MODELLING THE EFFECTIVE E-HRM ENABLERS USING ISM AND MICMAC APPROACH

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*P*URPOSE
*THE purpose of this paper is to review and reconcile the enablers affecting effective imple-
mentation of EHRM. Further, this paper also aims at formulating a comprehensive model
describing the interplay of enablers of effective EHRM (EHRMEs), with the help of ISM methodology*

Methodology: *Experts from industries and academics were referred in order to design ISM, which
explains the contextual relationship among various enablers of effective E-HRM. The result of ISM
was futher used for MICMAC analysis in order to determine driving, linkage, dependent variables.*

Findings: *This paper has identified 18 key enablers of E-HRM (EHRMEs) which facilitate the efficacy
of E-HRM practices in an organisation. The authors have additionally established relationships between
all identified EHRMEs utilizing Interpretive Structural Modelling methodology. This is an attempt
to examine the E-HRM enablers by utilizing MICMAC analysis.*

Research Limitations: *The weightage allotted in ISM Methodology is solely dependent on the
judgment of the academicians and industry experts. Thus empirical research is to be conducted to
verify the proposed relationship.*

Practical Implications: *This study would help the academicians and the managers to have the
broader picture of various enablers of EHRM.*

Originality/Value: *The results would help the HR managers to effectively managevarious enablers
of EHRMs, especially during the implementation of digital HR practices in the organisation.*

Key Words: *ISM, Digital HR Practices, MICMAC, Enablers of E-HRM.*

Introduction

Today's era of digitalisation has brought outstanding vicissitudes in the society, economy, and industry. The essential changes carried by information technology (IT) have paramountly altered how companies run their businesses and thus, in turn, has led to transmutations in management records and procedures. Gone are those days when the entire task in an organisation was done manually. Nowadays, organisations are endeavouring to make all possible efforts to digitalise all its operations and HRM is no exception to this. Usually, E-HRM can be described as an "assimilated information system that comprises some applications of Human Resource functions like supply and demand forecast, HR planning, staffing information, recruitment and selection, information on training and development, pay increase,

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compensation forecast, promotion-related information, employee relations, and so on"(Masum, Bhuiyan, & Kabir, 2013, pp. 1). Because of its simplicity of expedient approachability on data identified with employees, E-HRM might enhance those methods of choice making process. Furthermore, along these lines it may be recognized as a key accomplice of the organizations(Rodríguez & Ventura, 2003).

The EHRM practices can be efficaciously implemented if there are only few enablers in the decision making process. Virtually there are several enablers which are considered while taking decision cognate to EHRM practices, termed as EHRMEs in this study. In such case, it is consequential to determine if all these enablers have equal effect on EHRM practices implementation or if there is any variation between the effects of these enablers, and if there is any variation, it is essential to determine to what extent every single enabler effects EHRM practices implementation.

Review of Literature

Many researchers have discussed the several enablers which effects efficacy of EHRM practices in an organisation.

In this study, 18 EHRMEs have been selected. These selected EHRMEs are strategic positioning of business (Gupta & Singh, 2013), organizational culture(Sinha, Singh, Gupta, & Dutt, 2010), Clarity of E-HRM Goals, stakeholder involvement (Sachdeva & Singh, 2017), Management support (Singh, 2013), sufficient resources, cooperation between IT and HR departments (Mohapatra, 2012), organizational readiness, effective communication, language support, on-going training, compatible IT legacy systems, system quality, Perceived Utility, Perceived Ease of Use, Organizational Citizenship Behavior, User Satisfaction with EHRM, and User Support. These enablers are studied by ISM and MICMAC analysis. ISM is a renowned method used for classifying relationships between various enablers identified for an issue (Sage & Smith, 1977). On the basis of opinion of various experts, a relationship matrix was designed, which became base for the ISM model. The ISM model designed in this study identifies the interaction between EHRMenablers

Objectives

- To review and reconcile the enablers affecting effective implementation of EHRM.

- To formulate a comprehensive model describing the interplay of enablers of effective EHRM (EHRMEs), with the help of ISM methodology

Methodology

In the present research, the authors utilize the Interpretive Structural Modelling (ISM) methodology to structure various enablers for effective implementation of E-HRM practices. The first stage in the research involves extensive review of the extant literature on E-HRM practices and its various enablers. On reviewing the present work of researchers and authors, pertinent enablers have been extracted. The second stage in the research involves adoption of the ISM technique to comprehensively understand the complex relationships that exist amongst the various enablers for effective E-HRM, and form conclusions on how these relate to each other and function as a system enabling organizations to be successful in implementing E-HRM practices. The third stage, involves carrying out MICMAC analysis and describing the complex relationships via a diagraph.

Interpretive Structural Modelling (ISM)
Interpretive Structural Modelling (ISM) refers to the "systematic application of some elementary notions of graph theory in a way to exploit the theoretical, conceptual, and computational leverage and efficiently construct a directed graph (network representation) descriptive of complex pattern of a contextual relationship among the set of elements considered" (David, 1975, pp. 397). ISM procedure helps individuals and/or groups better understand complex phenomenon through transformation complex model. The technique was developed by Warfield in 1974 and it helps

Table No.1: Relationship Matrix

EHRMEs	Bondarouk & Looise (2009)	Lippert & Swiercz (2005)	Shen, Chae, & Yang (2004)	Burbach & Dundon (2005)	Stone (2012)	Belardo & Kavanagh (2012)	Heikkila & Smale (2011)	Burbach (2011)	Chien & Tsaur (2007)	Yoon (2009)	Davis, Bagozzi, & Warshaw (1989)	Davis, Bagozzi, & Warshaw (1992)	Zeithaml, Berry, & Parasuraman (1996)	Zhu, Li, Wang, & Chen (2010)	Garača (2011)	Udo & Bagchi (2011)	Zhang & Prybutok (2005)	Cakmak, Bank, & Budak (2011)	Hsieh & Liao (2011)
Strategic positioning of business, HR and ITstrategies	✓																	✓	
Organizational culture		✓	✓																
Clarity of E-HRM Goals					✓												✓		
Stakeholder involvement				✓	✓														
Management support				✓	✓							✓							
Sufficient resources (time, money and personnel)				✓															
Cooperation between IT and HR departments						✓													
Organizational readiness					✓														
Effective communication				✓	✓														
Language support							✓	✓	✓	✓	✓	✓							
On-going training						✓		✓	✓	✓	✓	✓							
Compatible IT legacy								✓											
System quality									✓										
Perceived Utility											✓								
Perceived Ease of Use												✓							
Organizational citizenship behaviour										✓									
User Satisfaction with EHRM											✓	✓	✓	✓	✓	✓	✓	✓	✓
User Support																			

EHRMEs	Leng, Lada, Muhammad, & Ibrahim (2011)	Ruël, Bondarouk, & Looise, (2007)	Voermans & Veldhoven	Haines & Lafleur (2013)	Alleyn, Kakabadse & Kakbadase (2007)	Teo, Lim & Fedric (2007)	Alleyn, Kakbadse, & Kakbadse (2007)	Marler, Fisher, & Ke (2009)	Marler, Liang & Dulebohn (2006)	Ngai, Law, & Wat (2008)	Laumer, Eckhardt, & Weitzel, (2010)	Ruël, Bondarouk, & Van der Velde (2007)	Fishbein & Ajzen (1975)	Mahmood, Burn, Gemoets, & Jacquez (2000)	Seddon (1997)	Agarwal, & Prasad (1997)	Amoroso, & Cheney (1991)	Igbaria, Zinatelli, Cragg & Cavaye (1997)
Strategic positioning of business, HR and IT strategies		✓	✓	✓	✓	✓	✓	✓	✓	✓								
Organizational culture		✓																
Clarity of E-HRM Goals												✓	✓		✓	✓	✓	✓
Stakeholder involvement							✓	✓										
Management support								✓										
Sufficient resources (time, money and personnel)									✓	✓	✓							
Cooperation between IT and HR departments			✓	✓														
Organizational readiness						✓												
Effective communication						✓												
Language support																		
On-going training																		
Compatible IT legacy systems								✓	✓									
System quality																		
Perceived Utility			✓		✓													
Perceived Ease of Use					✓											✓		
Organizational citizenship behavior																		
User Satisfaction with EHRM	✓													✓	✓			
User Support																	✓	✓

formulate a hierarchical relationship amongst the various elements concerning an issue. ISM examines interrelatedness of various elements and through their prioritizing and sequencing it enables researchers to distinguish amongst the various drivers, enablers, dependents and autonomous variables in an elements set. ISM has its utility in providing an insight into the interrelatedness amongst various factors explaining a particular issue by identifying order and direction in their inter-relationships (Agarwal, Shankar, & Tiwari, 2007). It fosters collective understanding of direct and indirect relationships amongst factors explaining an issue. ISM lets discover complex relations that exist amongst all factors rather than having a standalone or silo look at individual factors. It helps originate comprehensive interpretation of phenomena underlying issues (Chaudhary & Sindhu, 2015). ISM methodology is *interpretive* as it interprets judgement of individuals/groups/researchers; *structural* as it extracts out a structure based on the appraisal of relationships amongst elements identified by the individuals/groups/researchers and; *modelling technique* as a diagraph explains the structural relationships amongst elements.

Steps in Interpretive Structural Modelling

Identification of relevant elements specific to the issue
The present study has focused on discerning the various enablers of effective implementation of E-HRM practices. Thus, an extensive review of the present literature has been made in order to identify various enablers of successful implementation of E-HRM practices in organizations. The present research utilizes results from 50 studies to identify the various enablers. Other papers were also referred to establish contextual relationships amongst the various enablers and also to highlight any sporadic work on the subject made by several authors. The review of the current literature has uncovered 18 distinct yet interrelated soft enablers. Table no. 2 enlists these enablers and also provides codes for respective factors. The codes have been developed for concise and clear presentation of the various ISM steps.

Table No. 2: Enablers of Successful Implementation of E-HRM practices and their Codes

S. No.	Factor	Factor Code
1.	Strategic Positioning of Business, HR and IT strategies	**EHRME1**
2.	Organizational Culture	**EHRME2**
3.	Clarity of E-HRM Goals	**EHRME3**
4.	Stakeholder Involvement	**EHRME4**
5.	Management Support	**EHRME5**
6.	Sufficient Resources	**EHRME6**
7.	Cooperation Between IT and HR Departments	**EHRME7**
8.	Organizational Readiness	**EHRME8**
9.	Effective Communication	**EHRME9**
10.	Language Support	**EHRME10**
11.	On-Going Training	**EHRME11**
12.	Compatible IT Legacy Systems	**EHRME12**
13.	System Quality	**EHRME13**
14.	Perceived Utility	**EHRME14**
15.	Perceived Ease of Use	**EHRME15**
16.	Organizational Citizenship Behavior	**EHRME16**
17.	User Satisfaction with EHRM	**EHRME17**
18.	User Support	**EHRME18**

Establishment of a Contextual Relationship

Contextual relationships encompass the inter-relationship amongst various factors as included by the researcher in his/her study. In the present study, the aim is to establish contextual relationships amongst the various enablers for successful implementation of E-HRM practices in organisations. The idea here is that one enabler for instance, might influence some other enablers; get influenced by some others; may have a mutually influencing relationship with the other variables; or may not have any relationship with the others. This relationship is determined on basis of extant literature and contribution of scholars plus, opinion from experts and/or veterans in the field of E-HRM.

Development of the Self Interaction Matrix (SSIM)

An SSIM is developed post establishment of the contextual relationships amongst various factors. Table no. 3 represents the SSIM prepared for the various enablers. In the table, the following four symbols explain the direction of relationship amongst the various enablers:

V = Enabler i will help to achieve Enabler j {i®j};

A = Enabler j will help to achieve Enabler i {j®i};

X = Both Enablers i and j will help achieve one another {i« j};

O = Enablers i and j are unrelated {i¹j}.

Development of the Reachability Matrix and Embedding Transitivity

At this stage, the SSIM is converted into a binary matrix called the Initial Reachability Matrix (Table 4). That means, all the V, A, X & O entries are now coded as '0' and '1'. The following rules apply for the same:

a)   For all (i, j) entries in the SSIM as V, the (i, j) entries in the initial reachability matrix become 1 and the (j, i) entries become 0;

b)   For all (i, j) entries in the SSIM as A, the (i, j) entries in the initial reachability matrix become 0 and the (j, i) entries become 1;

c)   For all (i, j) entries in the SSIM as X, the (i, j) and the (j, i) entries become 1; and

d)   For all (i, j) entries in the SSIM as O, the (i, j) and the (j, i) entries become 0.

After embedding transitivity (i.e., if A leads to B and B leads to C, A also leads to C), a Final Reachability Matrix is derived as shown in Table no. 5. *1** entries are marked in the final reachability matrix to depict transitivity.

Partitioning of the Reachability Matrix

At this stage, the final reachability table is divided. It is done by evaluating the reachability and antecedents of each variable. The levels of ISM hierarchy are found where the reachability and intersection sets are same. The top-level enablers of the hierarchy would not help to achieve any other enablers that lie above their own level. Post identification of the top-level enablers is complete; the identified enabler is removed from the rest of the enablers. This process is repeated till all enablers attain their respective positions in the ISM hierarchy. This cycle is called *Iteration*. In this case a set of *five* iterations have helped identify the ISM hierarchy. Tables no. 6, 7, 8, 9, 10, 11, 12 represent iterations I, II, III, IV, V, VI, and VII respectively.

Table No. 3: Self Interaction Matrix of Enablers

EHRMEs		EHRME 2	EHRME 3	EHRME 4	EHRME 5	EHRME 6	EHRME 7	EHRME 8	EHRME 9	EHRME 10	EHRME 11	EHRME 12	EHRME 13	EHRME 14	EHRME 15	EHRME 16	EHRME 17	EHRME 18
EHRME 1	Strategic positioning of Business, HR and IT strategies	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
EHRME 2	Organizational Culture		V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
EHRME 3	Clarity of E-HRM Goals			A	A	O	X	A	A	X	V	A	V	V	V	O	V	V
EHRME 4	Stakeholder Involvement				V	V	V	V	V	O	V	O	A	X	O	O	X	V
EHRME 5	Management Support					V	V	V	V	V	V	V	V	V	V	V	V	V
EHRME 6	Sufficient Resources (Time, Money, and Personnel)						V	V	V	V	V	V	V	V	V	O	V	V
EHRME 7	Cooperation between IT and HR Departments							O	O	O	O	X	V	V	V	O	V	V
EHRME 8	Organizational Readiness								V	O	V	V	V	O	O	O	O	O
EHRME 9	Effective Communication									X	X	A	V	O	O	V	O	V
EHRME 10	Language Support										X	X	V	V	V	O	V	V
EHRME 11	On-Going Training											O	X	V	V	O	V	X
EHRME 12	Compatible IT Legacy Systems												V	V	V	O	V	V
EHRME 13	System Quality													V	V	V	V	X
EHRME 14	Perceived Utility														X	O	V	X
EHRME 15	Perceived Ease of Use															V	O	X
EHRME 16	Organizational Citizenship Behavior																A	A
EHRME 17	User Satisfaction with EHRM																	X
EHRME 18	User Support																	

Table No. 4: Initial Reachability Matrix : First Iteration

EHRMEs		EHRME 1	EHRME 2	EHRME 3	EHRME 4	EHRME 5	EHRME 6	EHRME 7	EHRME 8	EHRME 9	EHRME 10	EHRME 11	EHRME 12	EHRME 13	EHRME 14	EHRME 15	EHRME 16	EHRME 17	EHRME 18
EHRME 1	Strategic Positioning of Business, HR and IT strategies	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EHRME 2	Organizational Culture	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
EHRME 3	Clarity of E-HRM Goals	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0
EHRME 4	Stakeholder Involvement	1	1	0	0	1	1	0	1	0	1	1	1	1	1	1	0	0	0
EHRME 5	Management Support	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
EHRME 6	Sufficient Resources (Time, Money, and Personnel)	1	1	0	1	1	1	1	0	1	1	1	1	1	0	0	0	0	0
EHRME 7	Cooperation between IT and HR Departments	1	1	0	1	1	1	1	1	1	0	0	1	0	0	0	1	0	0
EHRME 8	Organizational Readiness	0	0	0	0	0	1	1	1	0	1	1	0	0	0	0	0	0	0
EHRME 9	Effective Communication	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
EHRME 10	Language Support	1	1	1	1	1	0	1	1	1	1	0	0	0	0	0	1	0	0
EHRME 11	On-Going Training	1	1	1	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0
EHRME 12	Compatible IT Legacy Systems	1	1	1	1	0	1	1	0	1	0	0	1	0	0	0	0	0	0
EHRME 13	System Quality	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
EHRME 14	Perceived Utility	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EHRME 15	Perceived Ease of Use	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EHRME 16	Organizational Citizenship Behavior	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
EHRME 17	User Satisfaction with EHRM	1	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
EHRME 18	User Support	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0

Table No. 5: Final Reachability Matrix

EHRMEs		EHRME 1	EHRME 2	EHRME 3	EHRME 4	EHRME 5	EHRME 6	EHRME 7	EHRME 8	EHRME 9	EHRME 10	EHRME 11	EHRME 12	EHRME 13	EHRME 14	EHRME 15	EHRME 16	EHRME 17	EHRME 18
EHRME 1	Strategic Positioning of Business, HR and IT strategies	1	1	1	1	1	1	1	1*	1	1	1	1	1	1	1	1	1	1
EHRME 2	Organizational Culture	1	1	1	1	1	1	1	1*	1	1	1	1	1	1	1	1	1	0
EHRME 3	Clarity of E-HRM Goals	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
EHRME 4	Stakeholder Involvement	1	1	1*	1*	1	1	1*	1	1*	1	1	1	1	1	1	1*	0	0
EHRME 5	Management Support	1	1	1*	1	1*	1	1	1	1	1	1	1	1	1	1*	1*	0	0
EHRME 6	Sufficient Resources (Time, Money, and Personnel)	1	1	1*	1	1	1	1	1	1	1	1	1	1	0	1*	1	0	0
EHRME 7	Cooperation between IT and HR Departments	1	1	1*	1	1	1	1	1*	1*	1*	1*	1	0	0	1*	1	0	0
EHRME 8	Organizational Readiness	1*	1*	1*	1*	1*	1	1	1*	1*	1	1	1*	0	1*	0	0	0	0
EHRME 9	Effective Communication	1	1	1	1	1	1	1	1	1*	1*	0	1*	0	0	1*	1*	0	0
EHRME 10	Language Support	1	1	1*	1	1	1	1*	1	1	1	1*	1*	0	1*	1*	1	0	0
EHRME 11	On-Going Training	1	1	1*	1	1	1	1*	1	1	1	0	0	0	0	1*	0	0	0
EHRME 12	Compatible IT Legacy Systems	1	1	1*	1	1*	1	1	1*	1	1*	1*	1	0	0	1	1*	0	0
EHRME 13	System Quality	1	1	1	1	1	1	0	1	1*	1*	0	0	0	0	1*	0	0	0
EHRME 14	Perceived Utility	1	1	1*	1	1	1	0	1*	0	1*	1*	1*	1*	1*	1	0	0	0
EHRME 15	Perceived Ease of Use	1	1	1	1	1*	1*	0	1*	0	0	0	0	0	0	1*	0	0	0
EHRME 16	Organizational Citizen-ship Behavior	1	1	1	1*	1*	1	0	1*	0	0	0	0	0	0	1*	1	0	0
EHRME 17	User Satisfaction with EHRM	1	1	1*	1	1*	1	0	1	0	1*	0	1	0	0	1	0	1	0
EHRME 18	User Support	1	1	1*	1	1	1	0	1	1*	0	0	1*	0	0	1*	0	1	1

Table No. 6: Partition of Reachability Matrix: First Iteration

EHRME Code	Reachability Set	Antecedent Set	Intersection Set	Level
EHRME 1	1,2,3,4,5,6,7,8,9,10,11,12, 13,14,15,16,17,18	1	1	
EHRME 2	2,3,4,5,6,7,8,9,10,11,12,13, 14,15,16,17,18	1,2	2	
EHRME 3	3,4,5,6,7,8,9,10,11,12,13,14, 15,17,18	1,2,3,4,5,6,7,9, 10,12	3,4,5,6,7,9,10,12	
EHRME 4	3,4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18	1,2,3,4,5,6,7,9,10,11, 13,14,15,16,17,18	3,4,5,6,7,9,10,11, 13,14,15,16,17,18	
EHRME 5	3,4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18	1,2,3,4,5,10,14,17	3,4,5,10,14,17	
EHRME 6	3,4,6,7,8,9,10,11,12,13,14, 15,16,17,18	1,2,3,4,5,6,14,17	3,4,5,6,14,17	
EHRME 7	3,4,7,8,9,10,11,12,13,14,15, 16,17,18	1,2,3,4,5,6,7,8,9,10, 12,14,17,18	3,4,7,8,9,10,12,14, 17,18	
EHRME 8	7,8,9,10,11,12,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,10, 14,17	7,8,10,14,17	
EHRME 9	3,4,7,9,10,11,12,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,9,10, 11,12,13,14,17	3,4,7,9,10,11,12,13, 14,17	
EHRME 10	3,4,5,7,8,9,10,11,12,13,14,15, 16,17,18	1,2,3,4,5,6,7,8,9,10, 11,12,13,18	3,4,5,7,8,9,10,11,12, 13,18	
EHRME 11	4,9,10,11,12,13,14,15,16,17, 18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,9,10,11,12,13,14, 15,16,17,18	I
EHRME 12	3,7,9,10,11,12,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,9,10,11, 12	3,7,9,10,11,12	
EHRME 13	4,9,10,11,13,14,15,16,17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,9,10,11,13,14,15, 16,17,18	I
EHRME 14	4,5,6,7,8,9,11,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,5,6,7,8,9,11,13,14, 15,16,17,18	I
EHRME 15	4,11,13,14,15,16,17,18 12,13,14,15,16,17,18	1,2,3,4,5,6,7,8,9,10,11,	4,11,13,14,15,16,17, 18	I
EHRME 16	4,11,13,14,15,16,17,18	1,2,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,11,13,14,15,16,17, 18	I
EHRME 17	4,5,6,7,8,9,11,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,5,6,7,8,9,11,13,14, 15,16,17,18	I
EHRME 18	3,7,10,11,13,14,15,16,17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	3,7,10,11,13,14,15, 16,17,18	I

Table No. 7: Partition of Reachability Matrix: Second Iteration

EHRME Code	Reachability Set	Antecedent Set	Intersection Set	Level
EHRME 1	1,2,3,4,5,6,7,8,9,10,12	1	1	
EHRME 2	2,3,4,5,6,7,8,9,10,12	1,2	2	
EHRME 3	3,4,5,6,7,8,9,10,12	1,2,3,4,5,6,7,9,10,12	3,4,5,6,7,9,10,12	
EHRME 4	3,4,5,6,7,8,9,10,12	1,2,3,4,5,6,7,9,10	3,4,5,6,7,9,10	
EHRME 5	3,4,5,6,7,8,9,10,12	1,2,3,4,5,10	3,4,5,10	
EHRME 6	3,4,6,7,8,9,10,12	1,2,3,4,5,6	3,4,5,6	
EHRME 7	3,4,7,8,9,10,12	1,2,3,4,5,6,7,8,9,10,12	3,4,7,8,9,10,12	II
EHRME 8	7,8,9,10,12	1,2,3,4,5,6,7,8,10	7,8,10	
EHRME9	3,4,7,9,10,12	1,2,3,4,5,6,7,8,9,10,12	3,4,7,9,10,12	II
EHRME 10	3,4,5,7,8,9,10,12	1,2,3,4,5,6,7,8,9,10,12	3,4,5,7,8,9,10,12	II
EHRME 12	3,7,9,10,12	1,2,3,4,5,6,7,8,9,10,12	3,7,9,10,12	II

Table No. 8: Partition of Reachability Matrix: Third Iteration

EHRME Code	Reachability Set	Antecedent Set	Intersection Set	Level
EHRME1	1,2,3,4,5,6,8	1	1	
EHRME2	2,3,4,5,6,8	1,2	2	
EHRME3	3,4,5,6,8	1,2,3,4,5,6	3,4,5,6	
EHRME4	3,4,5,6,8	1,2,3,4,5,6	3,4,5,6	
EHRME5	3,4,5,6,8	1,2,3,4,5	3,4,5	
EHRME6	3,4,6,8	1,2,3,4,5,6	3,4,6	
EHRME8	8	1,2,3,4,5,6,8	8	III

Table No. 9: Partition of Reachability Matrix: Fourth Iteration

EHRME Code	Reachability Set	Antecedent Set	Intersection Set	Level
EHRME1	1,2,3,4,5,6	1	1	
EHRME2	2,3,4,5,6	1,2	2	
EHRME3	3,4,5,6	1,2,3,4,5,6	3,4,5,6	IV
EHRME4	3,4,5,6	1,2,3,4,5,6	3,4,5,6	IV
EHRME5	3,4,5,6	1,2,3,4,5	3,4,5	
EHRME6	3,4,6	1,2,3,4,5,6	3,4,6	IV

Table No. 10: Partition of Reachability Matrix: Fifth Iteration

EHRME Code	Reachability Set	Antecedent Set	Intersection Set	Level
EHRME 1	1,2,5	1	1	
EHRME 2	2,5	1,2	2	
EHRME 5	5	1,2,5	5	V

Table No. 11: Partition of Reachability Matrix: Sixth Iteration

EHRME Code	Reachability Set	Antecedent Set	Intersection Set	Level
EHRME 1	1,2	1	1	
EHRME 2	2	1,2	2	VI

Table No. 12: Partition of Reachability Matrix: Seventh Iteration

EHRME Code	Reachability Set	Antecedent Set	Intersection Set	Level
EHRME 1	1	1	1	VII

Developing the Conical Matrix and MICMAC Analysis

By clustering the factors of the same level a conical matrix is developed(Table no. 13). Next driving power and dependence power for each variable is assessed and showed in a table (Table no. 14) based on MICMAC analysis.

Clustering for a variable is done on the basis of the dependence power and driving power. The driving power of an enabler is calculated by adding the number of 1 in the rows. Similarly, its dependence power is calculated by adding the number of 1 in the columns. MICMAC clusters key variables driving a system in four categories based on their respective drive power and dependence power. These four clusters are of autonomous variables, linkage variables, dependent variables and independent variables.

Autonomous variables display weak drive power and fragile dependence power. They do not have strong relationship with most of the elements of the system. On the other hand, Linkage variables exhibit strong driving power and dependence power whereas on the other hand Dependent variables exhibit weak driving power and dependence power. Independent variables exhibits robust driving power but weak dependence power. Key factors exhibit extremely strong driving power. Figure no. 1 presents the clustering of various soft enablers of successful lean transformations as done on the basis of MICMAC Analysis. As depicted in the figure, Strategic Positioning of Business, HR and IT strategies, Organizational Culture, Clarity of E-HRM Goals, Management Support and Sufficient Resources (Time, Money, and Personnel) have been identified as Independent Variables.

Linkage variables include Organizational Readiness, Compatible IT Legacy Systems, Cooperation between IT and HR Departments, Effective Communication, Perceived Utility, Stakeholder Involvement and Language Support. Since these are all linkage variables, any change in these would affect the system and any change in the other variables would have a feedback impact on these. The dependent variables in the system have been identified as On-Going Training,Compatible IT Legacy System,System Quality, Perceived Utility, Perceived Ease of Use, and Organizational Citizenship Behavior. There are no autonomous variables found hence, there is no single variable that is disconnected from the system.

Levels of EHRMEs

EHRME Code	Reachability Set	Antecedent Set	Intersection Set	Level
EHRME 1	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	1	1	VII
EHRME 2	2,3,4,5,6,7,8,9,10,11,12, 13,14,15,16,17,18	1,2	2	VI
EHRME 3	3,4,5,6,7,8,9,10,11,12,13, 14,15,17,18	1,2,3,4,5,6,7,9,10,12	3,4,5,6,7,9,10,12	IV
EHRME 4	3,4,5,6,7,8,9,10,11,12,13, 14,15,16,17,18	1,2,3,4,5,6,7,9,10,11, 13,14,15,16,17,18	3,4,5,6,7,9,10,11,13, 14,15,16,17,18	IV
EHRME 5	3,4,5,6,7,8,9,10,11,12,13, 14,15,16,17,18	1,2,3,4,5,10,14,17	3,4,5,10,14,17	V
EHRME 6	3,4,6,7,8,9,10,11,12,13,14, 15,16,17,18	1,2,3,4,5,6,14,17	3,4,5,6,14,17	IV
EHRME 7	3,4,7,8,9,10,11,12,13,14,15, 16,17,18	1,2,3,4,5,6,7,8,9,10,12, 14,17,18	3,4,7,8,9,10,12,14, 17,18	II
EHRME 8	7,8,9,10,11,12,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,10,14,17	7,8,10,14,17	III
EHRME 9	3,4,7,9,10,11,12,13,14,15, 16,17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,17	3,4,7,9,10,11,12,13, 14,17	II
EHRME 10	3,4,5,7,8,9,10,11,12,13,14, 15,16,17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,18	3,4,5,7,8,9,10,11,12, 13,18	II
EHRME 11	4,9,10,11,12,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,9,10,11,12,13,14, 15,16,17,18	I
EHRME 12	3,7,9,10,11,12,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,9,10,11, 12	3,7,9,10,11,12	II
EHRME 13	4,9,10,11,13,14,15,16,17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,9,10,11,13,14,15, 16,17,18	I
EHRME 14	4,5,6,7,8,9,11,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,5,6,7,8,9,11,13, 14,15,16,17,18	I
EHRME 15	4,11,13,14,15,16,17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,11,13,14,15,16, 17,18	I
EHRME 16	4,11,13,14,15,16,17,18	1,2,4,5,6,7,8,9,10,11,12, 13,14,15,16,17,18	4,11,13,14,15,16, 17,18	I
EHRME 17	4,5,6,7,8,9,11,13,14,15, 16,17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	4,5,6,7,8,9,11,13, 14,15,16,17,18	I
EHRME 18	3,7,10,11,13,14,15,16, 17,18	1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18	3,7,10,11,13,14,15, 16,17,18	I

Table No. 13: Conical Matrix

EHRME Code	EHRME 1	EHRME 2	EHRME 5	EHRME 6	EHRME 4	EHRME 3	EHRME 8	EHRME 12	EHRME 10	EHRME 9	EHRME 7	EHRME 18	EHRME 17	EHRME 16	EHRME 15	EHRME 14	EHRME 13	EHRME 11
EHRME 11	0	0	0	0	1	0	0	1	1	1	0	1	1	1	1	1	1	1
EHRME 13	0	0	0	0	1	0	0	0	1	1	0	1	1	1	1	1	1	1
EHRME 14	0	0	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1
EHRME 15	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1	1
EHRME 16	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1	1
EHRME 17	0	0	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1
EHRME 18	0	0	0	0	1	0	0	0	1	0	1	1	1	1	1	1	1	1
EHRME 7	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EHRME 9	0	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1
EHRME 10	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
EHRME 12	0	0	0	0	0	1	0	1	1	1	1	1	1	0	1	1	1	1
EHRME 8	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1
EHRME 3	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EHRME 4	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EHRME 6	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EHRME 5	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EHRME 2	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EHRME 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table No. 14: Micmac Analysis

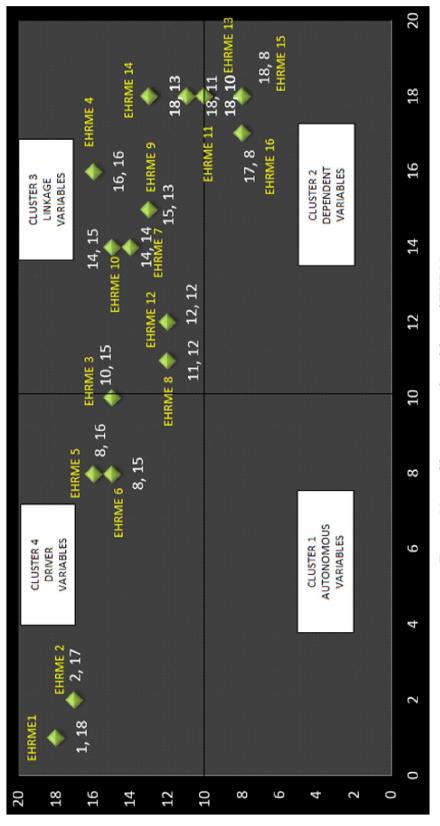| EHRME Code	EHRME 11	EHRME 13	EHRME 14	EHRME 15	EHRME 16	EHRME 17	EHRME 18	EHRME 7	EHRME 9	EHRME 10	EHRME 12	EHRME 8	EHRME 3	EHRME 4	EHRME6	EHRME 5	EHRME 2	EHRME 1	Driving Power	Rank
EHRME 11	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	0	0	0	11	VIII
EHRME 13	1	1	1	1	1	1	1	0	1	1	0	0	0	1	0	0	0	0	10	IX
EHRME 14	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	0	0	13	VI
EHRME 15	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	8	X
EHRME 16	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	8	X
EHRME 17	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	0	0	13	VI
EHRME 18	1	1	1	1	1	1	1	1	0	1	0	0	0	1	0	0	0	0	10	IX
EHRME 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	14	V
EHRME 9	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	13	VI
EHRME 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	15	IV
EHRME 12	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	12	VII
EHRME 8	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	0	0	0	12	VII
EHRME 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	15	IV
EHRME 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	16	III
EHRME6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	15	IV
EHRME 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	16	III
EHRME 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	17	II
EHRME 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	I
Dependence Power	18	18	18	18	17	18	18	14	15	14	12	11	10	16	8	8	2	1		
Rank	I	I	I	I	II	I	I	V	IV	V	VI	VII	VIII	III	IX	IX	X	XI		

Figure No. 1: Clustering of enablers of EHRM

Developing the Digraph and ISM Model

From the last reachability grid, the basic model has been produced by methods for vertices or nodes and lines of edges. For where there is a connection between the enablers *i* and *j*, it is appeared by a bolt which indicates from *i* to *j*. This diagram is known as a coordinated chart or digraph. In the wake of evacuating all the transitivity according to ISM technique, the digraph is at last changed over into ISM Model. The ISM based model of the soft enablers of E-HRM has been presented practices in Figure no. 2.
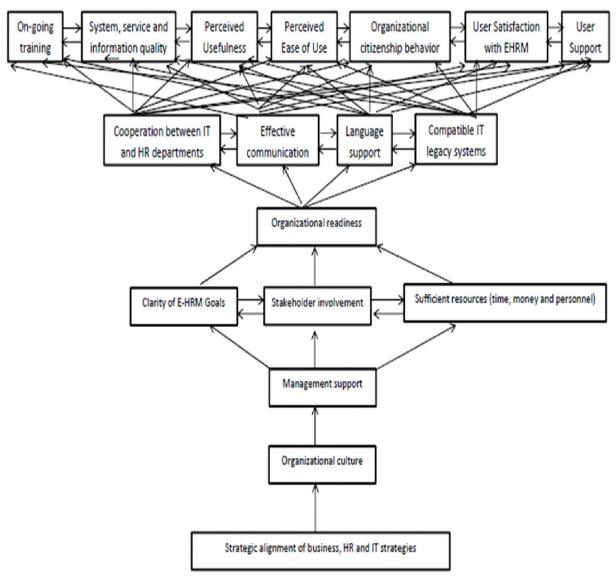

Figure No. 2 ISM Model E-HRM enablers

Discussion and Conclusion

In the present study, the authors have attempted to firstly, reconcile and present the various enablers of E-HRM (EHRMEs) which facilitate the efficacy of E-HRM practices in an organisation and secondly, model the interrelationships amongst the identified enablers using the Interpretive Structural Modelling Technique and MICMAC analysis.

On reviewing a total of 39 studies dealing specifically with the enablers or critical success factors and their value in facilitating the efficacy of E-HRM practices in an organisation, the authors identified 18 key enablers of E-HRM (EHRMEs) viz., Strategic Positioning of business, HR and IT strategies, organizational culture, Clarity of E-HRM Goals, stakeholder involvement, Management support, sufficient resources, cooperation between IT and HR departments, organizational readiness, effective communication, language support, on-going training, compatible IT legacy systems, system, service and information quality, Perceived Utility, Perceived Ease of Use, organizational citizenship behaviour, User Satisfaction with EHRM, and User Support.

The second stage in the research involved adoption of the ISM technique to comprehensively understand the complex relationships as these exist amongst the various enablers of E-HRM (EHRMEs) and form conclusions on how these relate to each other and function as a system enabling organizations to facilitating the efficacy of E-HRM practices in an organisation. The third stage, involved carrying out MICMAC analysis and describing the complex relationships via a digraph. It took a total of seven iterations to identify the levels at which each of the enablers would exist.

Hence, all the variables were distributed amongst seven levels withOn-Going Training, System, Service and Information Quality, Perceived Utility, Perceived Ease of Use, Organizational citizenship behaviour, User Satisfaction with EHRM, and User Support at Level I; cooperation between IT and HR departmentscompatible IT legacy systems at Level II; Organizational Readiness at Level III; Clarity of E-HRM Goals, Stakeholder Involvement, Sufficient Resources at Level IV; Management Support at Level V, Organisational Culture at Level VI and Strategic Positioning of Business, HR and IT strategies at Level VII.

This means for facilitating the efficacy of E-HRM practices in an organisation the first enabler is Strategic Positioning of Business, HR, and IT strategies which lays foundation for favourable Organisational Culture. Other enabler, Management Support originated on account of favourable Organisational Culture.

The present study has important implications for practising managers. Figure no. 1 that represents the enablers on the two side matrix of their dependence power and driving power gives potent insights about the dependencies and/or significance of each enabler considered in the study. Strategic Positioning of Business, HR and IT strategies, Organizational Culture, Clarity of E-HRM Goals, Stakeholder Involvement, Management Support and Sufficient Resources (Time, Money, and Personnel)fall in the Driver Variables Cluster which means that they are the strongest variables and they influence all the other enablers included in the study.It means organizational leaders must ensure the Strategic Positioning of Business, HR, and IT strategies to facilitate the efficacy of E-HRM practices in an organisation. Clarity of E-HRM Goals goes a long way in attaining this. Similarly Stakeholder Involvement, Management Support and Sufficient Resources (Time, Money, and Personnel) are also an indispensable part of implementing EHRM practices effectively in an organisation.

On-going Training, Compatible IT Legacy Systems, System, Service and Information Quality, Perceived Utility, Perceived Ease of Use, Organizational Citizenship Behaviour found their place in the Dependent Variables Cluster. These aredependent on other factors and on the other hand are weak drivers as well.These enablers hold the top levels of the ISM hierarchy. Managers should understand their dependence on the lower level enablers in the ISM.Organizational Readiness Effective Communication, Language Support, Cooperation Between IT and HR Departments, Stakeholder Involvement, Management Support, Sufficient Resources (Time, Money, and Personnel), Cooperation Between IT and HR Departments, Effective Communication, Language Support, On-Going Training, Compatible IT Legacy Systems, System, Service, and Information Quality, Perceived Utilityhave strong driving power and strong dependence power and hence occupy the Linkage Variables Cluster. Being in this

cluster, means that any change in the enablers would have a far reaching impact on each other as well as on the enablers in the dependent and independent variables clusters. Similarly, any change in the independent/dependent variables would have a feedback effect on the linkage variables. It is interesting that there was no autonomous variable found in the study. Autonomous variables are weak drivers of the model.

Scope for Future Research

The ISM technique transforms obscure, poorly articulated phrenic models of systems into visible and well-defined structural models. An ISM model avails unearthing key factors cognate to a quandary or issue and presents the direct and indirect relationships that subsist amongst factors. The model developed through ISM technique describes varied situations far more accurately when individual factors are understood in isolation. Yet, it is relatively impuissant as an ISM model is not statistically validated. Structural equation modelling (SEM) has the capability of test and validates the hypothetical model. ISM has the capability to develop an initial structural model that contextually links the variables in question. Plus, the present ISM model is a result of literature review and authors' judgment of the relationships that subsist amongst variables. Thus, future study could focus both on evolving an ISM model and later validating it via SEM.

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