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[Human Resource Practices as a Predictor of Ambidexterity towards Competitive Advantage with Moderation of Managerial Ambidexterity]

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ABSTRACT

This study intended to highlight the downward association of ability-enhancing human resource practices (AHP) on employees' ambidexterity (EA), not in isolation, but by taking employees' goal-orientation (EGO) as a mediator. *Moreover, the upward connection between EA and organizational ambidexterity (OA) towards competitive advantage (CA) was examined in the presence of ambidextrous manager (AM), and opportunity-enhancing human resource practices (OHP) as moderators. This study aims to explore the multilevel analysis between organizational-level and individual-level constructs. OA indicates the ability of the firm to manage contrary nature of explorative and exploitative innovations simultaneously. Today's dynamic business climate enforce organizations, especially software companies to pursue contradictory demands of these innovations. The study has focused on developing methods of ambidexterity via implication of its contextual approach, which emphasize on culture of freedom and permit employees to group their tasks of exploration and exploitation by themself. The AHP facilitates employees' goal-orientation, which further boost EA in the presence of a moderator, that is, AM. This is a time-lag study and data were collected via multistage proportionate stratified random sampling technique from a total of 600 participants via questionnaire. AMOS 4.0 software was used to analyze the data. All proposed hypotheses were authenticated by results. The study contributes to the theory of ambidexterity by inaugurating a multilevel model connecting AHP towards CA directly and indirectly through EGO, EA, and OA in the presence of the AM and OHP as moderators. In addition, this study provides guidance to the experts in ICT industry how to manage complicated nature of ambidexterity to survive successfully in today's highly competitive world.*

Key Words: Employee Ambidexterity, Organizational Ambidexterity, Ability-enhancing HR practices, Employee Goal Orientation, Competitive Advantage.

1.Introduction

Ambidexterity has become an essential strategy for every firm to achieve CA in today's dynamic business environment (Hu, Dou & You, 2023; Pertusa-Ortega et al., 2020; Du & Chen, 2018). The inexorable expansion of globalization stimulated robust and injudicious competition, which force organization to advance their competencies and distinctive output via utilizing current resources along with exploring new ideas.

In 1976, Robert Duncan first time used a word "ambidexterity" in his original paper and affirmed that organizations should implement exploitation and exploration sequentially by varying structures with time. Later, James March (1991) claimed that an organization should explore new ideas and activities and exploit existing projects in a sequence. Both emphasized on sequential ambidexterity. However, the theory of ambidexterity believed at the simultaneous execute of explorative and exploitative activities not sequentially ambidexterity (Tushman & O'Reilly, 1996). This study has employed contextual approach of ambidexterity which offers employees to divide their

time for searching new ideas and utilizing existing competencies.

Ambidexterity has become hot topic for the researchers. Organizations should employ contextual approach of ambidexterity to increase their performance (Gibson & Birkinshaw, 2004). In addition, managers should permit employees to divide their tasks and time for both exploration and exploitation to compete in everchanging business climate (Schnellbacher & Heidenreich, 2020). According to Papachroni and Heracleous (2020), the conflict between the contrary nature of these two types of innovation should be manage well to avoid adverse results (Lubatkin, Simsek, Ling, & Veiga, 2006).

In the last decade, business models significantly transformed towards ambidexterity to gain CA (Jacobs & Maritz, 2020; Mehmood, Qureshi, & Hadi, 2019). The world's leading ambidextrous organization, such as IBM, Microsoft, Apple, Google, Amazon, and Samsung are flourishing due to right balance of exploration and exploitation (Andrejis, 2016). Rodriguez (2014) indicated that, Ericsson focused only on exploration and opened 100 plus research centers to enhance global mobile communication, but it failed due to overlooking already established project. Likewise, Nokia, Kodak, and Yahoo were also unsuccessful due to only exploitation-based policies. Therefore, ambidexterity has become imperative for organizational success and vigorous source to accomplish CA (Pangarso et al., 2020).

Several theoretical studies suggested that there is a need to design such framework that guide companies to maintain balance between two contradictory natures of innovation concurrently (Schnellbacher, Heidenreich, & Wald, 2019). However, Mom, Fourne and Jansen (2015) argued that HR bundles along with AMacts as facilitators of ambidexterity at employee-level and organizational-level. In addition, multilevel organizational researchers recommend that organizational context stimulates higher-level performance to achieve CA (Kim, 2019; Mom, Chang, Cholakova, & Jansen, 2018).

Research on the predecessors of OA is still in its embryonic stage (Venugopal, Krishnan, Kumar, & Upadhyayula, 2019). Prevailing research findings has shown a massive range of research that investigated only OA and ignored EM (Suh et al., 2019). Moreover, scholars paid less attention on EM and its precursors (Schnellbacher & Heidenreich, 2020; Schnellbacher et al., 2019; Swart, Turner, Rossenberg, & Kinnie, 2019). Likewise, the association of HR practices with AM and OA has been investigated by few researchers (Mu, Riel, & Schouteten, 2020; Zimmermann, Raisch, & Cardinal, 2018). This literature debate directs a scope of future research into the role of AHP as antecedent of EM and OA leading to outcome contruct i.e., CA (Yang & Yang, 2020; Ahammad, Glaister, & Junni, 2019). Consequently, the current study examined the role of AHP as a predictor of EA and OA.

Mom, Chang, Cholakova, and Jansen (2018) highlighted a literature gap to study the indirect role of cognitive factors between AHR and EA. There is a dire need to establish an indirect relation via employees' cognitive abilities to achieve EA (Kaupila, 2018; Lee & Meyer-Doyle, 2017; Hoeksema, 2017). Accordingly, this study has chosen EGO as a cognitive factor and establish the mediating relationship. Researchers of ambidexterity also stressed on probing role of ambidextrous leader as a facilitator to minimize tension of ambidexterity (Watson & Cromarty, 2016). Previous research studies

(Kassotaki, 2019: Luo, Zheng, Ji, & Liang, 2018**;** Rosing et al., 2011; 2016; Mom et al. 2015) suggested that future scholars should explore the supporting role of AMto enhance EA. There is also scarce understanding regarding positive relationship of OA with CA (Jurksiene & Pundziene, 2016). This study has distinguished the moderating of AM along with direct connection between OA and CA. It further provides a novel vision into the ambidexterity literature via validating a unique multilevel model augment the existing literature.

2. Theoretical background and hypothesis

There is a dire need of practical understanding of precursors and consequences of EA and OA. The current study model is based on theory of ambidexterity (March, 1991) and AMO theory (Appelbaum, 2000) to underpin the logic explained in figure 1. There is total seven constructs used in the model: (1) AHP exogenous variable, (2) EGO mediating variable, (3) EA mediating variable, (4) OA mediating variable, (5) AM moderating variable, (6) OHP moderating variable, and (7) CA endogenous variable.

2.1 AHP and EGO

AHP builds and establish constructive outcomes for the organization (Appelbaum et al., 2000). Previous literature reveals that these HR practices facilitate employees to achieve strategic goals like EA, OA, and CA (Wright & McMahan, 2011). According to Li, Pak, Kim and Li (2016) AHP namely selective hiring, training, and job enlargement employ as a significant tool to develop employees' behavior to achieve distinct goals. These practices are prominent contributor to EGO through expansion in knowledge, skills, and behaviors (Bouwmans, Runhaar, Wesselink & Mulder, 2018; Chuang et al., 2013). Recent research studies investigated these three components of AHPs as a predictor of the EGO (Mom, Chang, Cholakova & Jansen, 2018). Goals act as a catalyst to stimulate EA (Colquitt & Simmering, 1998). The above arguments in the literature proposed following hypothesis.

Hypothesis 1: AHP *has a positive association with EGO.*

2.2 AHP and EA

Research demonstrated that AHPs established organizational context to facilitate employees' simultaneous involvement in both exploitative and explorative innovation via promoting their abilities and skills (Patel et al.,2013). After selective hiring, provision of training and job enlargement opportunities by the organizations will leads employees towards ambidextrous behavior (Veld & Caniëls, 2016). According to Nicholson, Khan, Akhtar and Tarba (2020) a positive and significant relationship exist between AHP and EA. In addition, employees have to fulfill the concurrent demand of both exploitative and explorative activities. These AHPs helps employees to cope with this challenge and increases ambidexterity at employee and organizational level (Yu, Gudargan & Chin, 2018; Garaus et al., 2016). To support above argument, various studies in the literature empirically validated positive impact of AHP on the EA (Junni et al., 2015; Gibson & Birkinshaw, 2004; Lengnick-Hal, 2003). Following hypothesis has been generated based on above literature discussion.

Hypothesis 2: *AHP has positive association with EM.*

2.3 EGO and EM

Hoeksema (2017) highlighted ambidexterity as a learning phenomenon in which high goal-oriented employees facilitates the employee ambidexterity. These employees always learn new things and set goals in their life. Their creative mind set helps them to accomplish simultaneous success of the exploitation and exploration (Gong, Kim, Zhu & Lee, 2013; Weisberg, 1999). Innovation has been endorsed as a renowned outcome of the EGO in the existing literature (Hoeksema, 2017; Runhaar, Sanders & Yang, 2010; Gong, Huang & Frah, 2009; Gupta et al., 2006; Benner & Tushman, 2003). Moreover, scholars also emphasized to study cognitive skills like EGO as a predecessor of the EM. Therefore, this study has proposed following hypothesis.

Hypothesis 3: *EGO has positive influence on EM.*

2.4 AHP with OA

OA has recognized as important factor for enhancing organizational performance. Organization should harmonize its strategy with resources and capabilities, such as HR practices to gain OA (Raisch & Birkinshaw, 2008). AHP and MHP plays a leading role to boost up ambidexterity at organizational level. According to Giudice, Scuotto, Ballestra, and Pironti (2022) HR practices has positive and significant influence on organizational-level ambidexterity. This study formulates following hypotheses.

Hypothesis 4: *AHP has positive relationship with OA.*

2.5 AHP with CA

Previous literature demonstrated that HR practices including selective hiring, training, job enrichment, reward and benefits, participation in decision making are significant predictors of the organization by generating CA (Amarakoon et al., 2018; Agarwal et al., 2017; Xiu et al., 2017; Huselid, 1995). These practices build employees skills and abilities to facilitates balanced innovation and ultimately gain CA. Scholars recommended HR practices as a fundamental success factor to increase organizational performance that leads to CA (Hoon et al., 2019). Digitization shapes HRP practices in such a manner that helps organization to gain CA globally (Vrontis et al., 2021). AHP and MHP has been recognized as significant driver of the CA. Therefore, following hypothesis are generated.

Hypothesis 5: *There is a positive connection between AHP and CA.*

2.6 EA and OA

Ambidexterity has become challenge because of its contradictory nature between exploitation and exploration innovation (Chang & Hughes, 2012). These two are completely opposite in logic, like exploitation focus on already existing systems while exploration emphasis on new and innovative plans. According to Caniels and Veld (2016) employees should be expert of implementing these conflicting structures of the innovation that will contribute to the OA. Ambidextrous organizations encourage these employees and provide such opportunities that engage them in both types of activities (Mom, Chang, Cholakova & Jansen, 2018; Zimmermann, Raisch & Birkinshaw, 2015). Scholars identified EA as a predictor of the OA and positive significant relationship exist between them (Pertusa-Ortega et al., 2020; Veld & Caniëls, 2016). Succeeding researchers also established a meaningful association between two-levels of ambidexterity (Li et al., 2015; Mom et al., 2019; Prieto-Pastor & Martin-Perez, 2015 Prieto-Pastor & Martin-Perez,

2015). The crux of above-mentioned literature leads us to develop following hypothesis.
Hypothesis 6: *EM has direct positive connection with OA.*

2.7 OA and CA

For the last few years, OA has become a successful tool to survive and gain CA in today's ever-changing environment (Mom et al., 2018; Preda, 2014; Anderson, Potočnik, & Zhou, 2014; Chinedu, Obiageli & Onyinye, 2016). OA proved as a robust antecedent of the CA through proper management of the exploitation and exploration. The abilities of the organizations to cope to the tension raised from opposing nature of innovation effects their CA (Atuahene-Gima, 2005). According to Wang (2014) organizations can achieve CA through unique characteristics via implementing ambidexterity.

Previous studies reveal that organizations concentrated on new ideas and resources and utilizing existing ones simultaneously can gain CA (Anning-Dorson, 2018; Preda, 2014). In addition, elusive assets like EA help organization to create a CA. This leads to following hypothesis.

Hypothesis 7: *OA has a positive association with a CA.*

2.8 EGO as a mediator

Scientists and research scholars of organizational psychology and organizational behavior Kanfer (1992) and Blau (1964) conceptualize that work environment constructs influence behaviors via their effect on individual-level characteristics, like cognitive and motivational attributes. Moreover, in reflection of expectancy theory (Vroom,1960) MHP like rewards, compensation, job enrichment etc., have indirect effect on EA via individual characteristic of EMO. In addition, AHP have strong influence indirect on employees' behaviors like EA via cognitive skills such as EGO (Jiang et al., 2013). According to Jiang, Lepak, Han, et al. (2012) specific set of HR practices direct employees' behavior by influencing individual attributes. This study has examined EGO and EMO as an individual attributes as a mediating variable and proposed following hypotheses.

Hypothesis 8: *The relationship between AHP and EM is mediated by EGO.*

2.9 EA as a mediator

The ability of the employees to pursue both exploitation and exploration innovation is conceptualized as EA (Gibson & Birkinshaw, 2014). According to multilevel research individual behaviors EA plays a distinct role in shaping organizational outcomes like OA. (Mom et al., 2018; Kozlowski & Chao, 2012). This upward relationship has been addressed in this study. Based on multilevel theory of strategic human resource management, set of AHP and MHP have indirect impact on the organizational level construct, OA via mediation of EA.

Hypothesis 9: *The relationship between AHP and OA is mediated by EM.*

2.10 OA as a mediator

Resource-Based View (Barney (1991) believe the perspective of an 'inside-out' view and recommended that interior resources are fundamental element to gain CA. Similarly, theory of ambidexterity (March, 1991) has basic premise that firm should meet demand of the existing business as well as being adaptive to the external changes in the environment can gain CA. Based on perspective of these theories, organizational internal resources have indirect impact on the CA via mediation of OA. Therefore,

following hypotheses has been developed.

Hypothesis 10: *The relationship between AHP and CA is mediated by OA.*

According to H8, H9, and H10, serial mediation H11 has been formulated.

Hypothesis 11: *EGO, EM, and OA sequentially mediate the relationship between AHP and CA.*

2.11 MA as a moderator

The attributes of the managers for accomplishment of the incremental and continuous changes are called managerial ambidexterity (Gibson & Birkinshaw, 2004). According to Mom and colleagues MA facilitates multiple tasks of employees' exploitation and exploration towards OA (Mom et al., 2009; 2015; 2018). The theory of ambidextrous leadership was proposed by (Rosing et al., 2011) which believes that great leaders accommodate according to dynamic circumstances (Bass, 1985). Literature emphasized and concluded strong influence of AM on the EA and organizational outcomes (Attar & Kalfaoglu, 2020; Nicholson, Khan, Akhtar & Tarba, 2020).

Hypothesis 12: *The relationship of EGO and EM is moderated by an AM.*

2.12 OHP as a moderator

Contingency theory believed that the relationship between EA and OA is dependent on OHP. The association between employees and organizational level depends on the HR practices (Fulmer & Ostroff, 2015; Jiang, Lepak, Hu, & Baer, 2012). OHP provide opportunities to the employees via involvement in policy formulating and goal making, dissemination of meaningful and timely information, and encouraging their ideas by higher authority boost up culture of creativity and innovation (Chen & Du, 2017). Following hypothesis has been formed in the light of prevailing literature:

Hypothesis 13: *OHP moderates the association of EM and OA.*

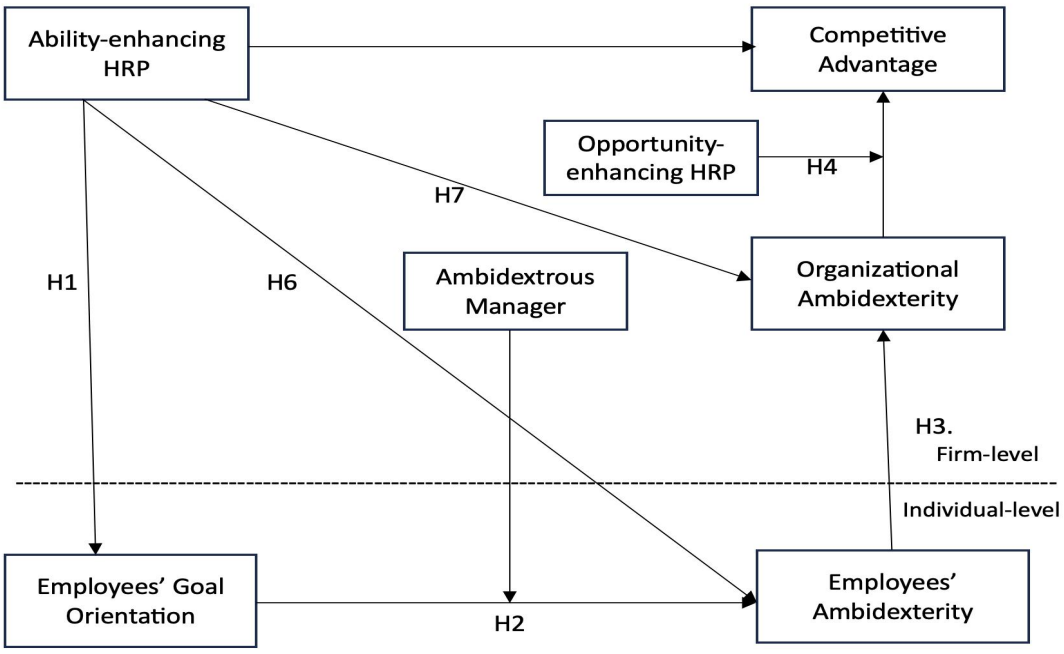

Figure 1 Conceptual Framework

3. Research Methodology

Research methodology is the strategy to collect, analyze and interpret data to draw some conclusion based on the proposed hypotheses (Sekaran, 2016 p.95; Zikmund, 2013 p.65). According to Saunders et al. (2007) research design is comprised of six different layers, current study follows them starting from positivism as a research philosophy, deductive approach, data gathering strategy i.e., time lag survey, quantitative as mono method of data analysis, cross-sectional time-horizon and questionnaire as a data collection instrument.

1.1 3.1 Research Philosophy

Positivism declares the social world in an objective way. Scientists conduct research as an objective analyst and ignore personal believes. The basic premise of this paradigm is that this world is based on the facts and figures which are control by stable forces of "cause and effect" (Marczyk, DeMatteo & Festinger, 2005). According to Elbaz, Agag and Alkathiri (2018) influence of one variable on another has been in the positivism. Thus, current study has used positivism philosophy along with applying deductive approach to analyze the interaction between variables.

1.2 3.2 Deductive Approach

The conceptual model is based on theory of ambidexterity along with supporting theories like resource-based view, social exchange theory. Deductive approach believes on testing already established theory, developing hypothesis, collecting and analyzing empirical data, and drawing some conclusion to revise the theory (Nola & Sankey, 2007). This approach has been widely used to collect quantitative data regarding attitudes, behaviors, and other defined subjective variables (Ghadi & Mohammad, 2012). Quantitative data collection method is considered as more reliable and authentic (Devault et al., 2020). Therefore, according of the descriptive nature of conceptual model, research questions, and objectives, deductive approach has been implemented. Previous studies on ambidexterity also used quantitative methods for data collection and analysis (Ortega & Azorin,2020; Partanen, Kohtamaki, Patel &Parida,2020; Iborra, Safon & Dolz,2020; Wamba, Dubey, Gunasekaran & Akter,2020; Fourne, Rosenbusch, Heyden & Jansen,2019).

1.3 3.3 Time-lag Survey Design

Time-lag survey design has been used to remove biasedness from the data. Participants were contacted in two different points in time to get the long-term understanding and impact of variables. This study has used two different questionnaires according to the two levels of the organizations. First, data of organizational-level variables were collected such as., AHP, OHP, AM, OA, and CA. Whereas, data of the employees' variables such as EGO, and EA were gathered via second questionnaire.

During the first-time lag (T1), top management provided data regarding AHP, and OHP while, employees provided responded to the questions of EGO. Later, after three weeks, researcher collected data from same respondents during second-time lag (T2). Top management reported their answers related to AM, OA and CA, and employees reported answers related to EA.

1.4 3.4 *Population and Sampling Design*

The target population for this study is ICT industry in Pakistan. Researcher has used multi-stage sampling technique due to presence of the multiple stages in the population as portrays in Figure 2. Researcher classified software companies into 5 groups as a stratum based on cities: Karachi, Islamabad, Lahore, Rawalpindi, and Peshawar and other small cities. In addition, these startas are further divided into two groups public and private software companies via proportionate stratified sampling and then random sampling was applied to collect data from both managers and employees.

The study has sample size of 600 respondents. The target population software companies in Pakistan have of 120,000 employees. After applying 95% confidence level formula, sample size of this population is 383 which is less than 600 (Israel, 1992). Correspondingly, least cut-off number for sample size in SEM is 5 participants for each variable i.e., 485 for current study, again less than 600 (Anderson & Gerbing, 1998; Hair et al.,2010). The sample size of this study fulfilled requirement of many other researchers, who recommended 200 sample size for statistical data analysis (Kline, 1998; Garver & Mentzer, 1999).

1.5 3.5 *Unit of analysis*

The unit of analysis of this study comprised of both employees and top management with a ratio of 1:5 (1 senior manager: 5 employees). 800 questionnaires were distributed to all respondents, 600 returned which includes 500 employees and 100 managers with a response rate of 75%.

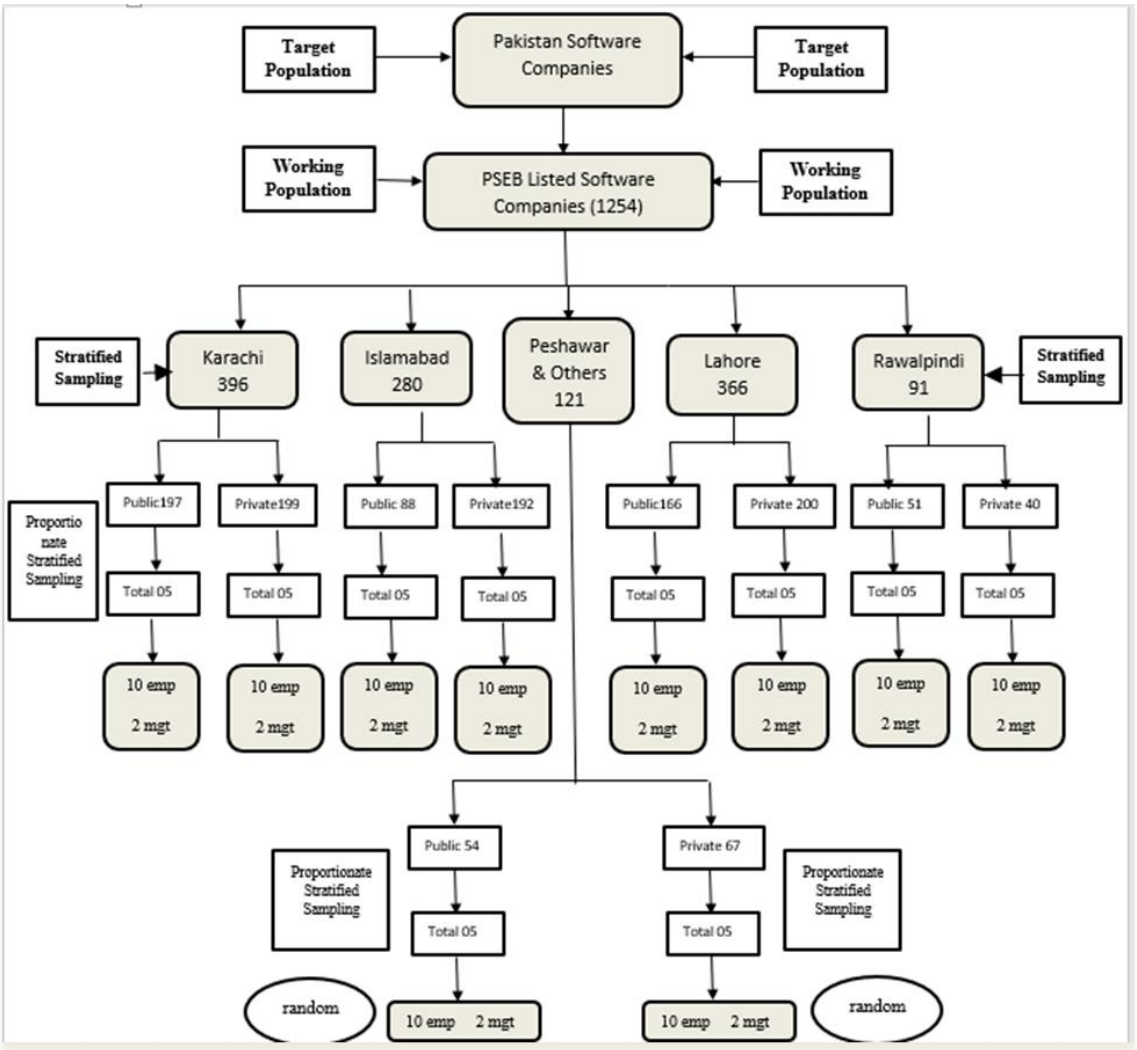

Figure 2 Multistage Stratified Sampling

1.6 3.6 Measurements

The measures of all the constructs a 7-point Likert scale ranging from 1, "strongly disagree," to 7, "strongly agree" was used. The 26-points scale of AHP, and 8-points scale of OHP developed by (Sun et al., 2007; Boxall, 2007; Wright ,2003; Hackman &Oldham, 1976) were used in current study. Sample item of the AHP is "extensive training programs are provided to the employees, and OHP is "employees in our firm are often asked to participate in decisions". The Cronbach's alpha value of both AHP was α=.85, and OHP was α=.833 met required criteria (α=.70) (Hair, Anderson, Tatham, & Black, 1998). The 19-points scale was used to measure EGO, developed by Van, Yperen and Janssen (2002). The Cronbach's alpha value for EGO was α=. 76.

Table 1

Population and Sampling Design

Population	Working population	Sample (Multi-stage Stratified Proportionate Sampling)	Total Sample

							Size
Software Companies of Pakistan	Pakistan Software Export Board (PSEB) listed Software Companies (Total Companies = 1254)	Karachi (396)	Public Companies (197)	Five software houses	2 managers 10 employees	120	Total number of employees = 600
			Private Companies (199)	Five software houses	2 managers 10 employees		
		Islamabad (280)	Public Companies (88)	Five software houses	2 managers 10 employees	120	
			Private Companies (192)	Five software houses	2 managers 10 employees		
		Lahore (366)	Public Companies (166)	Five software houses	2 managers 10 employees	120	
			Private Companies (200)	Five software houses	2 managers 10 employees		
		Rawalpindi (91)	Public Companies (51)	Five software houses	2 managers 10 employees	120	
			Private Companies (40)	Five software houses	2 managers 10 employee		

					s		
		Peshawar & Other Small Cities (121)	Public Companies (54)	Five software houses	2 managers 10 employees	120	
			Private Companies (67)	Five software houses	2 managers 10 employees		

EA was measured using the 14-items scale invented by Jansen et al, in 2006. A sample item includes "we invent new products and services". The Cronbach's alpha value for EA was α=. 97 above than required criteria. The 6-points scale of the OA was invented by Gibson and Birkinshaw (2004). A sample item includes "The management systems in this organization work coherently to support the overall objectives of this organization." Moreover, Cronbach's alpha value for OA was α=. 93. The 14- points scale of MA at the managerial level was developed by Mom, Bosch & Volberda in 2009. The Cronbach's alpha value for MA was α=. 74. This study has used 8-items standardized questionnaire developed by Li and Zhou (2010) based on Porter (1985), Song and Perry (1997), and Narver and Slater (1990). The Cronbach's alpha value for CA was α=. 81. A sample question is "we constantly offer overall differential advantage".

4. Results

4.1 Demographics and Descriptive analysis

This section provided a meticulous background of the respondents. Table 2 revealed that 68% participants were male and 39% were female. Whereas age of 39% respondents had age group between 21-30 years, 35% respondents had age group between 31-40 years, 20% respondents had age group between 41-50 years and 6% respondents had age group between 51-60 years. The marital status showed 63% respondents were married and 37% were unmarried. Education level showed 55% were bachelors, 36% were masters, and 9% were MS. Similarly, experience demographics showed majority respondents had experience of 1-20 years.

The skewness and kurtosis analysis were used to test normality of the data. The result meets standard values i.e., +2 to -2 (George & Mallery, 2010) and proved normality of the data. Likewise, mean values of the majority respondents were present between 4-5 on the Likert scale, which showed their agreeableness.

Table 2

Sample Descriptive

Demographic Variables	Codes	Frequency	%	Mean	S.D	Skewness	Kurtosis

	Male	68%	1.33	0.47	.70	-1.50
Gender	Female	32%				
	21-30 years	39%				
Age	31-40 years	35%	1.93	0.91	.63	-1.53
	41-50 years	20%				
	51-60 years	06%				
	Single	37%				
Marital Status	Married	63%	1.62	0.48	.53	-.54
	Bachelors	55%				
Qualification	Masters	36%	1.54	0.65	.80	-.45
	MPhill/MS	09%				
	PhD	00%				
	Less than 1 year	07%				
	1-5 years	17%				
Experience	6-10 years	24%	3.51	0.31	.07	-.73
	11-15 years	27%				
	16-20 years	19%				
	20 years & above	06%				

4.2 EFA and CFA

This section presents the item-wise loading against each construct of the study. EFA is used to place variables under specific factors logically and to remove the uncorrelated items. The result of KMO was .92 and Barletts test of sphericity was also significant. Table 2 explains the pattern matrix of all constructs. The model fit measures show all items are significantly loaded against the constructs. Table 3 describes model fit measures.

4.3 Validity Analysis

The study has used discriminant validity to assess the accuracy of the data, displays in Table 5. Different consultants and experts in the areas of the construct was contacted to determine the content validity. It has been concluded that no validity concerns have been found in the data and items. Therefore, model is fit for testing and determining relationship among constructs.

4.4 Hypothesis Testing

This study analyzed all hypotheses via SEM approach. Table 6 shows AHP has significant and positive impact on EGO (β =0.66), EM (β =0.66), and CA (β =0.46). Similarly, EGO has also significant relationship with EM (β =0.16) and EM is further significantly related to the OA (β =0.38). The association between OA and CA is also evidenced positive and significant (β =0.05). The sequential path model from AHP to CA consists of three mediators (M1= EGO, M2= EM, and M3=OA). Results revealed that the indirect effect (sequential mediation) of AHP on CA via M1, M2 and M3 was significant (β=.44). The structural path from AHP to EM via mediation of M1 i.e., EGO was significant and positive (β=.34). Furthermore, the structural path from AHP to OA in the presence of

M2 i.e., EM was also significant and positive (β=.44). However, direct effect from IV→ DV was also significant. Therefore, it has been concluded that all indirect effects were significant and proposed mediating hypothesis accepted partially.

Table 3

Pattern Matrix

Items	Factor								
	1	2	3	4	5	6	7	8	9
AHP1		.797							
AHP5		.728							
AHP6		.765							
AHP7		.843							
AHP8		.737							
AHP9		.719							
AHP10		.743							
AHP17		.924							
AHP18		.938							
AHP19		.885							
AHP20		.948							
AHP21		.914							
AHP22		.769							
AHP23		.824							
AHP24		.908							
AHP25		.851							
OHP1						.818			
OHP2						.869			
OHP3						.791			
OHP4						.797			
OHP5						.899			
OHP6						.836			
OHP7						.852			
OHP8						.749			
EMI1			.731						
EM2			.891						
EM3			.925						
EM4			.930						
EM5			.910						
EM6			.870						
EM7			.870						
EM8			.935						
EM13			.884						

EM14	.894				
EGO1		.723			
EGO3		.746			
EGO7		.752			
EGO9		.709			
EGO10		.886			
EGO12		.753			
EGO13		.729			
EGO14		.728			
EGO15		.701			
EGO16		.706			
EGO17		.733			
EGO18		.706			
OA1					.868
OA2					.849
OA3					.905
OA4					.855
OA5					.838
OA6					.778
CA1				.741	
CA3				.780	
CA4				.701	
CA5				.737	
CA6				.899	
CA7				.854	
CA8				.830	
MA2		.733			
MAI3		.760			
MAI4		.742			
MAI5		.751			
MAI8		.741			
MAI9		.725			
MA10		.802			
MA11		.704			
MA12		.766			
MA13		.849			
MA14		.720			

Table 4
Model Fit Measures

Indices	**Estimate**	**Threshold.**	**Interpretation**

CMIN	1683.62	
DF	1475	
CMIN/DF	1.41	Between 1 and 3
GFI	.858	>0.95
CFI	.982	>0.95
RMSEA	.012	<0.06
PCLOSE	.290	>0.05

Table 5
Discriminant Validity

Constructs	CR	AVE	MSV	1	2	3	4	5	6	7
AHP	.81	.68	.53	1						
OHP	.82	.60	.56	.497**	1					
EGO	.75	.69	.46	.678**	.384**	1				
EM	.75	.61	.53	.493**	.422**	468**	1			
OA	.81	.59	.40	.359**	.192**	277**	.559**	1		
MA	.76	.60	.64	.257**	.391**	241**	.285**	.039**	1	
CA	.80	.69	.60	312**	.240**	243**	.248**	.323*	.189**	1

Table 6
Hypothesis Testing

Relationship	Estimate	SE	P	LL at 95%CI	UL at 95%CI
EGO ← AHP	.66	.057	***	.438	.603
EM ← AHP	.18	.042	***	.263	.377
EM ← EGO	.16	.032	***	.058	.215
EM← MA	.02	.034	.032	.001	.140
OA ← EM	.38	.087	***	.577	.677
OA ← OHP	.13	.054	.022	.285	.489
CA← OA	.05	042	.005	.599	.754
CA ← AHP	.46	.032	***	.081	.115
EM← EGO← AHP	.34	.38	***	.270	.385
OA← EM← AHP	.44	.047	***	.361	.516
CA ← OA← EM← EGO← AHP	.48	.050	***	.392	.562

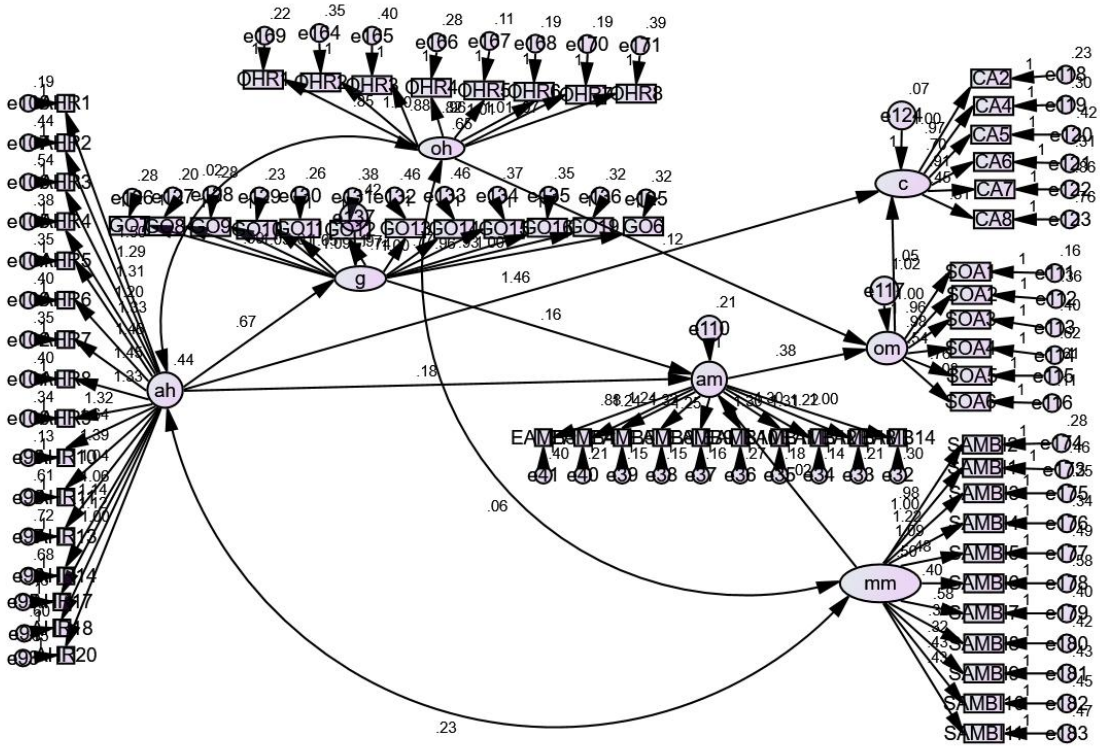

Figure 3 Structural Model

4.7 Moderation Analysis

Andrew F Hayes process model was used to measure the moderation of the AM between EGO and AM. Table 4.6 shows 27 % variance on EM by EGO and AM with significant P-value (P=0.000). The interaction term was also found significant (R2-change=.025, p<.001) and concluded that .25% variance explained on EGO and EM by AM as depicted in above graph.

The second moderator OHP between EM and OA. The result depicted 35 % variance on OA by EM and OHP with significant P-value (p=0.000). The interaction term was also found significant (R2-chng=.029, p<.001) and concluded that .029% variance explained on EM and OA by OHP as shown in graph.

Table 7
Moderation Analysis

R	R-sq	MSE	F	df1	df2	p
.5250	.2756	.4027	278.1081	3.0000	596.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	5.573	.0262	212.544	.0000	5.5216	5.6246
LAMB	.1268	.0411	3.0840	.0021	.0460	.2075
GO	.3971	.0481	8.2614	.0000	.3027	.4915
int_1	-.4225	.0210	-5.8454	.0000	-.1637	-.0814

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0250	34.1691	1.0000	596.0000	.0000

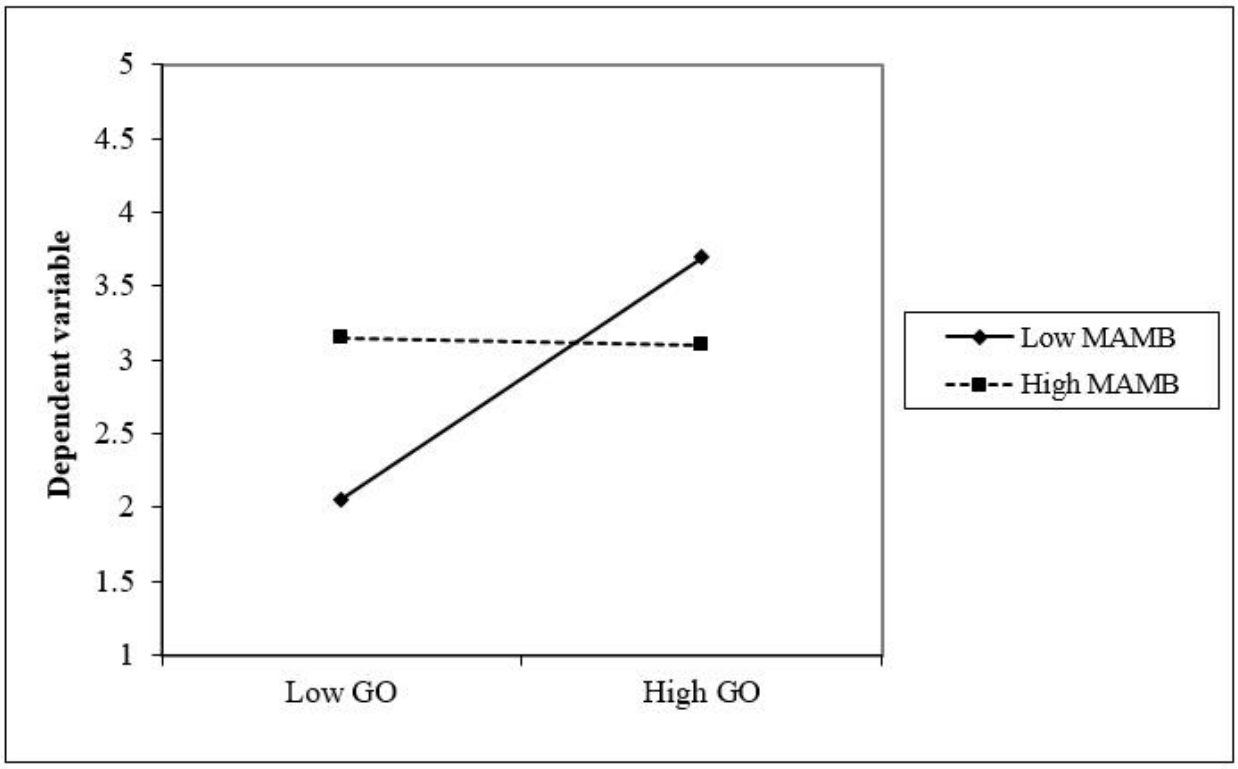

Figure 4 Moderation of MA between EGO and EM

Table 8
Moderation Analysis

R	R-sq	MSE	F	df1	df2	p
.5938	.3526	.3453	347.0254	3.0000	596.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	5.703	.0259	220.0430	.0000	5.6521	5.7539
OHR	.2720	.0526	5.1662	.0000	.1686	.3754
EAMB	.3281	.0546	6.0147	.0000	.2210	.4352
int_1	-.7591	.0174	-7.4341	.0000	-.1632	-.0950

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0295	55.2663	1.0000	596.0000	.0000

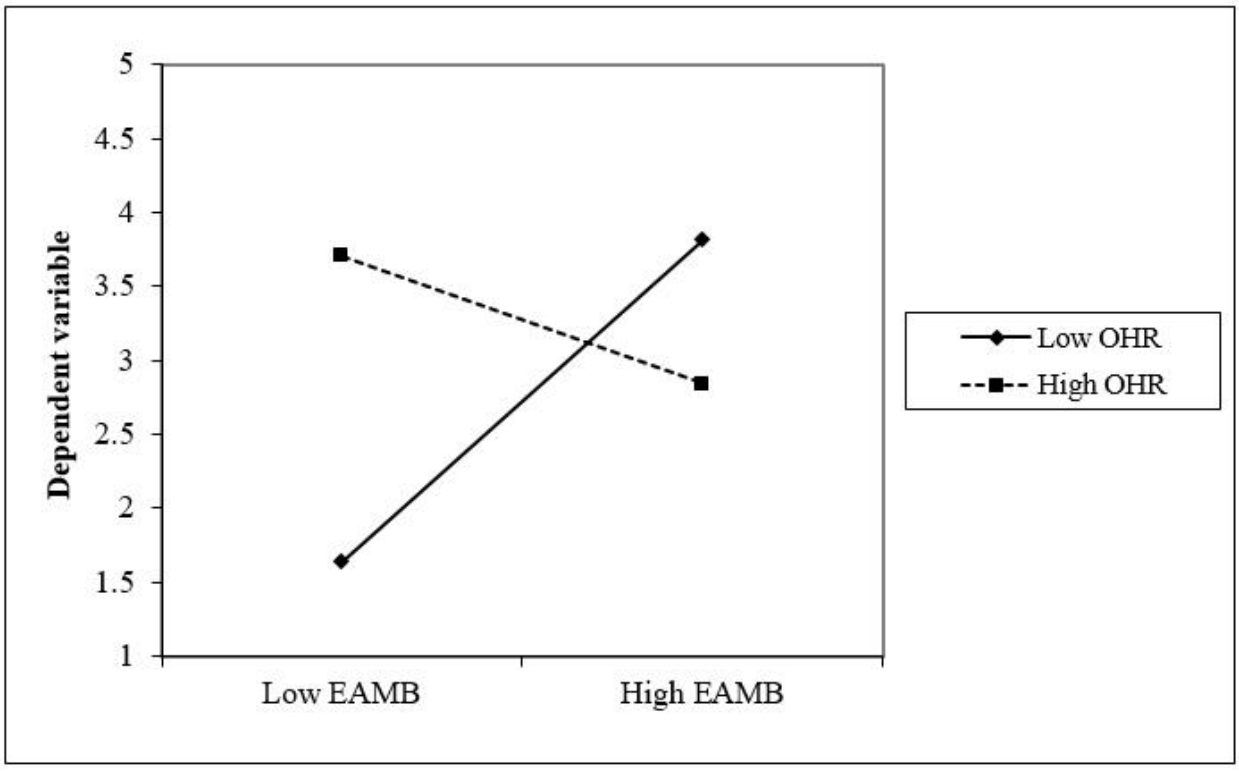

Figure 5 Moderation of MA between EGO and EM

5. The discussion and findings

The results of the hypotheses supported by theoretical justifications are presented in this section. The first and second assessment were based on first research question which states; The first hypothesis examined the effect of AHP on EGO. The SEM results confirmed the positive significant relationship between AHP and EGO ($\beta = 0.64$, $p < 0.001$). HR interventions include AHP stimulates employees' goal-oriented abilities

(Mom, Chang, Cholakova, & Jansen, 2018). According to Dumas, Schmidt, and Alexander (2016) thrill of setting and achieving goals direct software engineers towards innovative practices. The goal-setting theory by Locke (1996) empirically investigated that goal setting increased employees' performance and creativity. In light of some recent studies (Ahammad, Glaister, & Junni, 2019; Swart et al., 2019; Kim, 2019) contribution of AHP in enhancing goal-setting skills of the employees were found positive and significant. The second assumption of the study examined impact of AHP on EM and results indicate AHP positively facilitated EM ($\beta = 0.29$, $p < 0.001$). Previous literature argued that these HR practices are important predictors of the employee ambidexterity and empirically proved positive relationship between them (Nicholson, Khan, Akhtar, & Tarba, 2020; Panagopolous, Rapp, & Pimentel, 2020; Veld & Caniëls, 2016).

The next conjecture was related to second research question of the study. The EGO is positively linked with EM. The statistical results generated from path analysis of SEM also supported the positive relationship ($\beta = 0.13$, $p < 0.001$). Earlier scholars also supported positive association between EAand their goal orientation in three different service-sector firms (Hoesksema, 2017). The study (Chen & Liu, 2018) also found consistent results and suggested EGO as an important indicator of the EM.

The third research question emphasized on direct association of AHP with their outcomes via following hypotheses. AHP are positively connected with the OA. The result of the SEM established positive relationship ($\beta = 0.53$, $p < 0.001$) between these constructs. Scholars also confirmed similar results and authenticated this result (Yu, Gudargan, & Chin, 2018; Garaus et al., 2016). The next hypothesis stated that there is a positive impact of AHP on CA. The results supported this association and found AHP positively ($\beta = 0.52$, $p < 0.001$) contributed to enhance CA of the organization.

The fourth research question stressed on the linkage of ambidexterity between two different level i.e., employee-level and organizational-level. The hypothesis proposed that EM positively contributed to increase OA. Organization formulated such culture that allow employees to decide between conflicting nature of the exploration and exploitation and maintain balance according to situation to attain organizational goals effectively. Previous scholars focused more on organizational-level ambidexterity and ignored EA(Mu, Riel, & Schouteten, 2020; Schnellbacher & Heidenreich, 2020; Schnellbacher et al., 2019; Suh et al., 2019; Mom, Chang, Cholakova, & Jansen, 2018; Zimmermann, Raisch, & Cardinal, 2018;). This study has investigated and found positive connection between employees' ambidexterity and organisational ambidexterity ($\beta = 0.12$, $p < 0.001$).

The fifth research question of the study highlighted the last direct connection between OA and CA. According to Klein (2002) CA has been proved as an important predictor of the organizational long-term success in todays' dynamic world. However, OA plays impressive role in booting firm's CA via balancing existing and new innovative projects concurrently (Chinedu, Obiageli, & Onyinye, 2016). The SEM results founds strong positive relationship between these constructs ($\beta = 0.82$, $p < 0.001$). Scholars also found similar type of results via empirical data findings (Mom, Chang, Cholakova, & Jansen, 2018)

The sixth research question emphasized on the role of mediating constructs i.e., EGO between AHP and EM. The relationship between AHP and EM is mediated by EGO. The statical findings revealed that EGO partially mediates the relationship between AHP and EM ($\beta = 0.12$, $p < 0.001$). This result strengthened the basic premise of the underlying theory of ambidexterity (March, 1991). Therefore, it is inferred that consultant and managers in the software companies should focus on EGO to increase their ambidexterity. Therefore, this study investigated the mediation of EM and findings of the SEM showed partial but significant indirect relationship ($\beta = 0.27$, $p < 0.001$). These findings are consistent with previous theories.

Based on the previous literature, the next research question anticipated the mediating role of OA between AHP and CA. According to the researchers, OA act as an incredible booster of CA via its balancing nature between two types of innovation i.e., exploration and exploitation (Kuncore, TisnawatiSule, Prabowo, & Aziz, 2017). Additionally, this positive association is the basic theme of ambidexterity theory (March, 1991) and was confirmed by existing studies that OA is the undeniable predictor of CA (Preda, 2014; Kuncore, TisnawatiSule, Prabowo, & Aziz, 2017; Anning-Dorson, 2018). The findings of current study also found partial but significant indirect relationship ($\beta = 0.42$, $p < 0.001$) of OA between AHP and CA. Therefore, this study has filled literature gap and found significant mediation analysis. Consequently, practitioners can gain CAthrough OA in the presence of ability-enhancing HR bundles.

Based on previous direct and indirect relationships, the eight-research question highlighted sequential mediation via following hypothesis. EGO, EM and OA sequentially mediate the relationship between AHP and CA. The study found a significant and partial sequential relationship ($\beta = 0.48$, $p < 0.001$) of all the mediators (M1, M2, and M3).

The ninth research question of the study underlined on the role of moderating constructs. Primarily, first moderating variable managerial ambidexterity was analyzed via generation of the following hypothesis. AM moderates the relationship between EGO and EM. Researchers recommended that moderating role of AM should be empirically tested by upcoming researchers (Garcia et al., 2017). Abilities of the employees to explore new projects and exploit existing endeavors can be strengthen by the moderating role of the AM. Manager, act as an ambidextrous leader and role model to enhance ambidexterity at employee-level (Alghamdi, 2018). The result showed that an AMhas a positive moderating effect ($\beta = 0.57$, $p < 0.001$), and their presence strengthened the relationship between EGO and EM by 57%. The hypothesis was hence accepted and substantiated by existing theories (Venugopal, T.N, Kumar, 2018; Luo, Zheng, Ji, & Liang, 2018).

The last question demonstrated the moderating effect of OHP and formulated last hypothesis. OHP moderates the relationship of AM and OA. Preceding studies revealed that the relationship between EM and OA is contingent on the HR opportunities provided to employees such as participation in decision making and information sharing (Lepak, Liao, Chung, & Harden, 2006; Fulmer & Ostroff, 2015). Correspondingly, Fiedler's (1964) contingency theory authenticated this upward relationship between EM with OA depends upon OHP. The interactional term results showed a OHP moderate relationship

of AM and OA by 50% (β = 0.50, p < 0.001).

6. Practical Implications

The findings of the current work suggested that ICT companies should not only focus on structural and strategic changes but also emphasized on cultural and leadership shift to beat in a dynamic environment. According to the result, policy makers should implement HR practices to stimulate employees' creativity and skill enhancement. Furthermore, the study established positive connection of EGO with EA. Therefore, it is recommended that managers should focus to develop goal orientation of the employees by cultivating such organizational culture that supports innovation and risk taking, while maintaining current day-to-day projects.

Leader should wear multiple hats and be open to variety of tasks to encourage simultaneous execute of exploitation and exploration. The study suggested managers acts as a catalyst to stimulate employees' involvement in generating new ideas along with emphasizing on current tasks to achieve EA and OA. Because statistical results delineated a positive linkage of EA with OA. OA has been considered a building block of the CA in such a volatile environment.

To sum up, the role of HR bundles like selective hiring, training and development, job enlargement, job enrichment, and information sharing etc., have significant impact on nurturing employees' exploratory and exploitative skills. Ambidextrous traits of the managers can foster a culture that values and reward employees involve in both innovation and efficiency. By incorporating these practical implications, ICT industry can enhance ambidexterity not only at employee-level but managerial and OA can be accomplished to gain CA in the long run.

7. Limitations and Future Recommendations

Despite of aforementioned practical contributions, this study is subject to the following limitations. The sample of study focused on only one sector i.e., ICT industry, while results can vary across industries. This study has used only quantitative method, though mixed methodology is super important to get more comprehensive understanding about problem by having best of both quantitative and qualitative data worlds (Timans, 2019). Therefore, future researchers should examine ambidexterity across different industries via mixed method approach. Multi-level analysis was used in this study to examine the association of HR practices, ambidexterity along with mediators and moderators. Future studies may examine the other mediators and extend the ambidextrous role of the manager as a moderator.

8. Conclusion

The present study concluded that alignment of HR bundles with ambidextrous leadership and ambidexterity (employee-level, organizational-level) creates CA. HR practices plays significant role in fostering ambidexterity within organization. By effectively balancing exploration and exploitation, organizations can adapt to changing environment while maintaining efficiency. Software companies should focus to build employees' cognitive skills and motivate them towards ambidexterity for their long-term survival. According to result, AHP act as a robust force to develop employees' ability to adapt to changing environments, capitalize on new opportunities, and optimize existing

resources effectively.

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