activities	5	3.95	0.665	0.740*	0.800*								
4	Interaction facilitation	5	3.98	0.658	0.701*	0.676*	0.675*							
5	Incentives to meet objectives	5	3.87	0.633	0.470*	0.429*	0.370*	0.547*						
6	Training on job skills	5	3.98	0.717	0.312*	0.337*	0.343*	0.330*	0.454*					
7	Training in multiple functions	5	3.89	0.656	0.371*	0.385*	0.396*	0.332*	0.478*	0.558*				
8	Communication of strategy	5	3.76	0.861	0.197*	0.253*	0.213*	0.160*	0.316*	0.426*	0.574*			
9	Feedback on performance	5	3.91	0.657	0.298*	0.347*	0.349*	0.265*	0.408*	0.462*	0.708*	0.706*		
10	JIT implementation	18	3.83	0.532	0.815*	0.825*	0.788*	0.752*	0.465	0.353*	0.385*	0.267*	0.356*	
11	Operational performance	10	3.92	0.646	0.797*	0.776*	0.768*	0.756*	0.434*	0.351*	0.362*	0.223*	0.290*	0.847*

Quality of Measurement Model

The measurement form includes validity and reliability tests for the items of the study tool and its various constructs. As the reliability, constructive reliability, convergent and discriminant validity, Cornbach's alpha, were all tested to determine the reliability and validity of study tool measurement. ll Cornbach's alpha coefficients achieved greater than 70 values, and the loading factors for all items of the study tool were higher than 0.50. In order to measure the convergent validity of the study tool, testing was done on both the composite reliability and average variance extracted (AVE). Composite reliability (CR) values reached between (.70-.90), which are acceptable values, while all average variance extracted (AVE) values were higher than 0.50, which indicates the convergence of the items of the study tool with each other Finally, the discriminatory validity was tested by comparing the square root of (AVE) with the square of the correlation for the paragraphs within the same variable, and it was found that all the values of the square root of (AVE) are greater than the square of the correlation for the paragraphs within the same construct (Table 2).

Table 2 MEASUREMENT QUALITY INDICATORS						
Construct	item	Loading	A	CR	AVE	SQRT(AVE)> COOR^2
H R Practices						
MHRF	M1	0.828	0.634	0.86	0.56	0.74>0.38
	M2	0.775				
	M3	0.715				
	M4	0.710				
	M5	0.697				
BA	BA1	0.776	0.782	0.84	0.56	0.74>0.59
	BA2	0.794				
	BA3	0.737				
	BA4	0.523				
	BA5	0.592				
TA	TA1	0.857	0.66	0.92	0.64	0.80>0.45
	TA2	0.837				
	TA3	0.776				
	TA4	0.770				
	TA5	0.768				
IF	IF1	0.755	0.756	0.83	0.49	0.70>0.53
	IF2	0.728				
	IF3	0.690				
	IF4	0.670				
	IF5	0.655				
IMO	IMO1	0.741	0.884	0.80	0.45	0.67>0.63
	IMO2	0.730				
	IMO3	0.667				
	IMO4	0.632				
	IMO5	0.566				
TJS	TJS1	0.754	0.846	0.81	0.46	0.67>0.61
	TJS2	0.750				
	TJS3	0.717				
	TJS4	0.628				
	TJS5	0.515				
TMF	TMF1	0.808	0.873	0.88	0.60	0.77>0.53
	TMF2	0.788				
	TMF3	0.738				
	TMF4	0.794				
	TMF5	0.746				
COS	COS1	0.706	0.877	0.76	0.39	0.62>0.56
	COS2	0.693				
	COS3	0.551				
	COS4	0.538				
	COS5	0.627				
FOP	FOP1	0.819	0.916	0.90	0.65	0.80>0.69
	FOP2	0.857				
	FOP3	0.770				
	FOP4	0.788				
	FOP5	0.796				

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			0.859			
Bartlett's Test of Sphericity			1377.874			
Df			45			
Sig.			0.000			
Construct	**item**	**Loading**	**A**	**CR**	**AVE**	**SQRT(AVE)> COOR²**
JIT						
Internal JIT	IJ1	0.918	0.922	0.94	75	0.87>0.72
	IJ2	0.894				
	IJ3	0.865				
	IJ4	0.863				
	IJ5	0.783				
Supply JIT	SJ1	0.829	0.839	0.91	0.570	0.75>0.47
	SJ2	0.789				
	SJ3	0.762				
	SJ4	0.696				
	SJ5	0.829				
	SJ6	0.768				
	SJ7	0.711				
	SJ8	0.647				
Selling JIT	SEJ1	0.857	0.715	90	0.595	0.77>0.36
	SEJ2	0.719				
	SEJ3	0.768				
	SEJ4	0.755				
	SEJ5	0.771				
	SEJ6	0.755				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			0.815			
Bartlett's Test of Sphericity			3167.093			
Df			171			
Sig.			0.000			
Construct	**item**	**Loading**	**A**	**CR**	**AVE**	**SQRT(AVE)> COOR²**
Operational performance	OP1	0.835		.		0.75>0.48
	OP2	0.826				
	OP3	0.817				
	OP4	0.773				
	OP5	0.807	0.863	0.92	57	
	OP6	0.756				
	OP7	0.710				
	OP8	0.688				
	OP9	0.621				
	OP10	0.571				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			0.857			
Bartlett's Test of Sphericity			1433.758			
Df			45			
Sig.			0.000			

Test of research hypotheses Main hypothesis's test (statistics and results)

Finally, multiple regression analysis (using the means of the items of every scale) was used to test the direct impact HRM practices, operational performance, and the implementation of JIT all have on operational performance. In order to test the mediating effect of JIT

implementation on HR practices and operational performance, Baron and Kenny's (1986) procedure was used.

The use of HRM Practices and The Operational Performance of Firms

Table 3 shows the result of multiple regression analysis of HRM practices on OP. Results show that there is a positive and statically significant relationship between some HRM practices and operational performance of the studied companies. In particular, results show that the coordination between HR and manufacturing departments has a positive effect on the operational performance of the firms (B=0.317, t=4.051, p<0.01).

Table 3 MULTIPLE REGRESSION ANALYSIS OF HRM PRACTICES AGAINST OPERATIONAL PERFORMANCE						
HRM Practices	Beta	t-value	Sig.	R^2	F	Sig.
Manufacturing and human resources fit	0.317	4.051	0.000	0.755	54.984	0.000
Behaviour and attitude	0.114	1.351	0.179			
Team activities	0.242	3.423	0.001			
Interaction facilitation	0.304	4.862	0.000			
Incentives to meet objectives	-0.036	-0.690	0.491			
Training on job skills	0.047	0.942	0.348			
Training in multiple functions	0.003	0.045	0.964			
Communication of strategy	0.069	1.215	0.226			
Feedback on performance	-0.067	-1.017	0.311			

HRM practices that encourage teamwork also have a positive effect on organizations' operational performance (*B*=0.242, t=3.423, *p*<0.01). Finally, results show that the interaction between supervisors and their subordinates positively affects a firm's organizational performance (*B*=0.304, t=4.862, *p*<0.01). However, results do not show statically significant relationships between the implementation of any of the other HRM practices and operational performance. Thus, Hypothesis 1 is partially supported.

The use of HRM practices and the implementation of JIT systems

Results also show that there is a positive and statically significant relationship between some of the studied HRM practices and the implementation of JIT systems (Table 4).

In particular, this applies to those HRM practices that make possible the coordination between HR and manufacturing departments (*B*=0.261, t=3.606, *p*<0.01); practices that consider behavioral attitudes in the selection process (*B*=0.252, t=3.235, *p*<0.01); HRM practices which encourage teamwork (*B*=218, t=3.334, *p*<0.01) and the interaction between supervisors and their subordinates (*B*=0.241, t=4.172, *p*<0.01) positively affect the implementation of JIT systems. On the other hand, results do not show statically significant relationships between the implementation of any of the other HRM practices and the implementation of JIT systems. Thus, Hypothesis 2 is partially supported.

Table 4 MULTIPLE REGRESSION ANALYSIS OF HRM PRACTICES AGAINST JIT SYSTEMS						
HRM Practices	**Beta**	**t-value**	**Sig.**	R^2	**F**	**Sig.**

Manufacturing and human resources fit	0.261	3.606	0.000	0.791	67.531	0.000
Behavior and attitude	0.252	3.235	0.001			
Team activities	0.218	3.334	0.001			
Interaction facilitation	0.241	4.172	0.000			
Incentives to meet objectives	0.005	0.097	0.923			
Training on job skills	0.012	0.271	0.787			
Training in multiple functions	-0.039	-0.686	0.494			
Communication of strategy	0.064	1.214	0.227			
Feedback on performance	0.027	0.443	0.659			

The Implementation of JIT Systems and The Operational Performance of Firms

Our findings show that there is a positive and statically significant relationship between the implementation of JIT systems and the operational performance of firms ($B =0.847$, $t=20.741$, $p<0.05$) (table 5). This finding is in line with those studies that suggest that the implementation of JIT systems could involve some improvements which could reduce the direct costs and improve the quality of production (Beshtawi, 2007). Hence, hypothesis 3 is supported.

Table 5						
SIMPLE REGRESSION ANALYSIS OF JIT AGAINST OPERATIONAL PERFORMANCE						
Variable	Beta	t-value	Sig.	R^2	F	Sig.
JIT Implementation	0.847	20.741	0.0000	0.718	430.188	0.000

The Mediating Role of JIT Systems

Hierarchical multiple regression analysis was used to investigate the mediating effect of the implementation of JIT systems between HR practices and operational performance based on Baron and Kenny's (1986) procedures. The first step of this procedure is to examine the relationship between HRM practices and the operational performance of organizations. The result shows that three groups of HRM practices are positively related to OP of firms (hypothesis 1). The second step is to examine the effect of the independent (HRM practices) on the mediator (the implementation of JIT systems). The results confirm this relationship (hypothesis 2). In step three, we examine the relationship between the mediator (the implementation of JIT systems) and the dependent variable (operational performance of firms). The obtained results (hypothesis 3) confirm this relationship. The fourth step is to include the mediator, in the model to examine whether it reduces the effects of the antecedents to non-significance.

Table 6						
HIERARCHICAL MULTIPLE REGRESSION ANALYSIS OF MEDIATING EFFECT OF JIT BETWEEN HRM PRACTICES AND OPERATIONAL PERFORMANCE						
Variable	Step 1			Step4		
HRM Practices	B	t-value	Sig.	B	t-value	Sig.
Manufacturing and human resources fit	0.317	4.051	0.000	0.217	2.839	0.005
Behavior and attitude	0.114	1.351	0.179	0.017	0.206	0.837
Team activities	0.242	3.423	0.001	0.158	2.307	0.022
Interaction facilitation	0.304	4.862	0.000	0.211	3.422	0.001
Incentives to meet objectives	-0.036	-0.690	0.491	-0.038	-0.773	0.441
Training on job skills	0.047	0.942	0.348	0.042	0.902	0.369
Training in multiple functions	0.003	0.045	0.964	0.018	0.308	0.758
Communication of strategy	0.069	1.215	0.226	0.044	0.831	0.407

Feedback on performance	-0.067	-1.017	0.311	-0.077	-1.252	0.212
JIT				0.385	4.818*	0.000
R^2	0.755			0.786		
F	54.984			58.634		
ΔR^2				3.10%		
ΔF				3.65%		

Our results show that the implementation of JIT systems significantly reduces the effects of HRM practices on the operational performance of organizations (table 6, step 4). The findings indicate that the inclusion of JIT implementation attenuates the relationships between HR practices and operational performance. Thus, JIT implantation mediates the relationship between HRM practices and operational performance, partially supporting the fourth Hypothesis. Hypothesis 4 is partially supported because the relationship between HRM practices and operational performance is still significant after entering the independent variable.

In particular, results show that the relationship between those HRM practices: 1) allow for coordination between HR and manufacturing departments; 2) encourage teamwork, 3) promote the interaction between supervisors and their subordinates and 4) the operational performance of organizations is mediated by the implementation of JIT systems.

FINDINGS AND RECOMMENDATIONS

Our findings show that the use of some HRM practices has a positive effect on operational performance of organizations. Those practices that encourage the a) coordination between HR and manufacturing departments, b) the organization of collaborative teams at work, and c) the interaction between supervisors and their subordinates have a positive direct effect on operational performance of organizations; they also have an indirect effect through the implementation of JIT systems.

As prior research has noted that HRM practices affecting employees' relationship, involvement, and communication have a positive effect on the operational performance of organizations, our results are in line with prior research (Jones et al. 2006; and Jail et al., 2014).

However, our findings show that the other studied HRM practices do not influence the operational performance of organizations. If we assume that all of the studied HRM practices are correctly implemented, these results note that some of the studied HRM practices are not relevant for improving the operational performance of Jordanian organizations. On the other hand, HRM practices are effective if they are introduced in a coherent manner. Considering this point, our results could suggest that some of the other studied HRM practices are not working because they are not well implemented or designed. If this assumption is true, managers of Jordanian companies could pay attention to the design and introduction of the implemented HRM practices.

Besides having a positive effect on operational performance, our findings show that practices which encourage the a) coordination between HR and manufacturing departments, b) the organization of work teams, and c) the interaction between supervisors and their subordinates are also relevant practices to effectively implement JIT systems.

As a cooperative environment is one of the most influential factors for the success of the implementation of JIT systems (Gupta, 2000) and considering these HRM practices play a key role to create a cooperative environment.

In particular, some researchers have highlighted the importance of teamwork for JIT success (Oliver, 1990).

Furthermore, results show that those HRM practices that consider behavioral attitudes in the selection process also have a positive effect on the implementation of JIT systems. The importance of these HRM practices is, in our opinion, an interesting finding, since prior research has paid little attention to these groups of HRM practices. Results suggest that managers interested in implementing JIT systems should pay attention to questions such as the desire to work in a team or employees' ability to provide ideas to improve the manufacturing process.

On the other hand, some results are unexpected. Researchers have highlighted the importance of effective training practices for both managers and employees so that both they understand the JIT approach and the associated culture (Gupta, 2000). However, results do not show a positive relationship between these practices, operational performance of firms, and the implementation of JIT systems; further research is needed to clarify this point.

Incentive programs are also considered a relevant component of successful JIT implementation. Our findings do not show a positive effect on both operational performance and the implementation of JIT systems. However, incentive programs have a positive effect on JIT implementation when they are in line with company and team goals. The fact that incentive programs of the studied companies are focused on individual outputs could explain the obtained finding. Further research is also needed to confirm this point.

Results also show that implementation of JIT systems has a significant positive effect on operational performance. This finding is in line with those studies that suggest that the implementation of JIT systems could involve some improvements, which could reduce the direct costs and improve quality of production (Beshtawi, 2007).

LIMITATION AND FUTURE LINES OF RESEARCH

The study was conducted on companies in Jordan. While the obtained findings contribute to a better understanding of the studied relationships in Jordan, generalizing such results to other industries and countries is questionable.

In particular, it would be interesting to replicate the study in other countries and sectors to check if those HRM practices, which play a key role in improving operational performance for Jordanian companies, play a different role in other contexts.

The cross-sectional nature of this research is another limitation, making it impossible to examine causal relationships between the studied variables. Future research should consider longitudinal designs to test different causality models.

CONCLUSION

This paper presents practical evidence of the positive influence of some HRM practices on operational performance and the implementation of JIT systems. In particular, results show the importance of HRM practices that encourage coordination between HR and manufacturing departments, teamwork, and interaction between supervisors and subordinates. Additionally, it shows that HRM practices that consider behavioral attitudes in the selection process play a relevant role in implementing JIT systems.

These findings could help managers to respond to competitive forces and enhance business performance by: 1) better management and 2) operations and processes improvement by JIT systems implementation.

In addition, the present work contributes to literature on HRM and JIT by broadening the scope of previous work on this topic. Prior research has been mainly carried out in the English-speaking world and developed countries, which has resulted in fewer studies done in other countries with different cultural habits. As our research developed in Jordan, this study provides a more well-rounded understanding of these relationships in a previously unexplored context.

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