

The Use and Effect of Human Resource Information Systems on Human Resource Management Productivity

Javad Shahreki^{a,*}^a Faculty of Business, Multimedia University, Malaysia* Corresponding author email address: Javad.shahreki@mmu.edu.my / Javadshahreki@gmail.com

Abstract

This study aims to investigate the effect of Information and Communication Technology (ICT) implementation on Business Process Management (BPM) through examining the relationship among influences of Human Resource Information Systems (HRIS) on HRM productivity. The current study developed a conceptual model and examined collected data from 187 HR specialists who have access to HRIS in their organizations. Partial Least Squares-Structural Equation Modeling (PLS-SEM) analysis was used to test hypotheses and examined data set. The results of this research showed that, applied properly, HRIS-provide HR transformational, transactional and traditional exercise has an important influence on the HRM performance. These results are suitable for competitive organizations in the marketplace that seek enhancement in HRM productivity by HRIS-empowered HR exercise. Consequently, the companies aimed to reconsider and renovate their business methods based on HRM are encouraged by this research to adopt a suitable HRIS, particularly a performance management system (PMS), which is a serious factor in their achievement.

Keywords: Human Resource Management (HRM), Human Resource Information System (HRIS), Business Process Management (BPM).

1. Introduction

Although Business Process Management (BPM) can be considered a critical factor in effective organizational management, ICT has changed the way that organizations achieve their BPM exercise. BPM can be defined as a modern management approach that concentrates on managing the entire business procedure of an organization to achieve its purposes based on the modern ICT systems. According to Ravesteyn and Batenburg (2010), BPM Systems are ICT systems that are related to BPM. The organizations' BPM outcome is maximized through approaches that are qualified by ICT process along with the other key factors. This study attempts to explore the effect of ICT contribution on BPM through examining the relationship among Human Resource Information System (HRIS) effects on Human Resource Management (HRM) efficiency. According to Vuksic et al. (2013), BPM can be defined as an approach that implements procedure as the essential idea to understand and manage business operations. On the other hand, Jeston (2014) defined BPM as various methods of handling business by the management and continuing enhancement of its procedures. HR management is an organizational function that is focused on the total management of employee in the organization. The origins of HRM trace back to the employment exercise related to "welfare capitalist

employers" during the 1930s in the United States (Boxall and Purcell, 2011). Additionally, Huselid (1995) defines HRM as a collection of policies that are planned to maximize employee commitment. HR exercise or HR activities refer to the HR management tasks, such as recruitment, selection, compensation, knowledge management, performance management, routine bookkeeping activities, benefits administration, training programs, organizational development (Bamberger et al., 2014; Cascio, 2015; Greer et al., 1999; Huselid, 1995; Kavanagh and Johnson, 2017; Noe et al., 2017; Shahreki, 2019; Shahreki and Nakanishi, 2016). According to Bratton and Gold (2017), human resource exercise affect organization performances. Therefore, the present study aims to investigate the effect of ICT-empowered business process on business process management performance, or more precisely, human resource information system empowered HR exercise on HRM productivity. In this sense, a conceptual HRIS-empowered HRM productivity model developed to examine the main constructs of this research according to the research model of Paauwe and Richardson (1997) and Lee et al. (2012). Hence, in the next section, a review of literature related to the role of 'HRIS-empowered HR exercise on HRM productivity' will be discussed. In this sense, a conceptual framework is designed and developed for further examination. The following sections revealed the methodological details and

statistical outcome. Last section is related to the conclusion, implications, discussions, research limitations, and future recommendations.

2. Literature Review

2.1 Influences of HRIS use on HR exercise

In this study, HR exercise act as business processes; HRIS act as ICT system, and HRM act as BPM. According to Bresnahan et al. (2002), although the correlation between the ICT and business process is recursive, business processes support ICT and in turn ICT supports business processes, and the real practice is related to ICT-empowered limited process management. There is limited experimental evidence to show how information and communication technology supports business process management. Lee et al. (2012) used two ICT infrastructures, ecommerce infrastructure (ECI) and resource planning infrastructure (RPI), in place of adopting any specific BPM system as an ICT tool. Although they do not propose any reason to clarify why they chose these two ICT infrastructures, one reason might be related to the nature of their study, which was large because they evaluated the effect of information and communication technology on business process management. Another reason might be that because their study also comprises the research of industry impacts and country distinctions, they had to use a multi-faceted ICT approach as ECI and RPI. According to Vuksic et al. (2013), BPM is not the same as business process reengineering (BPR) but Lee et al. (2012) use these identical terms in their work. To validate the identical use of BPR and BPM, the researcher should refer to previous work by Smith and Fingar (2003), Dumas et al. (2013), Jeston (2014), Trkman (2010), and Lee and Dale (1998), in which these researchers discuss that organizations are sometimes required to change their structure to align with the adopted ICTs to achieve better operational efficiency and positive business performance. ICT application and its impact on BPM are based on three important aspects such as change in organizational structure (OS), in workplace (WP), and in workforce (WF) (Lee et al., 2012). They stated that developed ICT adoption breaks down time and space, such that employee work guidelines are vague and involve non-face-to-face coordination operations outside the office, thus ICT acceptance has significant and positive influence on WP reform. Additionally, they stated that ICT activate mechanization in management exercise, such as order management, customer service management, and supply chain management to reduce manpower and has a significant and positive effect on WF reform. ICTs are flexible to manage the situation and business procedure changes such as information exchange and sharing over ICTs assist employees to cooperate with general managers directly, thereby improving mediation and increasing cross unit collaboration. In this sense, ICT adoption has a significant and positive effect on OS reform. In summary, Lee et al. (2012) proposed six hypotheses to be examined

in their model, although their general work was on the ICT infrastructure and organizational performance. This study proposed that certain ICT systems, such as PMS, management information systems (MIS), HRIS, facilitate the organization management, but BPM has been ignored. Furthermore, the researcher believes that the Lee et al. (2012) arguments should be used in this research since the focus of this study is on investigating the ICT BPM productivity correlation through HRIS-HRM productivity, so the BPR-BPM confusion and the country distinctions are overlooked. This study also only concentrated on the two components of the adoption of ICT, and the influence this adoption on business processes and the effect of company size and type is ignored. In addition, the Trkman (2010), Powell and Dent-Micallef (1997) business process definitions and Kalina (2010), Unwin and Unwin (2009) ICT process definition was used to accept whether HRIS implementation qualifies as an ICT process. Roglinger et al. (2012) and Snell et al. (1995) anticipated that since HR exercise is considered as HR management activities, HR exercise can be referred to as 'business processes'. Therefore, Lee et al. (2012) model offers a powerful theoretical background to link the relationship between HR exercise (HRIS-empowered HR exercise) and HRIS implementation (ICT process). However, further theoretical analysis is needed to evaluate the second relationship between HRM productivity and HRIS-empowered HR exercise of this conceptual model. In following section, the analysis of the HR exercise-HRM productivity by the HRM framework proposed by Paauwe and Richardson (1997) is discussed.

2.2 HRIS-empowered HR exercise on HRM productivity

This study attempts to examine the influence of the HRIS-empowered HR exercise on the HRM productivity. The review of related literature on HRM and performance proposes that HRM enhances the whole organization performance. However, the HRM evaluation through HRM performance requires validation of the presence of influence of HRM in an organization. On the other hand, measuring HRM academics in HRM productivity measurement within organization performance is essential whereas measuring HRM productivity through HRM outcomes is important (Boateng, 2007; Boselie et al., 2005; Shahreki, 2019; Shahreki and Nakanishi, 2016). According to the related previous studies, a well-designed framework has been proposed by Paauwe and Richardson (1997) to explain how HR exercise affects HR outcomes. As the aim of this study is to develop a conceptual model for evaluating the HRM productivity by the HRM outcomes on HRIS post-implementation, the third method was adapted from Paauwe and Boselie (2007) as HRM related outcomes. Many studies have been conducted to measure HRM-organization productivity through financial (Paauwe, 2004), organizational (Vanhala and Ahteela, 2011) and HRM-related outcomes (Tzafir, 2005). However, the current research has concentrated on HRM results as a benchmark to evaluate the HRM productivity. HR exercise

affects the HRM outcomes and in consequence affect organization performance. Since the focus of this paper was on the third proposed method (Paauwe, 2004) and adopted a part of the HRM model (Paauwe and Richardson, 1997), HRM productivity was not adequate to measure the HRM outcomes so the ‘firm performance’ section was ignored. Furthermore, six items as HRM outcomes were categorized by Paauwe and Richardson (1997) including absenteeism, turnover, management and employee trust, loyalty and involvement, lay-offs, social climate between employees and disciplinary actions and grievances. However, this paper used the Boselie et al. (2005) HRM outcomes list to serve as a practical tool for investigating the HRM productivity within the HR results. HR exercise can be categorized under three domains such as traditional, transactional, and transformational (Gardner et al., 2003; Kavanagh and Johnson, 2017). HR transactional exercise involve the daily transactions that deal mainly with bookkeeping and record keeping such as employee status changes, entering payroll information, and the administration of employee benefits. Additionally, this practice involves HR programs that “add value” to the use of the organization’s product, such as increasing innovation culture. For instance, a training plan for retail employees to develop customer service performance has been demonstrated as an organizations’ strategic purpose. Based on the fact that HR exercise can be considered as business procedure (Gould-Williams, 2003; Kinnie et al., 2005; Smith and Fingar, 2003; Trkman, 2010; Wright et al., 2005), activities under the traditional, transformational, and transactional exercise are considered as business

procedures related to HR exercise in the current research. The effect of measuring HR exercise has been related to specific HRM outcomes. HR exercise has direct influence on unions, job security, culture, training, compensation level, quality circles, labor relations, demographics, extensive recruiting efforts, quality of work life programs, and incentive compensation systems (Ulrich and Brockbank, 2005). There are three different methods to measure the HRM productivity, which are financial outcomes (sales, share, profits, market), organizational outcomes (quality, productivity, efficiencies) and HRM-related outcomes (behavioral and attitudinal influences among employees, such as satisfaction, and commitment) (Paauwe and Boselie, 2007). Based on the objective of current study, the third method (Paauwe, 2004) was adopted for further discussion.

3. Hypotheses Development

A new conceptual model was developed for this research through combining the models of Paauwe and Richardson (1997) and Lee et al. (2012). Therefore, the following hypotheses have been postulated.

H1: HRIS-empowered HR transactional exercise positively influences the HRM productivity.

H2: HRIS-empowered HR traditional exercise positively influences the HRM productivity.

H3: HRIS-empowered HR transformational exercise positively influences the HRM productivity.

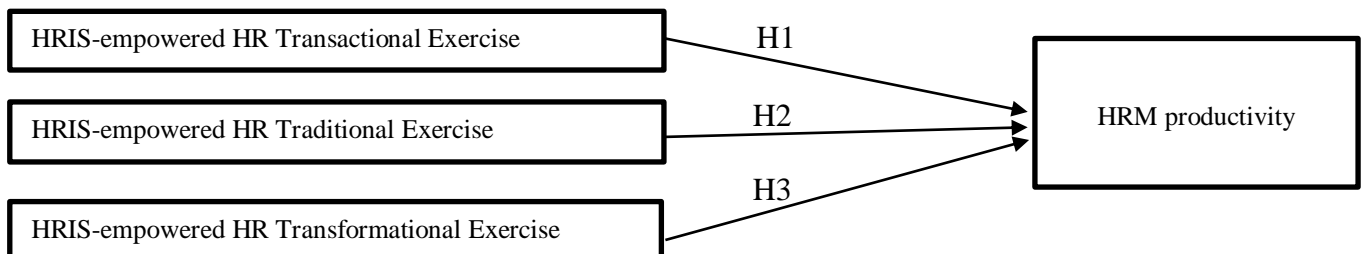


Fig. 1. Conceptual model

4. Research Methodology

The research methodology of the current research such as data collection procedure, the variables used for operational measures and the statistical analysis are discussed in this section.

4.1. Sampling and data collection

A survey questionnaire was adopted and developed from prior researches to examine the model shown in Fig. 1. The target population of this study was HR experts who access HRIS in Malaysia. The rationale for choosing this population is that limited research has been done to address ‘HRIS-empowered HRM performance’ from the BPM viewpoint. Additionally, this is a single-researcher study

with limited resources, so data was more accessible and practical in a specific setting. Therefore, a total of 500 questionnaires were mailed out to HR professionals of organization who have access to HRIS. A ‘purposive sampling’ method was used in the current research. Thus, a valid sample size of 187 HR professionals, with the response rate of 37.4%, was deemed suitable for this study (Sekaran and Bougie, 2016). According to Sekaran and Bougie (2016) this response rate can be expected from mailed surveys.

4.2. The research instruments

In the current study, the empirical data was collected through a survey questionnaire with 23 questions adapted from Ravesteyn and Batenburg (2010). How the survey

questionnaire items are designed is discussed in the following;

4.2.1 Screening questions

The eligibility of the respondents was examined through three questions to ensure that the respondents were HR experts and HRIS is implemented in their workplace.

4.2.2 General items

Five general items that focused on the general information of respondents were selected, and included their job role, company location, their company type, company size and industry.

4.2.3 HRIS and HR exercise

The influence of HRIS use on the HR exercise was measured through five questions. The first two items, known as ‘employee benefits administration activities’ and ‘employee day-to-day record keeping activities’, were related to HR transactional exercise groups as demonstrated in the literature review. The third and fourth items, known as “total management activities related to employee training, selection, recruitment, promotion, and compensation” and “total employee management activities related to employee career development, performance management, communication and rewards”, referred to two HR traditional exercise categories as described in the review of literature part. The fifth item, known as “overall employee management activities that meet strategic organizational objectives such as organizational development, knowledge management, strategic planning, and change management”, related to the HR transformational exercise grouping, which was considered in the review of literature part.

4.2.4 HRIS-empowered HR exercise – HRM productivity

The correlation between the HRM productivity and HRIS-empowered HR exercise was measured through ten items. The first two items, with reference to the HRIS-empowered HR transactional exercise, were related to employee daily record activities and involved employee entering payroll information and status changes to the two HRM productivity measures to examine employees’ general loyalty, presence, motivation, trust, satisfaction, retention, involvement, commitment and “social climate” between management and employee. The third and fourth items, with reference to the HRIS-empowered HR transactional exercise, were related to management benefit activities including managing retirement programs, health insurance coverage, and investments in the two HRM productivity measures to examine the general employees’ trust, presence, motivation, commitment, satisfaction, retention, involvement, loyalty, and “social climate” between management and employees. In this section, the fifth and sixth items were related to the HRIS-empowered

HR traditional exercise pertinent to manage behaviors include managing retirement programs, health insurance coverage, investments in the two HRM productivity measures to evaluate total employees’ presence, satisfaction, involvement, retention, motivation, trust, commitment, loyalty, and “social climate” between management and employees. The seventh and eighth items were related to the HRIS-empowered HR traditional exercise pertinent to manage behaviors include managing retirement programs, health insurance coverage, investments in the two HRM productivity measures to evaluate total employee presence, satisfaction, involvement, retention, motivation, trust, commitment, loyalty, and “social climate” between management and employees. The ninth and tenth items were related to the HRIS-empowered HR transformational exercise pertinent in strategic organizational purposes as strategic planning, development, change management, and knowledge management in the two HRM productivity measures to evaluate total employee presence, satisfaction, involvement, retention, motivation, trust, commitment, loyalty, and “social climate” between management and employees.

5. Analysis

In order to examine the proposed model, Smart PLS 3.0 software was used to measure the outer and inner model parameters (Hair et al., 2016). This software attempts to maximize the variance of dependent variables and provides many advantages based on type of variables, the complexity of the model distribution requirements, and sample size. PLS path modeling was implemented with a path-weighting scheme for the inside approximation. Therefore, the nonparametric bootstrapping approximation was used (Chin, 2010) through 200 resamplings to achieve the assessments’ standard errors.

5.1 Assessment of the measurement model

Convergent validity, which is the degree to which multiple items measure the same concept in agreement, is evaluated in the first step. Factor loadings, Composite Reliability (CR) and Average Variance Extracted (AVE) (Hair et al., 2012) were used to measure convergence validity. The loadings exceeded recommended value of 0.5 for all items. CR values (Table 1), which represent the degree to which the construct indicators demonstrate the latent construct, was ranged from 0.89 to 0.91, which higher the recommended value of 0.7. The average variance reflects that the total amount of variance in the indicators accounted for the latent construct was in the range of 0.63 and 0.65, which was higher than the recommended value of 0.5 (Hair et al., 2012).

5.2 Discriminant validity of constructs

The discriminant validity was examined at the next step. The value shows that the measure is not reflected by other

variables and is indicated by the low connections between the area of interest and other construct measures (Henseler et al., 2015). Discriminant validity is measured by comparing the average variance extracted for a construct and the squared correlations between constructs (Fornell and Larcker, 1981). Table 2 has shown that the squared correlations for each construct is less than the average variance extracted by the indicators measuring that construct indicating adequate discriminant validity. In summary, the measurement model indicated adequate discriminant and convergent validity.

5.3 Assessment of the structural model

The structural model was used in the current study to examine the hypotheses. Table 3 and Fig. 2 have shown that all three hypotheses were supported. HR Traditional Exercise ($\beta=0.26$; $p < 0.01$), HR Transactional Exercise ($\beta=0.27$; $p < 0.01$), and HR Transformational Exercise ($\beta=0.29$; $p < 0.01$) have important effect on the HRM productivity, thus H1, H2 and H3 were supported. The results also showed that HR Transformational, Transactional, and Traditional Exercise explain 59% of the variance in HRM Productivity (Fig. 2).

Table 1
Loading, CR, validity, AVE, alpha coefficient (α)

| First-order constructs | Items | Loadings | AVE | CR | α |
|---|---------|----------|------|------|----------|
| HR Transactional Exercise (HRTAE) | HRTAE 1 | 0.79 | 0.65 | 0.90 | 0.86 |
| <i>Scale type: Reflective</i> | HRTAE 2 | 0.82 | | | |
| HR Traditional Exercise (HRTDE) | HRTDE 1 | 0.78 | 0.63 | 0.89 | 0.85 |
| <i>Scale type: Reflective</i> | HRTDE 2 | 0.86 | | | |
| HR Transformational Exercise (HRTFE) | HRTFE 1 | 0.72 | 0.64 | 0.91 | 0.87 |
| <i>Scale type: Reflective</i> | | | | | |
| HRM Productivity (HRMP) | HRMP 1 | 0.78 | 0.63 | 0.89 | 0.85 |
| <i>Scale type: Reflective</i> | HRMP 2 | 0.86 | | | |
| | HRMP 3 | 0.85 | | | |
| | HRMP 4 | 0.81 | | | |
| | HRMP 5 | 0.79 | | | |
| | HRMP 6 | 0.84 | | | |
| | HRMP 7 | 0.72 | | | |
| | HRMP 8 | 0.73 | | | |
| | HRMP 9 | 0.82 | | | |
| | HRMP10 | 0.76 | | | |

Table 2
Assessment of discriminant validity

| | 1 | 2 | 3 | 4 |
|---------|-------------|-------------|-------------|-------------|
| 1 HRTAE | 0.81 | | | |
| 2 HRTDE | 0.49 | 0.82 | | |
| 3 HRTFE | 0.61 | 0.51 | 0.72 | |
| 4 HRMP | 0.45 | 0.63 | 0.53 | 0.80 |

Notes: Diagonal elements (bold) are the square root of the average variance extracted (AVE) for each construct.; HRTAE= HR Transactional Exercise; HRTDE= HR Traditional Exercise; HRTFE= HR Transformational Exercise; HRMP= HRM Productivity.

Table 3
Estimation of model (bootstrap results).

| Constructs | Hypotheses | Sign | Coefficients | t-value | Remarks |
|--------------|------------|------|--------------|---------|---------|
| HRTAE → HRMP | H1 | + | 0.27** | 3.21 | S |
| HRTDE → HRMP | H2 | + | 0.26** | 3.08 | S |
| HRTFE → HRMP | H3 | + | 0.29** | 3.58 | S |

Notes: ** $p < 0.01$. HRTAE= HR Transactional Exercise; HRTDE= HR Traditional Exercise; HRTFE= HR Transformational Exercise; HRMP= HRM Productivity; S= Supported.

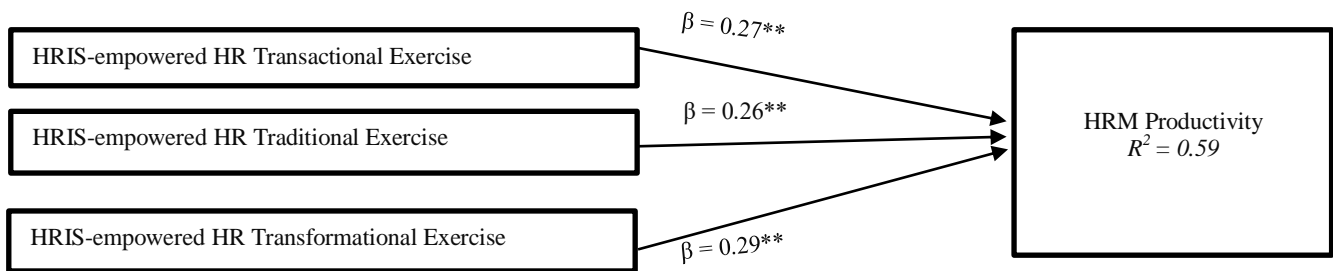


Fig. 2. Structural model

6. Conclusions

This study aims to investigate the effect of information and communication technology (ICT) implementation on business process management (BPM) through examining the relationship among influences of HRIS on HRM productivity.

6.1 Theoretical implications

The contribution of this research is threefold. First, it demonstrates the ICT impact on BPM contribution through analyzing the relationship between HRIS influence on HRM productivity without considering the organization size and type. Second, findings of current research have shown that HRIS-empowered HR transformational, transactional, and traditional exercise, when applied suitably, has an important influence on the HRM productivity. Third, the results approve that HRIS-empowered HR traditional management exercise including career development, performance rewards, communication and management mainly influence the HRM productivity. In this sense, the association value is greater than usual between the HRM productivity and the above-mentioned HRIS-empowered HR traditional exercise. It means that this paper recommends that an organization purposely accepts PMS, an important HRIS factor, to deal with employees effectively. The current study offers an awareness of the contribution of ICT implementation on BPM through investigating the relationship between HRIS impact and HRM productivity. These conclusions are suitable for organizations that seek to enhance their HRM productivity via HRIS-empowered HR exercise. In particular, PMS impact on financial productivity, performance, service or product quality, employee job satisfaction and customer satisfaction. Furthermore, 79% of the CEOs reviews have proposed that the PMS implementation drives the cultural strategies that expand human assets in their organization (Aguinis, 2009).

6.2 Managerial implications

These findings are appropriate for those organizations that seek enhancement in their HRM performance via HRIS-empowered HR exercise. Hence, they should reconsider and restore their business processes based on

HRM through the current research results to adopt an appropriate HRIS, particularly as PMS is important for their success. While HRIS-empowered HR transformational and transactional exercise accompanied by HR traditional management exercise, for instance selection, recruitment, training, promotion, and compensation have considerable influence on the HRM performance, the current research confirms that HRIS-empowered HR traditional management exercise, for example, career development, performance rewards, communication and management, has important influence on the HRM performance. This research also confirms that HRIS-empowered HR traditional management exercise, for instance rewards, career development, performance management, and communication, has as significantly influence on the HRM productivity. Consequently, the present study particularly recommends that organizations implement PMS comprehensively, as significant factor of HRIS, to deal with their employees effectively. In summary, the conclusions are appropriate for those organizations that seek to enhance their HRM productivity via HRIS-empowered HR exercise.

6.3 Drawbacks and future plans

The scope of current study was Malaysia as a developing country, so the outcome may not be generalized to the related populations in other geographical locations. It is recommended that this investigation be conducted in other countries, such as the Lee et al. (2012) study that considered multiple countries to gather data sets that include different social, cultural, political and economic settings. From the management perspective, the BPM aspects are wide and broad, while the emphasis of this research was narrowed down to HR exercise, HRIS and HRM productivity connection. In addition, other BPM and ICT system sub-domains may not be suitable because of fundamental differences such as functionality and purpose, and the direct translation of outcome. Finally, while no important influence of the HRIS-empowered HRM productivity model was found regarding organization type or size, it is recommended that future study investigate the importance of these two variables on HR exercise, HRIS, and HRM productivity relationship.

References

- Aguinis, H. (2009). *Performance management*: Pearson Prentice Hall Upper Saddle River, NJ.
- Bamberger, P. A., Biron, M., and Meshoulam, I. (2014). *Human resource strategy: Formulation, implementation, and impact*: Routledge.
- Boateng, A. (2007). *The role of human resource information systems (HRIS) in strategic human resource management (SHRM)*. Master of Science Theses, Accounting Swedish School of Economics and Business Administration, Palovartijantie.
- Boselie, P., Dietz, G., and Boon, C. (2005). Commonalities and contradictions in HRM and performance research. *Human resource management journal*, 15(3), 67-94.
- Boxall, P., and Purcell, J. (2011). *Strategy and human resource management*: Macmillan International Higher Education.
- Bratton, J., and Gold, J. (2017). *Human resource management: theory and practice*: Palgrave.
- Bresnahan, T. F., Brynjolfsson, E., and Hitt, L. M. (2002). Information technology, workplace organization, and the demand for skilled labor: Firm-level evidence. *The quarterly journal of economics*, 117(1), 339-376.
- Cascio, W. F. (2015). *Managing human resources*: McGraw-Hill.
- Chin, W. W. (2010). How to write up and report PLS analyses. In *Handbook of partial least squares* (pp. 655-690): Springer.
- Dumas, M., La Rosa, M., Mendling, J., and Reijers, H. A. (2013). *Fundamentals of business process management* (Vol. 1): Springer.
- Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *J. Market. Res.* 18 (1), 39-50.
- Gardner, S. D., Lepak, D. P., and Bartol, K. M. (2003). Virtual HR: The impact of information technology on the human resource professional. *Journal of Vocational Behavior*, 63(2), 159-179.
- Gould-Williams, J. (2003). The importance of HR practices and workplace trust in achieving superior performance: a study of public-sector organizations. *International journal of human resource management*, 14(1), 28-54.
- Greer, C. R., Youngblood, S. A., and Gray, D. A. (1999). Human resource management outsourcing: The make or buy decision. *Academy of Management Perspectives*, 13(3), 85-96.
- Hair, J. F., Hult, G. T. M., Ringle, C., and Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*: Sage publications.
- Hair, J. F., Sarstedt, M., Ringle, C. M., and Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the academy of marketing science*, 40(3), 414-433.
- Henseler, J., Ringle, C. M., and Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135.
- Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of management journal*, 38(3), 635-672.
- Jeston, J. (2014). *Business process management: practical guidelines to successful implementations*: Routledge.
- Kalina, J. (2010). Relevant factors for implementation of operational-level IS/ICT processes in small IT organizations. *Journal of Systems Integration*, 1(4), 13-26.
- Kavanagh, M. J., and Johnson, R. D. (2017). *Human resource information systems: Basics, applications, and future directions*: Sage Publications.
- Kinnie, N., Hutchinson, S., Purcell, J., Rayton, B., and Swart, J. (2005). Satisfaction with HR practices and commitment to the organisation: why one size does not fit all. *Human Resource Management Journal*, 15(4), 9-29.
- Lee, R. G., and Dale, B. G. (1998). *Business process management: a review and evaluation*. *Business process management journal*, 4(3), 214-225.
- Lee, Y.-C., Chu, P.-Y., and Tseng, H.-L. (2012). Cross-National and Cross-Industrial Comparison of ICT-Enabled Business Process Management and Performance. *Journal of Global Information Management (JGIM)*, 20(2), 44-66.
- Noe, R. A., Hollenbeck, J. R., Gerhart, B., and Wright, P. M. (2017). *Human resource management: Gaining a competitive advantage*: McGraw-Hill Education New York, NY.
- Paauwe, J. (2004). *HRM and performance: Achieving long-term viability*: Oxford University Press on Demand.
- Paauwe, J., and Boselie, P. (2007). HRM and societal embeddedness. *Oxford Handbook of Human Resource Management*, The, 166.
- Paauwe, J., and Richardson, R. (1997). Strategic human resource management and performance: introduction. *International journal of human resource management*, 8(3), 257-262.
- Powell, T. C., and Dent-Micallef, A. (1997). Information technology as competitive advantage: The role of human, business, and technology resources. *Strategic management journal*, 18(5), 375-405.
- Ravesteyn, P., and Batenburg, R. (2010). Surveying the critical success factors of BPM-systems implementation. *Business Process Management Journal*, 16(3), 492-507.
- Roglinger, M., Poppelbuß, J., and Becker, J. (2012). Maturity models in business process management. *Business process management journal*, 18(2), 328-346.
- Sekaran, U., and Bougie, R. (2016). *Research methods for business: A skill building approach*: John Wiley & Sons.
- Shahreki, J. (2019). Electronic Human Resource Management and Employee Efficiency: Test of the Mediating Role of Impersonal Trust. *Journal of Soft Computing and Decision Support Systems*, 6(4), 20-29.
- Shahreki, J., and Nakanishi, H. (2016). The Relationship between Task Technology Fit and Individual Performance: Case Study in Hotel Industry in Malaysia. *Journal of Soft Computing and Decision Support Systems*, 3(6), 1-15.
- Smith, H., and Fingar, P. (2003). *Business process management: the third wave* (Vol. 1): Meghan-Kiffer Press Tampa, FL.
- Snell, S. A., Pedigo, P. R., and Krawiec, G. M. (1995). Managing the impact of information technology on human resource management. *Handbook of human resource management*, pp.159-174.
- Trkman, P. (2010). The critical success factors of business process management. *International journal of information management*, 30(2), 125-134.
- Tzafirir, S. S. (2005). The relationship between trust, HRM practices and firm performance. *The International Journal of Human Resource Management*, 16(9), 1600-1622.
- Ulrich, D., and Brockbank, W. (2005). *The HR value proposition*: Harvard Business Press.
- Unwin, P., and Unwin, T. (2009). *ICT4D: Information and communication technology for development*: Cambridge University Press.
- Vanhala, M., and Ahteela, R. (2011). The effect of HRM practices on impersonal organizational trust. *Management Research Review*, 34(8), 869-888.

- Vuksic, V. B., Bach, M. P., and Popovic, A. (2013). Supporting performance management with business process management and business intelligence: A case analysis of integration and orchestration. *International journal of information management*, 33(4), 613-619.
- Wright, P. M., Gardner, T. M., Moynihan, L. M., and Allen, M. R. (2005). The relationship between HR practices and firm performance: Examining causal order. *Personnel psychology*, 58(2), 409-446.