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Psychological Empowerment on Creativity Among Employees of IT Sector: The Mediating Role of Creative Process Engagement and Intrinsic Motivation

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Abstract

Aim of this study was to investigate the relationships between perceived psychological empowerment, intrinsic motivation, creative process engagement and employees' creativity by testing a conceptual model of hypothesized relationships derived from the previous body of knowledge relating to these constructs. A non-experimental quantitative research design was applied using a sample of IT professionals in software houses Punjab, Pakistan (n = 281). Participants completed a mailed questionnaire that measured the perceived presence of the psychological empowerment, intrinsic motivation, creative process engagement and employees' creativity. By using the multiple regression analysis, found that there are significant positive relationships between psychological empowerment, intrinsic motivation, creative process engagement and employees' creativity. The mediating effects of creative process engagement and intrinsic motivation are confirmed between the relationship of psychological empowerment and employees' creativity, by using Barren and canny and Sobel's test.

Key words: Psychological empowerment; Creative process engagement; Intrinsic motivation; Employees' creativity; IT employee's; Software houses (Punjab) Pakistan

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INTRODUCTION

In the present economic recession, organizations are facing many problems in order to sustain competitive advantage on the worldwide level. Technology is not stable in today's environment, therefore, organizations need to reinvent and have to become more innovative in order to take competitive advantage optimally (Kahumuza & Schechter, 2008). Creativity can be a solution to this problem, as it enhances the effectiveness and organization's flexibility to win competitive advantage (Zegaier, 2012). Moreover, creativity helps in searching the innovative and improved procedures and ideas. Therefore, stress is being placed on creative capabilities of employees within an organization. But can creative process engagement increase the creativity of employees? If so, then how? Latest researches recommend many factors which must appear jointly for enhancing the creativity of employees (Shelley, 2005). These contain intrinsic motivation, psychological empowerment and abilities of employees. Further, several researches have exposed that creativity can be improved by creative process engagement. In literature, creativity belongs to idea generation, techniques of innovation process and a key point to obtain competitive edge (Oldham & Cummings, 2012).

One of the many fields is the technology sector where creativity studies and researches have revealed various different concepts. Employees know how they can tackle with the new challenges of the growth for a winning change (Zegaier, 2012). For this purpose, ongoing supports to the employees should be provided; upper management should also be supported in the context of information technology to improve creativity (Kruse, 2013). Many researchers examined the effect of employee's creativity, which mostly focuses on subject matter of employee's support where psychological empowerment was not focusing a lot by researchers (Afshari, 2011).

So, main purpose of this study is to construct and analyze the theories that give the link of psychological empowerment and creativity along with a few other variables. Two mediating variables also involved in this research such as, creative process engagement and intrinsic motivation. "The psychologically empowered state considered to be a cognitive state characterized by a sense of perceived control, perceptions of competence, and internalization of the goals and objectives of the organization" (Menon, 1999). It is proved by previous studies that psychological empowerment in turn; make huge involvement to employee's creativity (Wong, 2012). Employees who are being motivated and empowered by their leaders show better results as compared to other employees who are not motivated and empowered (Afshari, 2011). It was proved that employees who are more motivated and encouraged by their leaders to perform their goals in a creative environment are more creative (Hwang, 2012). Also intrinsic motivation positively relates to creativity of employees because by engaging employees in this creative process they become fully able to meet their goals in a good manner. This thing in turn influences the development of employees and makes employees more energetic. It was identified that when the follower is energized he will work happily (Shin, 2008). Evidence includes that Creativity is favorable for a range of motives. Creativity assists into considering things with innovative viewpoint and judge innovative and better procedure. Creativity can boost efficiency and effectiveness (Hauksdottir, 2011).

This study is aimed at to find out how creative workers in information technology can grow in a corporate world. The gap can also lead to unawareness, which may impart to the negligence of creative workers. How creativity could be improved in creative industries is a main concern for the leaders of the companies. So, the aim of this study is to build a link between these variables, for a wider range understanding of psychological empowerment facts, if they relate to creativity or not an effective way. It is also one of the aimed of this research that it will contribute towards the knowledge about creative employees in a way that benefits both employees and organizational performance.

Objectives of the study

(a) Main objectives

→To explore the relationship of psychological empowerment and employee creativity along with the mediating role of creative process engagement and intrinsic motivation in IT sector of Pakistan.

(b) Sub objectives

i. To investigate the relationship of psychological empowerment with creative process engagement, intrinsic motivation and employee's creativity.

ii. To investigate the relationship of creative process engagement and intrinsic motivation with employee's creativity.

iii. To investigate the mediating role of creative process engagement and intrinsic motivation between psychological empowerment and employee creativity.

1. LITERATURE REVIEW

1.1 Psychological Empowerment

The idea of empowerment has come out in 1980 at the place of work and gained a huge concentration from education and business society because, it can be implemented in overall management and sector performance (Lashley, 1999). Bowen & Lower (1995), explained empowerment by utilizing four qualities: a) information regarding managerial performance; b) rewards supported on organizational performance; c) knowledge which facilitate to recognize and contribute to managerial performance; d) authority to make choices which manipulate organizational trend and work dealings. Furthermore, Kanter (1979) affirmed that empowerment results from delegation, from reducing hierarchical level and lastly from the employees' contribution. These philosophies affirmed that double benefits will be received by giving more control and authority towards employees. Empowerment can also be defined from two perspectives i.e. from a relational (Blau & Alba, 1982; Bacharach & Lawler, 1980) and from a more psychological perspective (Thomas & Velthouse, 1990, Spreitzer, 1995; Conger & Kanungo, 1988).

- Meaning individual experiences means when he/she believes that work is meaningful and has given greater responsibilities (Spreitzer, 1995). Wang & Lee (2009) was aimed to investigate the interactive result of psychological empowerment dimensions on job satisfaction and meaningfulness. Procedure of data collection was from employees of numerous organizations, inserting three-way interactions among the dimensions. The consequences present important impending for future theory development on psychological empowerment.
- Wong (2012) focused on query what makes life worthy because it is all about the human nature. In this regard, every human being has his out sets of thoughts that make his lives meaningful. Some people have said that the money makes them happy whereas the other believes in reputation. His finding was "the will to meaning" the key to living a worthy and fulfilling life regardless of private liking and situation.
- **Competence** Whereas, Spreitzer (1995) defined it as, an individual's feelings of self-efficacy or personal mastery that he/she can successfully accomplish a task. According to Bartram (2011) "Competencies mean a set of behaviors that are influential on the delivery of preferred consequences".

- **Self-determination** is a sense of choice in initiating and regulating one's actions (Deci, Connell, & Ryan, 1989). Whereas, Spreitzer (1995) defined it as, one's feelings of autonomy in making decisions in areas such as work methods, time, pace, and effort.
- **Impact** Whereas, Spreitzer (1995) defined it as, the degree to which an individual believes that his/her work makes a significant difference in achieving the purpose of the task, and the extent to which the individual believes that he or she can influence organizational outcomes.
- **Autonomy** is the capability to obtain blame of one's knowledge (Thanasoulas, 2000). Most of the times, when the schools are operated within a culture of accountability; autonomy and responsibility go side by side. Better autonomy in decision making belongs to set of courses, evaluations and supply distribution liability which in turn are connected with better student performance (Ikeda, 2011).This study revealed, when one should be allowed to override an individual's right to non-interference and when there were other more accurate prerogatives which can be secured on priority bases (Oshana, 2003). A formula which was made by many people is secured only when every one of them knows that he is smart enough to take the stand of one among others and sensibly describes each and every view of the query asked by other (Darwall, 2006).

1.2 Creative Process Engagement

Creativity: Creativity means a technique of ideas and a technique of considering and one's capability to find out, to imagine and to observe in innovative conducts. It takes in a procedure of thoughts and associated talent that a nation may be trained to apply in purposeful (Dahlberg, 2007). According to Dehlburg (2002) Creativity means capability to react adaptively to the desires for the latest advances and new products. It is fundamentally the skill to carry something new into subsistence.

Engagement: Not only takes in contribution but is also sensitively concerned with skill in which one discovers importance, pleasure or flow, engaging one's creative thoughts, terms and procedures to express creativity into new unique significant ways, form and structures of working in an organization can be said as creative process engagement (Dahlberg, 2007). One that creates improving attention of the bigger whole both as it is and as it is changing and results in activities that progressively provide the growing whole (Laberge, 2006). Sidky (2006) focused on gaining knowledge about root cause of the problem and finds the way of converting information of that problem into solution deeming fit to the requirements According to the Shalley and Simon (1991, 1966), an individual is basically engaged in activities i.e., problem identification, and information searching and idea generation.

- **Problem identification** is mostly time taking as the preliminarily stage. First of all, research query must be kept into the mind which is to be used to achieve the main goal, secondly the determination of the data which is required to initiate the plan and finally the utilization of the outcome (Escalada, 2009). Problem occurred whenever there is dissimilarity among what "ought to be" and what "to be"; among the imagination and the real state of affairs (Widdel, 2012).
- **Information searching:** During the process of brainstorming we only consider our genuine plans and ideas which we think easy to bring in practice. Sometimes it is also observed as crazy and rough ideas made by some people but proved very beneficial in the future. So we must not overlook the future applicability and availability of the ideas. There is a need to look all things in different ways without worrying about the quality outcome because if in business one is afraid to make decision then he can never think out of the box (Kirton, 2007).
- **Idea generation** technique has always been the most common interested research. Researchers always try to find out new ways and techniques to solve a problem. It provides a base and way for upcoming creativity sustained research by recognized idea generation techniques used by creative professionals (Scarlett R. Herring, 2009). It has been observed that there are various methods of idea generation but there is not sufficient work for their utilization and working (Bjorklund, 2010). This document investigated whether properly designed ideation benefits can enhance innovative outcome. By running two tests, which illustrated that benefits do have the ability to enhance idea development, validate the forecasts from the theoretical research (Toubia, 2006). Girotra (2009) it is not possible to generate new variety of productive ideas if one works individually rather than in a team.

1.3 Intrinsic Motivation

Motivation referred to one of the biggest factor which helps to improve satisfaction in the workplace. Intrinsic motivation helps to bring satisfaction and pleasure from participation and practice the work itself (Vallerand, 2007). Rely on Berlyne's theory; intrinsic motivation was defined as the "doing of an activity for its natural fulfillment rather than for some separate impact. When intrinsically motivated, an individual is shifted to act for the fun or task required rather than because of external items, demands or compensates" (Oudeyer, 2009).

Motivation belonged to reason that influence the attitude and insists individual to get ready. Intrinsic motivation is measured by individual's self-satisfaction, attention and happiness which differentiate by purposes, believes and set of actions. Mostly age matters a lot in this

matter. Motivation which is induced in children becomes inspiration in the future and gives better outcomes later on (Lai, 2011).

People that act intentionally belong to the class of inspiration which predicts that how people give weightier to their desires, and which also predicts a person's belief and attitude. If a person is conscious of his status in the society then the meaning of motivation for him will be the self-recognitions and wealth (Steven, 2004).

By getting support from the theory of Berlyne, this study described the approaches of different models explained in different studies. It has elaborated the need for compulsory approaches which are required for more improvements. Intrinsic motivation is a complicated tool to measure because it is qualitative approach (Pierre, 2008).

Since 30 years, there has been an extreme discussion on the consequences of external rewards on implicit inspiration. The response to this query seemed to rely on two qualities of a reward: management and details. Though many careers have utilized benefits to management actions with learners, sportsmen, and kids, but it appears that this very managing procedure has undermined implicit inspiration. Conversely, an informative concept of proficiency improved intrinsic motivation. Rewards are examined using the well-recognized Intellectual Assessment Concept (Wilson, 2008).

1.4 Employees' Creativity

Employees who were motivated and encouraged by their leaders and perform their goals in a creative environment are more creative (Hwang, 2012). Creativity referred to all to bring something new in order to respond to the changes and to meet the need of the existing organization. It also encourages the employees to work for the new goals (Dahlberg, 2013).

1.5 Hypothesis

H1: Psychological empowerment has positive relationship with creative process engagement.

H2: Psychological empowerment has positive relationship with intrinsic motivation.

H3: Psychological empowerment has positive relationship with employee's creativity.

H4: Creative process engagement has positive relationship with employee's creativity.

H5: Intrinsic motivation has positive relationship with employee's creativity.

H6: Creative process engagement mediates the relationship between psychological empowerment and employee creativity.

H7: Intrinsic motivation mediates the relationship between psychological empowerment and employee creativity.

2. THEORETICAL FRAMEWORK

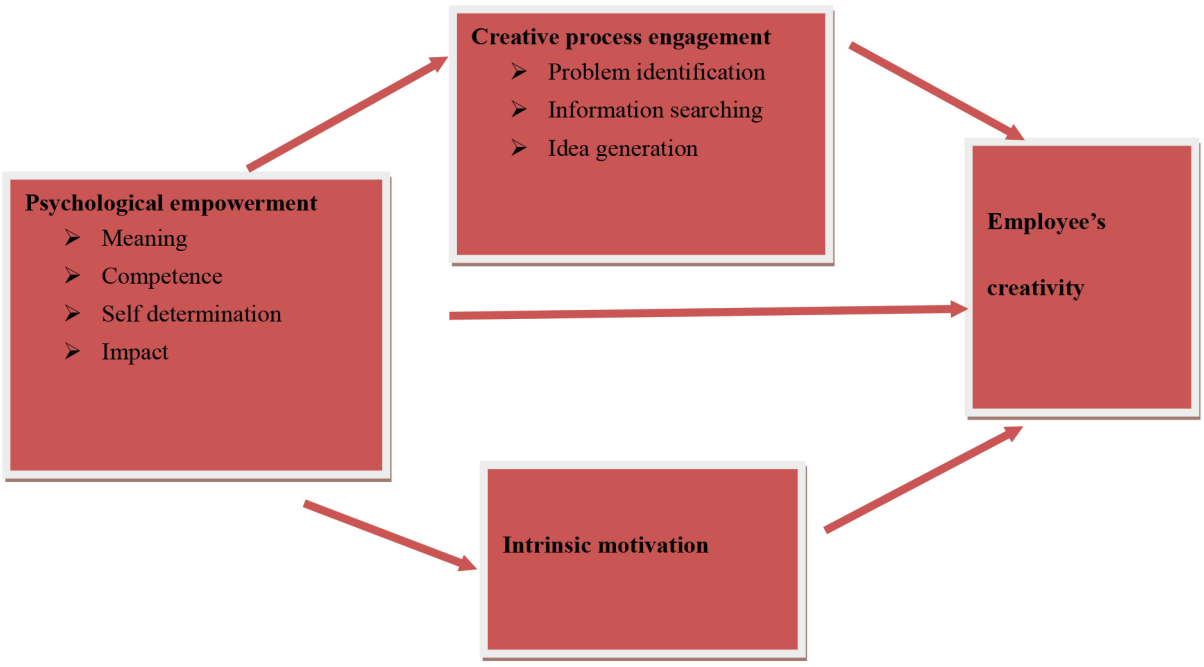


Figure 1
Conceptual Model

Exhibiting the Operational Variables; Psychological Empowerment, Creative Process Engagement, Intrinsic Motivation and Employee's Creativity

3. RESEARCH METHODOLOGY

3.1 Sampling Design

The targeted population for this study consists of the

software houses in Punjab, Pakistan. Total software houses of Punjab are 257 which were treated as clusters (see Appendix 1). As the sample size drawn for this study was 348 and average number of employees in one software house is 7. Therefore, 50 clusters were selected proportionately from each city in order to target 348 respondents. The total numbers of software houses operating in different cities were 257. From 257 software houses 50 sample software houses were drawn proportionately and detail is given below.

Table 1
Number of Software Houses in Punjab

s.#	Cities	No of software houses	Sample drawn
1	Daska	1	0
2	Faisalabad	4	1
3	Gujranwala	3	1
4	Lahore	207	39
5	Multan	3	1
6	Rawalpindi	36	7
7	Sialkot		1

3.2 Sample Size

The sample size will be drawn by taking help of Zikmund (2003),

$$n = (ZS/e)^2,$$

where, "n" is sample size, "e" is margin of error which is 0.05, "S" is the standard deviation value of dependent variable taken by conducting pilot study and "Z" value is 1.96 if e is 5%. Standard deviation was equal to 0.476 which was calculated after conducted pilot survey. And p value was .0025 by calculating the value we determine our estimated sample size of the study that was 348.

3.3 Data Collection

Web based mailed survey method was used to collect data for this study. Questionnaires was web based mailed questionnaire to collect data from the software houses (clusters) selected, because this method allowed itself to the compilation of huge amounts of information in a comparatively small period of time. As the survey was conducted over a geography that contained more than one city, the questionnaires were spread electronically. This enabled lessen of the expenses on the part of the investigator and time handiness also. The representatives were liable to inform the respondents' regarding the purpose of this study, importance of their participation, and the confidentiality of data; explaining to them that this study is being conducted for academic purposes only. Moreover, respondents were ensured that they were kept anonymous and some of the references were also used in order to deliver and fill out the questionnaires. All of the respondents in the study took the questionnaire very seriously as all of them know the importance of their response. Total 348 questionnaires were distributed, out of which 281 were completed and returned. But the useable responses among these were only 281 questionnaires. As the original sample size was 348, therefore, the response rate for this study was 80%.

4. DATA ANALYSIS

4.1 Descriptive Analysis

This study was based on a survey of 42 item; means scores of items range from 2.45-4.40 and the value of standard deviation ranges from 0.74-1.18. Responses of all items were measured on five point Likert scale ranging from 1 to 5 (see Exhibit: 4).

The descriptive summary for each construct is also given below:

Table 2
Descriptive Summary

	Minimum	Maximum	Mean	Std. deviation
Psychological empowerment	25.00	60.00	45.3523	8.63633
Creative process engagement	20.00	55.00	41.0036	7.22625
Intrinsic motivation	9.00	30.00	23.1792	4.51657
Employee creativity	20.00	60.00	43.5765	8.67109

Mean scores of each variable are within a range 23 to 45. It means that respondents are almost agreeing with the existence of all of these variables in our society. The value of standard deviation varies from 4.5 to 8.7.

4.2 Reliability Analysis

The Cronbach's Alpha for the whole questionnaire was 0.901. Whereas, the reliability of each variable when checked individually is given below:

Table 3
Reliablity of Measurement

Constructs	Valid N	Number of items	Cronbach's Alpha
Psychological empowerment	281	12	.861
Creative process engagement	281	11	.859
Intrinsic motivation	281	6	.908
Employee's creativity	281	13	.845

Table 3 shows the estimates value of Cronbach's alpha to examine the reliability and internal consistency of measures of the current sample (Kumar, 2010). Value of Cronbach's alpha is from 0.79-0.99 which means that every multi-item construct has high reliability, psychological empowerment (α=.861), creative process engagement (α=.859), intrinsic motivation (α=.908), employee's creativity (α=.845). High Cronbach's alpha for each item shows that there is high internal consistency.

Table 4
Summary of Results and Hypothesis

	Hypotheses	Results
H1	Psychological empowerment has positive relationship with the creative process engagement.	Supported
H2	Psychological empowerment has positive relationship with intrinsic motivation.	Supported
H3	Psychological empowerment has positive relationship with employee's creativity.	Supported
H4	Creative process engagement has positive relationship with employee's creativity.	Supported
H5	Intrinsic motivation has positive relationship with employee's creativity.	Supported

Table 5
Mediation Analysis in Case of Creative Process Engagement and Intrinsic Motivation

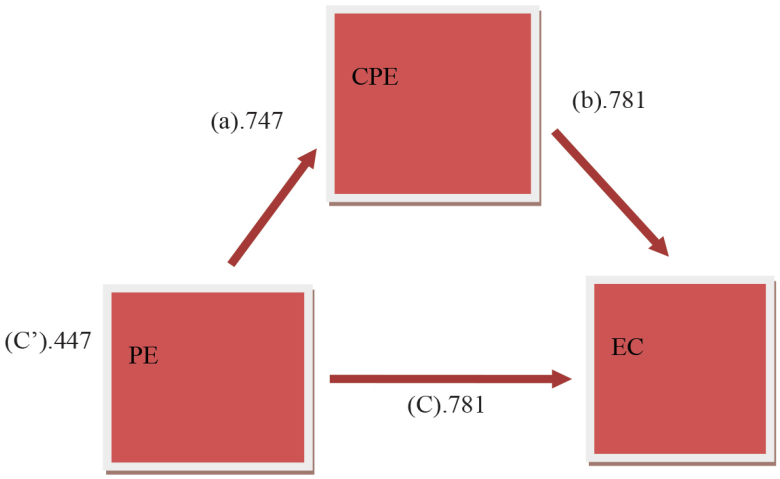
Hypothesis	DV	IV	Significance	*B*	*T*	R^2	Results
H6	EC	PE, CPE	0.000	.449	8.99	0.698	Supported
H7	EC	PE, IM	0.000	.524	11.22	0.683	Supported

H6 and H7 proposed that creative process engagement and intrinsic motivation mediate the association of psychological empowerment and employee's creativity, respectively and these were proved by adopting the procedure outlined by Baron and Kenny (1986). This procedure tests four conditions in order to check the mediation role of variables. Accordingly,

a) First, independent variables (i.e. psychological empowerment) influence the mediators (i.e. psychological empowerment and intrinsic motivation). That is found to be true for this study (i.e., path a).
b) Second, the change in the mediator significantly account for the variation in the dependent variable (i.e., Path b).
c) Third, relationship between the independent variables (i.e. psychological empowerment) and the dependent variable (i.e. employee's creativity) was checked and found to be significant for this study (i.e., path c).
d) Finally, the mediators (i.e. intrinsic motivation and creative process engagement) reduce the effects of antecedents (i.e. psychological empowerment) on dependent variable i.e. employee's creativity (path *c'),* which was also proved to be true as shown in the following diagram. Hence, H6 and H7 of this study were also supported.

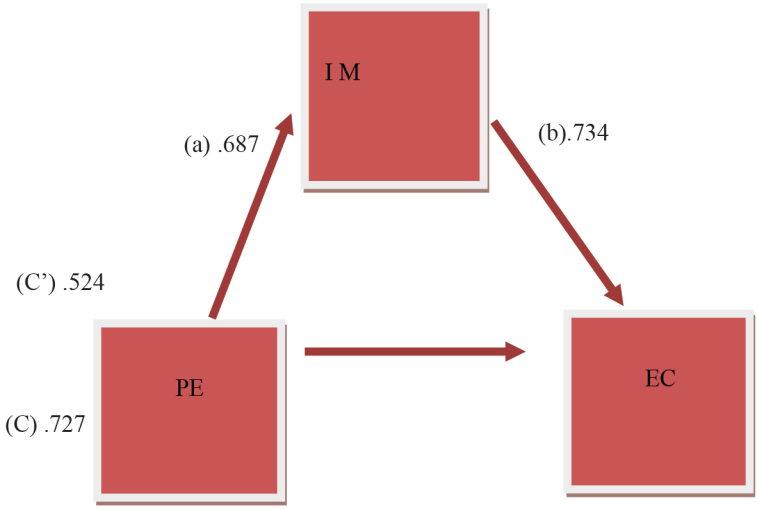
The following diagrams show diagrammatically the results of the proposed hypothesis of mediation: (B of each variable is mentioned)

Hypothesis 6:



Note. **PE=** psychological empowerment, **CPE=**creative process, engagement, **IM=** intrinsic motivation, **EC**=employee creativity

Hypothesis 7:



Note. **PE=** psychological empowerment, **CPE=**creative process, engagement, **IM=** intrinsic motivation, **EC**=employee creativity

If the direct effect of an independent variable on mediating variable, of mediating variable on the dependent variable and of an independent variable on dependent variable is significant then the mediation can be tested. To test the mediation of a variable according to the steps of Baron and Kenny (1986) independent variable and mediating variable they are entered into same regression as independent variables, if coefficients of both variables (i.e. independent and mediating) are significant then it shows the partial mediation between independent and dependent variables.

Multiple regression analysis was used to analyze the mediation of proposed mediation variables between independent and dependent variable. Results show that creative process engagement partially mediates between psychological empowerment and employee's creativity. Creative process engagement (β=0.447, p<0.005). Intrinsic motivation also partially mediates between psychological empowerment and employee's creativity (β=0.524, p<0.005).

H6: Creative process engagement has mediating link with psychological empowerment and employee creativity. The value of partial mediation is (β=0.447 that is less than the direct relation value β=0.781).

H7: Intrinsic motivation has mediating relationship with psychological empowerment and employee creativity. The value of partial mediation is (β=0.524 that is less than the direct relation value β=0.781). (See Exhibit: 7)

To reconfirm the existence of partial mediation we apply Sobel Test and the p value of the Sobel Test confirms the results of mediation analysis.

DISCUSSION

With respect to direct and mediating relationship of psychological empowerment, creative process engagement and employee's creativity, four hypotheses are developed in this study. The results purposed that there is a direct positive link between psychological empowerment and employee's creativity of IT professional in software houses of (Punjab) Pakistan. It had also been found that the creative professional assessed and empowered to fulfill his job requirement.

Another interesting finding of the study is that creative process engagement played significant role in determining the creativity of employees, which is according to previous research "the manager as a leader of the organization should try to remove the boundaries which limit the creativity of employees in the organization (Ahmadi, 2011). From the innovation perspective, IT professionals are not only expected to contribute towards the development of a nation, but also to face the challenge of doing more with less in the prevailing period of time.

These findings also reinforced the argument of Azlin and Ayob (2011) Managers should encourage stimulating their group by empowering them. This assumption is supported by the results of this study in that practice of creative process engagement of professional level employees, which are directly related to creativity of employees, was significantly linked with psychological empowerment of employees. Similarly, competence, meaning, self-determination and impact also affect the employee's creativity these should be considered for improving psychological empowerment of employees.

Results also indicate that the effect of mediating role of creative process engagement in transmitting the effect high towards employee's creativity was more significant as compared to psychological empowerment. This result consistence with the finding of Zhang and Bartol (2010)

Who found that creative process engagement influences the employee's creativity greater than psychological empowerment, Creative employees are considered to be a key player to achieve institutional goals

and are viewed the most valuable assets of organizations. Therefore, it is important to develop the empowerment of employees in order to gain increased employees and organizational performance that may lead to win sustainable competitive advantage.

CONCLUSION

This individual level research into empowerment-creativity relationship has made important theoretical and empirical contribution to the literature of employee's creativity in a non-western information technology context. The empirical evidence has provided support of employee creativity and psychological empowerment in the context of IT sector of Pakistan, whereby, employee's psychological empowerment has an influence on their creativity. The results of this study highlight the significance of implementation of psychological empowerment on employee creativity. Lastly, despite many cultural differences, the study gives support to the application of western theories to an eastern and developing country' context.

RECOMMENDATIONS FOR FUTURE RESEARCH

This study has made an initial attempt to propose and test a model of employee creativity and psychological empowerment relationship in the information technology sector of Pakistan. In order to overcome the limitations of the study, further study is needed for few directions are given below.

First, as present study has only taken intrinsic motivation, future studies need to investigate extrinsic motivation, which might impact attitude, and creativity of employees in information technology sector of Pakistan. Second, although this study contributes to literature by investigation the mediating mechanism through creative process engagement and intrinsic motivation, to further understand the influence it is desirable for future studies to use other variables as mediator or moderators for example, trust, job satisfaction, perceived organizational support etc. In the light of the findings of this study, it is suggested that future research should explore the mediating role of job satisfaction and trust in psychological empowerment and employee's creativity link. To do so, the future research can adopt qualitative approach to get in depth understanding of the phenomenon.

To overcome the issue of generalizability, it is suggested to test the model in different culture, countries, gender, age and other biographical and demographical differences. Lastly, it is also recommended that future research should gather data on the independent and dependent variable from different sources and should compare the results.

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APPENDIX 1

Table
List of Software Houses in Punjab, Pakistan

Sr.#	Software houses	Cities	E-mail
1	Invincible Technologies (smc-Pvt) Ltd	Daska	www.invincibletec.com
2	Devine Tech	Faisalabad	www.devinetech.org.uk
3	Rapid Communications	Faisalabad	
4	Corporate General Solutions (Pvt) Ltd	Faisalabad	www.cgs.com.pk
5	Westend Business Solutions	Faisalabad	www.westendbusinesssolutions.com
6	Softshack (Pvt) Ltd	Gujranwala	www.softshack.com.pk
7	Technikos Solutions	Gujranwala	www.technikos-solutions.com
8	PMS (Pvt) Ltd	Gujranwala	www.pms.net.pk
9	Expert Systems (Pvt) Ltd	Lahore	www.expertsystem.net
10	Adamsoft International (Pvt) Ltd	Lahore	www.adamsoftintl.com
11	Power Soft Nineteen (Pvt) Ltd	Lahore	www.powersoft19.com
12	eTechsol.com	Lahore	www.etechsol.com
13	Title Developments (Pvt) Ltd	Lahore	www.titlewebsolutions.com
14	Premium Telecom (Pvt) Ltd	Lahore	www.skylinkmedia.com
15	eWorx International (Pvt) Ltd	Lahore	www.eworxintl.com
16	Techlogix Pakistan (Pvt) Ltd	Lahore	www.techlogix.com
17	Convergence Business Systems	Lahore	www.convergence.pk
18	SigmaTec Solutions (Pvt) Ltd	Lahore	www.sigmatec.com.pk
19	Sofizar (Pvt) Ltd	Lahore	www.sofizar.com
20	Warid Telecom (Pvt) Ltd	Lahore	www.waridtel.com
21	Global IT Vision (Pvt) Ltd	Lahore	www.gitv.pk
22	Vital Management Services (Pvt) Ltd	Lahore	www.vms.com.pk
23	Hawk Telecom (Pvt) Ltd	Lahore	www.hawktechno.com
24	Avanceon	Lahore	www.avanceon.com
25	Call Biz	Lahore	www.callbizcenter.com
26	Mantaq Systems (Pvt) Ltd	Lahore	www.mantaq.com
27	VahZay (Pvt) Ltd	Lahore	www.vahzay.com
28	Nyns-4 International	Lahore	
29	Sabri Technologies	Lahore	www.sabritech.com
30	FiveRivers Technologies (Pvt) Ltd	Lahore	www.fivereriverstech.com
31	Virtual Communications	Lahore	www.virtualcommunications.org
32	Brisun Technologies	Lahore	www.brisuntech.com

To be continued

Continued

Sr.#	Software houses	Cities	E-mail
33	Kabot Intl (Pvt) Ltd	Lahore	www.kabotintl.com
34	KomKonsult (Pvt) Ltd	Lahore	www.komkonsult.com
35	Nextage Technologies (Pvt) Ltd	Lahore	www.nextagetech.com
36	Nine Alpha Global Computing (Pvt) Ltd	Lahore	www.intagleo.co.uk
37	Al-Khawarizmi Institute of Computer Science	Lahore	www.kics.edu.pk
38	Idream Systems (Pvt) Ltd	Lahore	www.vonemm.com
39	Solution Heights	Lahore	www.solutionheights.com
40	Oval Com	Lahore	www.ovalcom.com
41	Suits Me	Lahore	www.suitsmeonline.com
42	DeAxis Technologies	Lahore	www.deaxis.net
43	Flight House	Lahore	www.flighthouseuk.com
44	National Engineers Training Services (NETS)	Lahore	www.nets.edu.pk
45	Flying Technologies (Pvt) Ltd	Lahore	www.flyingtechs.com
46	Salim Murad & Company (Pvt) Ltd	Lahore	www.timtash.com
47	Sky BPO (Pvt) Ltd	Lahore	www.skybpo.com
48	Aedesign (Pvt) Ltd	Lahore	www.aedesign.com.pk
49	Kaya Systems (Pvt) Ltd	Lahore	www.binary.sys.com
50	Rolustech	Lahore	www.rolustech.com
51	SAS Enterprises	Lahore	www.sasepak.com
52	Clear Correct Pakistan (Pvt) Ltd	Lahore	www.clearcorrect.com
53	Cando Technologies	Lahore	www.candotech.com
54	Annzo Corporation	Lahore	
55	Avise Business Solutions	Lahore	www.avisebusiness.com
56	International Turnkey Systems (Pvt) Ltd	Lahore	www.its.ws
57	GeniTeam Solutions	Lahore	www.geniteam.com
58	Navigation & Communication Solutions (PVT) LTD.	Lahore	
59	Macrosoft Pakistan (SMC-Pvt) Ltd	Lahore	www.macrosoftpakistan.com
60	Put It Out	Lahore	www.putitout.co.uk
61	Naxertech (Pvt) Ltd.	Lahore	www.naxertech.com
62	Interwood Mobel (Pvt) Ltd	Lahore	
62	Visionary Integrations (Pvt) Ltd	Lahore	www.visionaryintegrations.com
63	Everest Consulting	Lahore	
64	Anahata Solutions	Lahore	www.anahatasolutions.com
65	OSM Invention	Lahore	
66	Hosting House	Lahore	
67	Arham Soft (Pvt)Ltd	Lahore	
68	Trans Resources	Lahore	
69	Velorium (Pvt) Ltd	Lahore	
70	Wiztec (Pvt) Ltd	Lahore	
71	Sport CC	Lahore	
72	Kinverg	Lahore	www.kinverg.com
73	Creative On	Lahore	
74	ICT Mentors	Lahore	
75	XcelSoft (Pvt) Ltd	Lahore	
76	Rimaun (Pvt) Ltd	Lahore	
77	KF Tech	Lahore	www.kftechpro.com
78	Media Barrel (Pvt) Ltd	Lahore	www.mediabarrel.com
79	Adept Technologies (Pvt) Ltd	Lahore	
80	Zimo ITS (Pvt) Ltd	Lahore	www.zimo-its.com
81	Remote Seat (Pvt) Ltd	Lahore	www.remoteseat.com
82	Open-Silicon Pakistan (Pvt) Ltd	Lahore	www.open-silicon.com
83	Globit Services (Pvt) Ltd	Lahore	
84	Off Road Studios	Lahore	www.offroadstudios.com
85	Orbi Soft	Lahore	www.orbisoftsolutions.com
86	Multi Care Business Solutions LLP (MCBS, LLP)	Lahore	
87	Incubator	Lahore	www.incubator.pk
88	Frok Tech	Lahore	www.forkparticle.com
89	Biz Hub (Pvt) Ltd	Lahore	www.bizhub.com.pk
90	Virtism	Lahore	www.virtism.com
91	Venexel Technologies (Pvt) Ltd	Lahore	www.venexel.com

To be continued

Continued

Sr.#	Software houses	Cities	E-mail
92	Services and Solutions Company (Pvt) Ltd	Lahore	
93	LINKdotNET Telecom Limited	Lahore	www.link.net.pk/english/default
94	Corvit Networks	Lahore	www.corvit.com
95	CureMD Pakistan (Pvt) Ltd	Lahore	www.curemd.com
96	Intech Process Automation (Pvt) Ltd	Lahore	www.intechww.com
97	TRG (Pvt) Ltd	Lahore	www.trgworld.com
98	MCB Bank Ltd	Lahore	www.mcb.com.pk
99	DWP Technologies (Pvt) Ltd	Lahore	www.dwp.com.pk
100	Future Now (Pvt) Ltd	Lahore	www.tfntech.com
101	Times Travel	Lahore	www.timestravel.com
102	Live Greeter	Lahore	www.livegreeter.com
103	Hira Software Solutions	Lahore	www.hirasoft.com
104	Smartrix Technologies	Lahore	www.smartrix.com
105	Vogue Vesture	Lahore	www.voguevesture.com
106	Intelligent Metering Systems (Pvt) Ltd	Lahore	www.intelmetering.com
107	Netrevelation Technologies (Pvt) Ltd	Lahore	www.netrevelation.se
108	Auctis.net	Lahore	
109	Softec Ventures (Pvt) Ltd	Lahore	www.softecventures.com
110	Innovative Marketing Company	Lahore	
111	Innovative (Pvt) Ltd	Lahore	www.innovative-pk.com
112	Systems Limited	Lahore	www.systemsltd.com
113	Xavor Pakistan (Pvt) Ltd	Lahore	www.xavor.com
114	NetSol Technologies Ltd	Lahore	www.netsoltech.com
115	Nextbridge (Pvt) Ltd	Lahore	www.nextbridge.pk
116	Softech Systems (Pvt) Ltd	Lahore	www.softech.com.pk
117	The Facts	Lahore	
118	Cybersoft (Pvt) Ltd	Lahore	www.csnainc.com
119	CAD CAM Centre	Lahore	www.cadcamcntr.net
120	Strategic Systems International	Lahore	www.ssidecisions.com
121	Accountancy Outsourcing Services	Lahore	www.aoserv.com
122	Autosoft Dynamics (Pvt) Ltd	Lahore	www.autosoftdynamics.com
123	Trisoft Technology (Pvt) Ltd	Lahore	www.etrisoft.com
124	Abacus Consulting Technology (Pvt) Ltd	Lahore	www.abacus-global.com
125	Descon Integrated Projects (Pvt) Ltd	Lahore	www.descon.com
126	Marriala Consultants	Lahore	www.marriala.net
127	Brain Storm (Pvt) Ltd	Lahore	www.brainstormworld.com
128	Imperial Soft (Pvt) Ltd	Lahore	www.imperialsoft.com.pk
129	InfoTech (Pvt) Ltd	Lahore	www.infotechgroup.com
130	Amos Global (Pvt) Ltd	Lahore	www.amos-global.com
131	LumenSoft Technologies (Pvt) Ltd	Lahore	www.lumensoft.biz
132	Shaukat Khanum Memorial Cancer Hospital & Research Centre	Lahore	www.shaukatkhanum.org.pk
133	Web Concepts (Pvt) Ltd	Lahore	www.wcpl.com.pk
134	Redmath (Pvt) Ltd	Lahore	www.redmath.com
135	Technosoft Solutions (Pvt) Ltd	Lahore	www.techno-soft.com
136	Virtual World (Pvt) Ltd	Lahore	www.trgworld.com
137	Northbay Solutions (Pvt) Ltd	Lahore	www.northbaysolutions.net
138	Confiz Limited	Lahore	www.confiz.com
139	Cinnova International	Lahore	www.cinnova.com
140	Ghost Software (Pvt) Ltd	Lahore	www.ghost-software.com
141	Ghost Maintenance (Pvt) Ltd	Lahore	www.ghost-maintenance.com
142	Nadpro	Lahore	www.nadpro.com
143	Tricastmedia Pakistan (Pvt) Ltd	Lahore	www.tricastservices.com
144	Mentor Graphics Pakistan Development (Pvt) Ltd	Lahore	www.mentor.com
145	Sensys (Pvt) Ltd	Lahore	www.sensys.com
146	Green Origin Consultancy Services (Pvt) Ltd	Lahore	www.greenorigin.co.uk
147	EWS (Pvt) Ltd	Lahore	www.ewsystemsinc.com
148	Vector Solutions Company	Lahore	
149	Arbisoft (Pvt) Ltd	Lahore	www.arbisoft.com
150	Dynamic Werx (Pvt) Ltd	Lahore	www.dwerx.com
151	Deeppixels	Lahore	www.deeppixels.com

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Sr.#	Software houses	Cities	E-mail
152	CTO 24/7 (Pvt) Ltd	Lahore	www.cto247.com
153	i2C Pakistan	Lahore	www.i2cinc.com
154	Imanami Pakistan (Pvt) Ltd	Lahore	www.imanami.com
155	Naseeb Online Services (Pvt) Ltd	Lahore	
156	Xismedia	Lahore	www.xismedia.com
157	Vopium Aktieselskab (Pvt) Ltd	Lahore	www.vopium.com
158	Mettoni Associates	Lahore	www.mettoni.com
159	Blue Technologies	Lahore	www.bluetechnologies.net
160	Zin Technologies (Pvt) Ltd	Lahore	www.zintechnologies.com
161	Business Technologies (Pvt) Ltd	Lahore	www.biztec.com.pk
162	Tkxel	Lahore	www.tkxel.com
162	Bitlogix (Pvt) Ltd	Lahore	www.ebitlogix.com
163	Kualitatem (Pvt) Ltd	Lahore	www.kualitatem.com
164	ComsoftPAK	Lahore	www.comsoftuae.com
165	Ovex Technologies Pakistan (Pvt) Ltd	Lahore	www.ovextech.com
166	Goldtime (Pvt) Ltd	Lahore	www.goldtimesolutions.com
167	Amigo Software (Pvt) Ltd	Lahore	www.amigo-software.com
168	Vision Telecom (Pvt) Ltd	Lahore	www.visiontelecom.com.pk
169	SSA Soft (Pvt) Ltd	Lahore	www.ssasoft.com
170	World Source	Lahore	
171	Tech Implement (Pvt) Ltd	Lahore	www.techimplement.com
172	Gameview Pakistan (Pvt) Ltd	Lahore	www.gamevstudios.com
173	Ascertia Pvt Ltd	Lahore	www.ascertia.com
174	Omni web Services	Lahore	www.omniwebservices.com
175	Azure Pakistan Outsourcing (Pvt) Ltd	Lahore	www.azure-global.com
176	Premlinx Pakistan (Pvt) Ltd	Lahore	www.premlinx.com
177	German IT Solutions (Pvt) Ltd	Lahore	www.g-it-s.com
178	CEPHIC	Lahore	www.cephic.com
179	Pure Logics	Lahore	www.purelogics.net
180	PITCO (Pvt) Ltd	Lahore	www.pitcopk.com
181	AGCN Pakistan (Pvt) Ltd	Lahore	
182	7 Vals	Lahore	www.7vals.com
183	Radius Interactive (Pvt) Ltd	Lahore	www.radiusinteractive.com
184	Ebryx (smc-Pvt) Ltd	Lahore	www.ebryx.com
185	Binarytech (Pvt) Ltd	Lahore	
186	Addvantum Innovative Technologies (Pvt) Ltd	Lahore	www.addvantum.com
187	Bilytica (Pvt) Ltd	Lahore	www.bilytica.com
188	Penguin Infomatics (Pvt) Ltd	Lahore	www.penguinitcs.com
189	Kaamil Soft	Lahore	www.kaamilsoft.com
190	Verscom Technologies (Pvt) Ltd	Lahore	
191	Todial Communication Systems (Pvt) Ltd	Lahore	www.todial.com
192	AR Systems	Lahore	
193	DGS (Pvt) Ltd	Lahore	www.dgsworld.com
194	Bytes Technologies	Lahore	www.bytestec.com
195	Crestar International	Lahore	
196	Renusoft (Pvt) Ltd	Lahore	www.renusoft.net
197	Xoho Tech	Lahore	
198	Ibex Global Solutions (Pvt) Ltd	Lahore	
199	ARK Solutions (Pvt) Ltd	Lahore	
200	Simolution (Pvt) Ltd	Lahore	www.simolution.com.pk
201	Enormit	Lahore	www.enormit.com
202	Getinn (Pvt) Ltd	Lahore	www.getinnltd.com
203	Red Signal	Lahore	www.redsignal.biz
204	Linez Technologies	Lahore	www.lineztechnologies.com
205	Re2qa (Pvt) Ltd	Lahore	www.rezqa.com
206	Gazambo (Pvt) LTd	Lahore	www.gazambo.com.pk
207	Techliance (Pvt) Ltd	Lahore	www.techliance.com
208	The Services Group	Lahore	
209	Karzansoft	Lahore	www.karzansoft.com
210	Soliton Health (Pvt) Ltd	Lahore	www.solitontechnologies.com

To be continued

Continued

Sr.#	Software houses	Cities	E-mail
211	Superior Connections (Pvt) Ltd	Lahore	www.superiorconnections.pk
212	Becnhmark	Lahore	www.benchmarkstudio.biz
213	Cybus E Sol (Pvt) Ltd	Lahore	www.cybussolutions.com
214	Unitech	Multan	
215	Institute of Professional Studies	Multan	
216	ICT Innovations	Multan	www.ictinnovations.com
217	Buraq Integrated Solutions	Rawalpindi	www.buraq.com
218	Uffaq Technologies (Pvt) Ltd	Rawalpindi	www.uffaq.com
219	Asia Software	Rawalpindi	www.asiasoftpk.com
220	Information Convergence Systems	Rawalpindi	www.infoconsys.com
221	Intelligentsia Software (Pvt) Ltd	Rawalpindi	www.intelligentsiasoftware.com
222	Alamgir Software International	Rawalpindi	www.alamgir-swi.com
223	Neo Web Services Provider	Rawalpindi	www.neowesservicesprovider.com
224	Yuztech	Rawalpindi	www.yuztech.com
225	RKSquare	Rawalpindi	
226	Aydin Solutions	Rawalpindi	
227	Right Hand Soft	Rawalpindi	
228	Wabwar	Rawalpindi	www.wabwar.com
229	Tarantula (Pvt) Ltd	Rawalpindi	
230	Union Mark (Pvt) Ltd	Rawalpindi	
231	Sky Tech	Rawalpindi	
232	Momentum Technologies	Rawalpindi	www.momentumpk.com
233	Outclick Labs	Rawalpindi	
234	WebsoftNet Technologies	Rawalpindi	www.websoftnet.com
235	Information Transformation Services (Pvt) Ltd	Rawalpindi	www.it-s.com
236	Visual Soft (Pvt) Ltd	Rawalpindi	www.visualsoft-inc.com
237	Datels International	Rawalpindi	www.datels.com
238	Fair Factor Force (F 3 Technologies)	Rawalpindi	www.fairfactorforce.com
239	Sequel Systems Inc	Rawalpindi	www.sequelsys.com
240	Mobile Technologies (Pvt) Ltd	Rawalpindi	www.mobiletechnologies.pk
241	Medical Transcription Billing Company (Pvt) Ltd	Rawalpindi	www.mtbc.com
242	Naxis Enterprises	Rawalpindi	
243	Bir Al Sabia Technologies (Pvt) Ltd	Rawalpindi	www.biralsabia.net
244	ITC Serve	Rawalpindi	
245	eBusinez Solutions	Rawalpindi	
246	i2D Technologies	Rawalpindi	
247	Tecnex System (Pvt) Ltd	Rawalpindi	www.tecnex.net
248	Noetic Technologies (Pvt) Ltd	Rawalpindi	www.noeticworld.com
249	App Desk Inc	Rawalpindi	www.app-desk.com
250	Optimum 5(Pvt) Ltd	Rawalpindi	
251	Econceptions	Rawalpindi	econception.mobi
252	Knovasmith	Rawalpindi	
253	Xperttel (Pvt) Ltd	Sialkot	
254	Integrated Units	Sialkot	Jahanzeb@tune.pk
255	Swenggco	Sialkot	www.swenggco-software.com

Exhibit: 2

Questionnaire

I am Sofia Aslam, students of M.Phil pursuing my research from University of Gujrat, Hafiz Hyatt campus. The topic of my research is **"*Interplay among Psychological Empowerment and Employee Creativity with Mediating Role of Creative Process Engagement and Intrinsic Motivation: A study of Information Technology Sector of Pakistan*"** The purpose of this study is to examine the psychological empowerment and employee's creativity in information technology sector with mediating role of intrinsic motivation and creative process engagement.

Anonymity of Identity

The information provided by you will remain confidential and will only be used for research purpose. It is further ensures that all information will be kept anonymous.

Section A

Profile of the Respondent:

Direction: Kindly fill up the following with the correct details about yourself. Please don't leave any item unanswered.

Age:

a) 22-29 b) 30-37

c) 38-44 d) 45 or above

Gender:

a) Male

b) Female

Educational Background:

a) Bachelors Level b) Masters Level

c) MS/M Phil

Job tenure

a) 1-3 yrs b) 4-7 yrs

c) 8- 10 yrs d) 10 or above

Section B

Please indicate the extent to which you agree with the following statements:

Employee empowerment						
S.NO	**Question**	**1**	**2**	**3**	**4**	**5**
	Enhancing meaningfulness					
1	My manager helps me understand how my objectives and goals relate to that of the company.					
2	My manager helps me understand the importance of my work to the overall effectiveness of the company.					
3	My manager helps me understand how my job fits into the bigger picture.					
	Participation					
4	My manager makes many decisions together with me.					
5	My manager often consults me on strategic decisions.					
6	My manager solicits my opinion on decisions that may affect me.					
	Expressing confidence					
7	My manager believes that I can handle demanding tasks.					
8	My manager believes in my ability to improve even when I make mistakes.					
9	My manager expresses confidence in my ability to perform at a high level.					
	Autonomy					
10	My manager allows me to do my job my way.					
11	My manager makes it more efficient for me to do my job by keeping the rules and regulations simple.					
12	My manager allows me to make important decisions quickly to satisfy customer needs.					

Psychological empowerment						
S.NO	**Question**	**1**	**2**	**3**	**4**	**5**
	Meaning					
1	The work I do is very important to me.					
2	My work activities are personally meaningful to me.					
3	The work I do is meaningful to me.					
	Competence					
4	I am confident about my ability to do my jobs.					
5	I am self-assured about my capabilities to perform my work activities.					
6	I have mastered the skills necessary for my job.					
	Self-determination					
7	I have significant autonomy in determining how I do my job.					
8	I can decide on my own how to go about doing my work.					
9	I have considerable opportunity for independence and freedom in how I do my job.					
	Impact					
10	My impact on what happens in my department is large.					
11	I have a great deal of control over what happens in my department.					
12	I have significant influence over what happens in my department.					

Creative process engagement						
S.NO	**Question**	**1**	**2**	**3**	**4**	**5**
	Problem identification					
1	I spend considerable time trying to understand the nature of the problem.					
2	I think about the problem from multiple perspectives					
3	I decompose a difficult problem/assignment into parts to obtain greater understanding.					
	Information searching					
4	I consult a wide variety of information.					
5	I search for information from multiple sources (e.g. personal memories, others' experience, documentation, Internet, etc.).					

To be continued

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Creative process engagement						
S.NO	**Question**	**1**	**2**	**3**	**4**	**5**
6	I retain large amounts of detailed information in my area of expertise for future use.					
	Idea generation					
7	I consider diverse sources of information in generating new ideas.					
8	I look for connections with solutions used in seeming diverse areas.					
9	I generate a significant number of alternatives to the same problem before I choose the final solution.					
10	I try to devise potential solutions that move away from established ways of doing things.					
11	I spend considerable time shifting through information that helps to generate new ideas.					

Intrinsic motivation						
S.NO	**Question**	**1**	**2**	**3**	**4**	**5**
1	I feel a sense of personal satisfaction when I do this job well.					
2	My opinion of myself goes down when I do this job badly.					
3	I take pride in doing my job as well as I can.					
4	I feel unhappy when my work is not up to my usual standard.					
5	I like to look back on the day' work with a sense of a job well done.					
6	I try to think of ways of doing my job effectively.					

Employee creativity						
S.NO	**Question**	**1**	**2**	**3**	**4**	**5**
1	Suggests new ways to achieve goals or objectives.					
2	Comes up with new and practical ideas to improve performance.					
3	Searches out new technologies, processes, techniques, and/or product ideas.					
4	Suggests new ways to increase quality.					
5	Is not afraid to take risks.					
6	Promotes and champions ideas to others.					
7	Exhibits creativity on the job when given the opportunity to.					
8	Often have new and innovative ideas.					
9	Comes up with creative solutions to problems.					
10	Suggests new ways of performing work tasks.					
11	Is a good source of creative ideas.					
12	Develops adequate plans and schedules for the implementation of new ideas.					
13	Comes up with creative solutions to problems.					

S.NO	**Questions**	**1**	**2**	**3**	**4**	**5**
1	Do you think that there is relationship between empowering leadership and employee creativity?					
2	Do you think that there is relationship between empowering leadership and psychological empowerment?					
3	Do you think that psychological empowerment has relationship with intrinsic motivation?					
4	Do you think that psychological empowerment has relationship with creative process engagement?					
5	Do you think that creative process engagement has relationship with employee's creativity?					
6	Do you think that intrinsic motivation has relationship with employee's creativity?					
7	Do you think that intrinsic motivation has mediating relationship with psychological empowerment and employee creativity?					
8	Do you think that creative process engagement has mediating link with employee creativity and psychological empowerment?					

Note. 1 Strongly disagree, 2 Disagree, 3 Neutral, 4 Agree, 5 Strongly agree
Thank you for your time and consideration

Exhibit: 3
CFA Results

Model estimates psychological empowerment				
	Parameter	**Standard**	***T***	**Prob.**
(PE)-1->[PE.M_Q1]	0.842	0.056	15.023	0.000
(PE)-2->[PE.M_Q2]	0.566	0.053	10.669	0.000
(PE)-3->[PE.M_Q3]	0.767	0.055	14.067	0.000
(PE)-4->[PE.C_Q1]	0.537	0.053	10.139	0.000
(PE)-5->[PE.C_Q2]	0.424	0.049	8.690	0.000
(PE)-6->[PE.C_Q3]	0.698	0.057	12.209	0.000
(PE)-7->[PE.SD_Q1]	0.646	0.056	11.452	0.000
(PE)-8->[PE.SD_Q2]	0.777	0.055	14.209	0.000
(PE)-9->[PE.SD_Q3]	0.582	0.052	11.123	0.000
(PE)-10->[PE.I_Q1]	0.851	0.057	14.805	0.000
(PE)-11->[PE.I_Q2]	0.661	0.065	10.189	0.000
(PE)-12->[PE.I_Q3]	0.870	0.061	14.225	0.000

Table B-1
Model Estimates (Psychological Empowerment) Step 2

	Parameter	**Standard**	***T***	**Prob.**
(PE)-1->[PE.M_Q1]	0.842	0.056	15.023	0.000
(PE)-3->[PE.M_Q3]	0.767	0.055	14.067	0.000
(PE)-4->[PE.C_Q1]	0.537	0.053	10.139	0.000
(PE)-6->[PE.C_Q3]	0.698	0.057	12.209	0.000
(PE)-7->[PE.SD_Q1]	0.646	0.056	11.452	0.000
(PE)-8->[PE.SD_Q2]	0.777	0.055	14.209	0.000
(PE)-10->[PE.I_Q1]	0.851	0.057	14.805	0.000
(PE)-11->[PE.I_Q2]	0.661	0.065	10.189	0.000
(PE)-12->[PE.I_Q3]	0.870	0.061	14.225	0.000

Table B-1
Model Estimates (Creative Process Engagement) Step 2

	Parameter	**Standard**	***T***	**Prob.**
(CPE)-2->[V18_A]	0.616	0.049	12.561	0.000
(CPE)-3->[V19_A]	0.634	0.058	11.007	0.000
(CPE)-4->[CPE.IS_Q]	0.709	0.045	15.574	0.000
(CPE)-5->[V21_A]	0.813	0.052	15.645	0.000
(CPE)-6->[CPE.1S_Q]	0.740	0.055	13.346	0.000
(CPE)-7->[CPE.IG_Q]	0.632	0.049	12.853	0.000
(CPE)-8->[V24_A]	0.662	0.051	12.934	0.000
(CPE)-10->[V26_A]	0.613	0.051	12.055	0.000

Table
Model Estimates Creative Process Engagement

	Parameter	**Standard**	***T***	**Prob.**
(CPE)-1->[CPE.PI_Q]	0.455	0.056	8.183	0.000
(CPE)-2->[V18_A]	0.616	0.049	12.561	0.000
(CPE)-3->[V19_A]	0.634	0.058	11.007	0.000
(CPE)-4->[CPE.IS_Q]	0.709	0.045	15.574	0.000
(CPE)-5->[V21_A]	0.813	0.052	15.645	0.000
(CPE)-6->[CPE.1S_Q]	0.740	0.055	13.346	0.000
(CPE)-7->[CPE.IG_Q]	0.632	0.049	12.853	0.000
(CPE)-8->[V24_A]	0.662	0.051	12.934	0.000
(CPE)-9->[V25_A]	0.461	0.047	9.740	0.000
(CPE)-10->[V26_A]	0.613	0.051	12.055	0.000
(CPE)-11->[V27_A]	0.496	0.049	10.136	0.000

Table
Model Estimates for Ation

	Parameter	Standard	*T*	Prob.
(IM)-1->[IM_Q1]	0.690	0.051	13.582	0.000
(IM)-2->[IM_Q2]	0.819	0.061	13.514	0.000
(IM)-3->[IM_Q3]	0.720	0.049	14.756	0.000
(IM)-4->[IM_Q4]	0.823	0.048	17.111	0.000
(IM)-5->[IM_Q5]	0.613	0.058	10.628	0.000
(IM)-6->[IM_Q6]	0.502	0.058	8.594	0.000

Table B-1
Model Estimates (Intrinsic Motivation) Step 2

	Parameter	Standard	*T*	Prob.
(IM)-1->[IM_Q1]	0.690	0.051	13.582	0.000
(IM)-2->[IM_Q2]	0.819	0.061	13.514	0.000
(IM)-3->[IM_Q3]	0.720	0.049	14.756	0.000
(IM)-4->[IM_Q4]	0.823	0.048	17.111	0.000
(IM)-5->[IM_Q5]	0.613	0.058	10.628	0.000

Table
Model Estimates (Employees' Creativity)

	Parameter	Standard	*T*	Prob.
(EC)-1->[EC_Q1]	0.652	0.052	12.513	0.000
(EC)-2->[EC_Q2]	0.729	0.051	14.237	0.000
(EC)-3->[EC_Q3]	0.796	0.049	16.206	0.000
(EC)-4->[EC_Q4]	0.681	0.049	14.027	0.000
(EC)-5->[EC_Q5]	0.746	0.060	12.355	0.000
(EC)-6->[EC_Q6]	0.740	0.053	13.857	0.000
(EC)-7->[EC_Q7]	0.636	0.052	12.280	0.000
(EC)-8->[EC_Q8]	0.811	0.046	17.488	0.000
(EC)-9->[EC_Q9]	0.671	0.040	16.629	0.000
(EC)-10->[EC_Q10]	0.808	0.047	17.128	0.000
(EC)-11->[EC_Q11]	0.524	0.047	11.181	0.000
(EC)-12->[EC_Q12]	0.738	0.049	15.128	0.000
(EC)-13->[EC_Q13]	0.625	0.048	13.110	0.000

Table B-1
Model Estimates (Employee's Creativity) Step 2

	Parameter	Standard	*T*	Prob.
(EC)-2->[EC_Q2]	0.729	0.051	14.237	0.000
(EC)-3->[EC_Q3]	0.796	0.049	16.206	0.000
(EC)-4->[EC_Q4]	0.681	0.049	14.027	0.000
(EC)-5->[EC_Q5]	0.746	0.060	12.355	0.000
(EC)-6->[EC_Q6]	0.740	0.053	13.857	0.000
(EC)-7->[EC_Q7]	0.636	0.052	12.280	0.000
(EC)-8->[EC_Q8]	0.811	0.046	17.488	0.000
(EC)-9->[EC_Q9]	0.671	0.040	16.629	0.000
(EC)-10->[EC_Q10]	0.808	0.047	17.128	0.000
(EC)-11->[EC_Q11]	0.524	0.047	11.181	0.000
(EC)-12->[EC_Q12]	0.738	0.049	15.128	0.000

Exhibit: 4
Descriptive Statistics

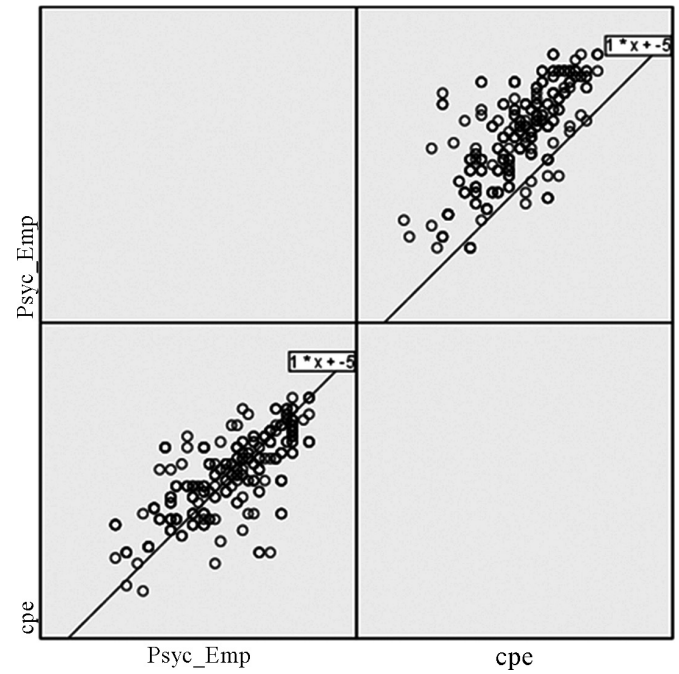
	N	Min	Max	Mean	Std. dev
The work I do is very important to me.	281	1.00	5.00	3.8897	1.08493
My work activities are personally meaningful to me.	281	1.00	5.00	3.9822	.94285
Work I do is meaningful to me.	281	1.00	5.00	3.9929	1.03507
I am confident about my ability to do my jobs.	281	1.00	5.00	4.1601	.93311
I am self-assured about my capabilities to perform my work activities	281	2.00	5.00	4.1174	.83906
I have mastered the skills necessary for my job.	281	1.00	5.00	3.7046	1.04622
I have significant autonomy in determining how I do my job.	281	1.00	5.00	3.7082	1.01783
I can decide on my own how to go about doing my work.	281	1.00	5.00	3.7117	1.04138
I have considerable opportunity for independence and freedom in how I do my job.	281	1.00	5.00	3.7189	.93883
My impact on what happens in my department is large.	281	1.00	5.00	3.5409	1.10805
Have a great deal of control over what happens in my department.	281	1.00	5.00	3.4093	1.14320
I have significant influence over what happens in my department	281	1.00	5.00	3.4164	1.16540
I spend considerable time trying to understand the nature of the problem.	281	1.00	5.00	3.5658	.94686
I think about the problem from multiple perspectives	280	1.00	5.00	3.7393	.89996
I decompose a difficult problem/assignment into parts to obtain greater understanding.	281	1.00	5.00	3.7082	1.02482
Consult a wide variety of information.	281	1.00	5.00	3.8577	.88702
I search for information from multiple sources (e.g. personal memories, others' experience, documentation, Internet, etc.).	281	1.00	5.00	3.8897	1.01696
Retain large amounts of detailed information in my area of expertise for future use.	281	1.00	5.00	3.7865	1.03370
I consider diverse sources of information in generating new ideas.	281	1.00	5.00	3.7117	.92128
I look for connections with solutions used in seeming diverse areas.	280	1.00	5.00	3.6857	.94725
I generate a significant number of alternatives to the same problem before I choose the final solution.	281	1.00	5.00	3.7402	.82383
I try to devise potential solutions that move away from established ways of doing things.	281	1.00	5.00	3.5623	.92420
I spend considerable time shifting through information that helps to generate new ideas.	281	2.00	5.00	3.7509	.85891
Feel a sense of personal satisfaction when I do this job well.	281	1.00	5.00	4.0641	.95403
Opinion of myself goes down when I do this job badly.	281	1.00	5.00	3.7153	1.11679
I take pride in doing my job as well as I can	281	1.00	5.00	3.9075	.92117
I feel unhappy when my work is not up to my usual standard.	281	1.00	5.00	3.9110	.95389
I like to look back on the day' work with a sense of a job well done	280	1.00	5.00	3.7464	1.00714
I try to think of ways of doing my job effectively.	280	1.00	5.00	3.8143	.99882
Suggests new ways to achieve goals or objectives.	281	1.00	5.00	3.6975	.96970
Comes up with new and practical ideas to improve performance.	281	1.00	5.00	3.6655	.98662
Searches out new technologies, processes, techniques, and/or product ideas.	281	1.00	5.00	3.6263	.98519
Suggests new ways to increase quality	281	1.00	5.00	3.6833	.93123
Is not afraid to take risks.	281	1.00	5.00	3.4591	1.12087
Promotes and champions ideas to others.	281	1.00	5.00	3.5445	1.02067
Exhibits creativity on the job when given the opportunity to.	281	1.00	5.00	3.6477	.96014
Often have new and innovative ideas	281	1.00	5.00	3.5552	.95505
Comes up with creative solutions to problems.	281	1.00	5.00	3.6833	.81681
Suggests new ways of performing work tasks	281	1.00	5.00	3.5836	.96415
Is a good source of creative ideas?	281	2.00	5.00	3.7758	.85121
Develops adequate plans and schedules for the implementation of new ideas.	281	1.00	5.00	3.5374	.95592
Comes up with creative solutions to problems	281	2.00	5.00	3.7438	.89752
Valid N (list wise)	278				

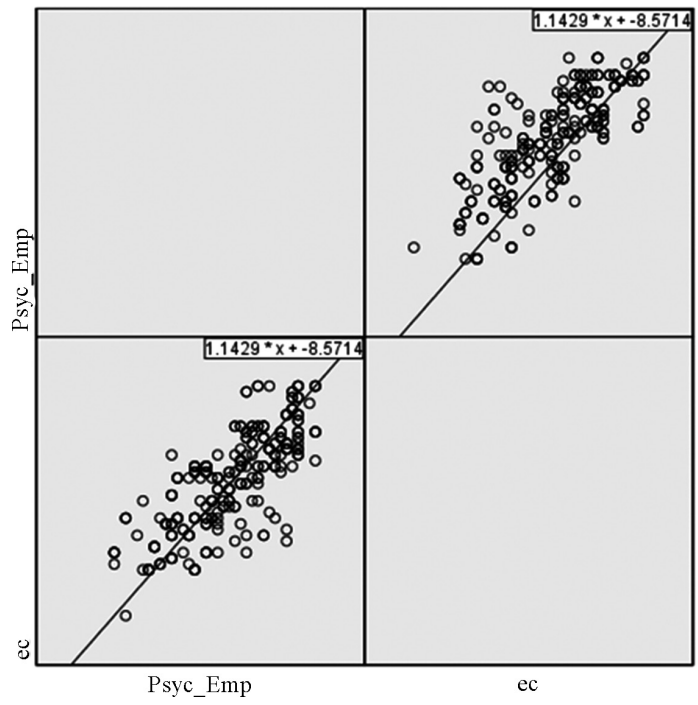
Exhibit: 5
Regression Assumptions

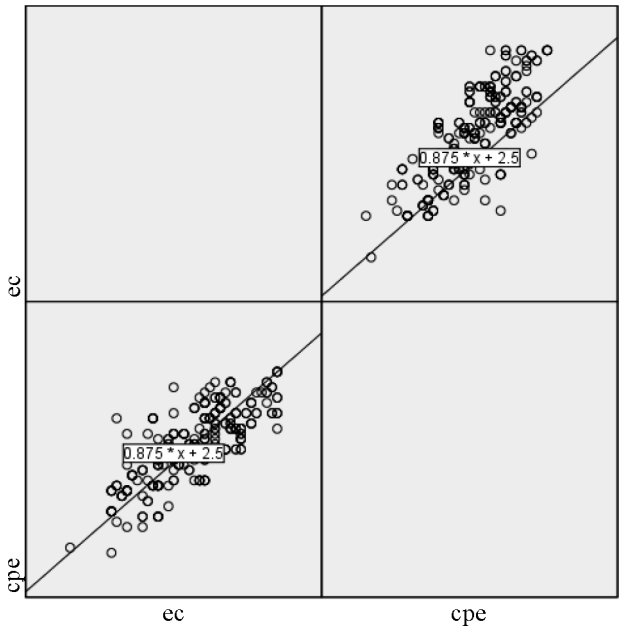
1. Normality

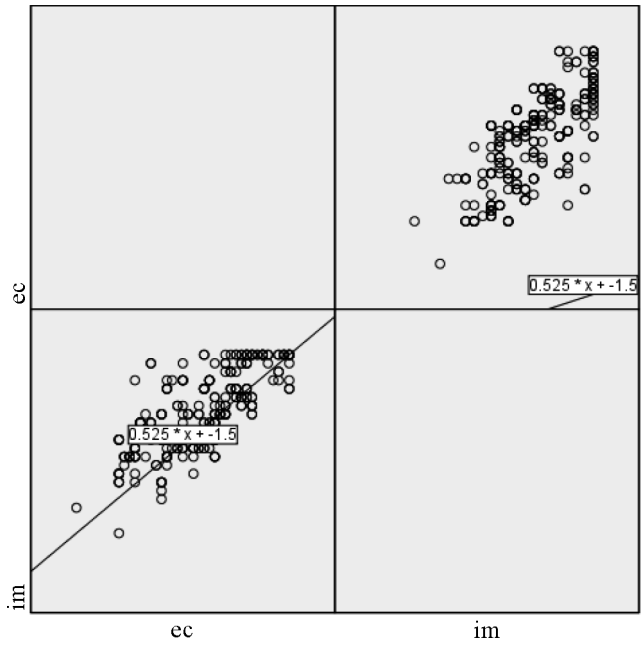
One-sample kolmogorov-smirnov test		
		Employee creativity
N		281
Normal parameters[a]	Mean	47.5000
	Std. deviation	9.44850
Most extreme differences	Absolute	.051
	Positive	.051
	Negative	-.048
Kolmogorov-smirnov *Z*		.591
Asymp. Sig. (2-tailed)		.876
a. Test distribution is normal.		

2. Linearity









3. Multi-co-linearity

Dependent variable	Independent variable	Tolerance (a)	VIF(b)	Condition Index (c)	Results
Employee creativity	Psychological empowerment	.368	2.716	.95	Accepted
	Creative process engagement	.399	2.505	.01	Accepted
	Intrinsic motivation	.481	2.078	.04	Accepted

Note. (a) Value should be < 0.20, (b) Value should be >5, and (c) Value should be >30

4. Homoscasdicity

ANOVA

EC.Comes up with creative solutions to problems					
	Sum of squares	***df***	**Mean square**	***F***	**Sig.**
Between groups	2.320	3	.773	.960	.412
Within groups	223.232	277	.806		
Total	225.552	280			

Exhibit: 6
Correlation

Correlations

		PSYC_EMP	***CPE***	***IM***	***EC***
PSYC_EMP	Pearson correlation	1	.747**	.687**	.781**
	Sig. (2-tailed)		.000	.000	.000
	N	281	280	279	281
CPE	Pearson correlation	.747**	1	.656**	.781**
	Sig. (2-tailed)	.000		.000	.000
	N	280	280	278	280
IM	Pearson correlation	.687**	.656**	1	.734**
	Sig. (2-tailed)	.000	.000		.000
	N	279	278	279	279
EC	Pearson correlation	.781**	.781**	.734**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	281	280	279	281

**. Correlation is significant at 0.01 level (2-tailed).

Exhibit: 7
Linear Regression

Hypothesis 1:

Model summary

Model	***R***	***R* square**	**Adjusted *R* square**	**Std. error of the estimate**
1	.747[a]	.559	.557	4.80889

a. Predictors: (Constant), Psyc_Emp

ANOVA[s]

Model		**Sum of squares**	**df**	**Mean square**	**F**	**Sig.**
1	Regression	8,140.116	1	8,140.116	351.998	.000[a]
	Residual	6,428.880	278	23.125		
	Total	14,568.996	279			

a. Predictors: (Constant), Psyc_Emp
b. Dependent variable: *cpe*

Coefficients

Model ***B***		**Unstandardized coefficients**		**Standardized coefficients**	***t***	**Sig.**
		Std. error	**Beta**			
1	(Constant)	12.680	1.537		8.251	.000
	Psyc_Emp	.624	.033	.747	18.762	.000

a. Dependent variable: *cpe*

Hypothesis 2:

Model summary

Model	*R*	*R* square	Adjusted *R* square	Std. error of the estimate
1	.687[a]	.472	.470	3.28674

a. Predictors: (Constant), Psyc_Emp

ANOVA[s]

Model		Sum of squares	*df*	Mean square	*F*	Sig.
1	Regression	2,678.700	1	2,678.700	247.966	.000[a]
	Residual	2,992.339	277	10.803		
	Total	5,671.039	278			

a. Predictors: (Constant), Psyc_Emp
b. Dependent variable: *im*

Coefficients

Model B		Unstandardized coefficients		Standardized coefficients	*t*	Sig.
		Std. error	Beta			
1	(Constant)	6.893	1.053		6.547	.000
	Psyc_Emp	.359	.023	.687	15.747	.000

a. Dependent variable: *im*

Hypothesis 3:

Model summary

Model	*R*	*R* square	Adjusted *R* square	Std. error of the estimate
1	.781[a]	.610	.608	5.42622

a. Predictors: (Constant), Psyc_Emp

ANOVA[s]

Model		Sum of squares	*df*	Mean square	*F*	Sig.
1	Regression	12,837.765	1	12,837.765	436.008	.000[a]
	Residual	8,214.840	279	29.444		
	Total	21,052.605	280			

a. Predictors: (Constant), Psyc_Emp
b. Dependent variable: *ec*

Coefficients

Model *B*		Unstandardized coefficients		Standardized coefficients	*t*	Sig.
		Std. error	Beta			
1	(Constant)	8.019	1.733		4.626	.000
	Psyc_Emp	.784	.038	.781	20.881	.000

a. Dependent variable: *ec*

Hypothesis 4:

Model summary

Model	*R*	*R* square	Adjusted *R* square	Std. error of the estimate
1	.781[a]	.610	.608	5.43489

a. Predictors: (Constant), cpe

ANOVA[s]

Model		Sum of squares	*df*	Mean square	*F*	Sig.
1	Regression	12,838.524	1	12,838.524	434.643	.000[a]
	Residual	8,211.587	278	29.538		
	Total	21,050.111	279			

a. Predictors: (Constant), cpe
b. Dependent variable: *ec*

Coefficients						
Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.
B		Std. error	Beta			
1	(Constant)	5.091	1.875		2.716	.007
	cpe	.939	.045	.781	20.848	.000

a. Dependent variable: *ec*

Hypothesis 5:

Model Summary				
Model	*R*	*R* square	Adjusted *R* square	Std. error of the estimate
1	.734[a]	.538	.536	5.89158

a. Predictors: (Constant), im

ANOVA[b]						
Model		Sum of squares	*df*	Mean square	*F*	Sig.
1	Regression	11203.013	1	11203.013	322.754	.000[a]
	Residual	9614.858	277	34.711		
	Total	20817.871	278			

a. Predictors: (Constant), im

b. Dependent variable: *ec*

Coefficients[a]						
Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.
B		Std. error	Beta			
1	(Constant)	11.066	1.847		5.990	.000
	im	1.406	.078	.734	17.965	.000

a. Dependent variable: *ec*

Hypothesis 6:

Model summary				
Model	*R*	*R* square	Adjusted *R* square	Std. error of the estimate
1	.835[a]	.698	.696	4.79101

a. Predictors: (Constant), Psyc_Emp, cpe

ANOVA[b]						
Model		Sum of squares	*df*	mean square	*F*	Sig.
1	Regression	14691.924	2	7345.962	320.033	.000[a]
	Residual	6358.186	277	22.954		
	Total	21050.111	279			

a. Predictors: (Constant), Psyc_Emp, cpe

b. Dependent variable: *ec*

Coefficients						
Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.
B		Std. error	Beta			
1	(Constant)	1.202	1.708		.704	.482
	cpe	.537	.060	.447	8.994	.000
	Psyc_Emp	.449	.050	.447	8.986	.000

a. Dependent variable: *ec*

Hypothesis 7:

Model summary				
Model	*R*	*R* square	Adjusted *R* square	Std. error of the estimate
1	.826[a]	.683	.681	4.89076

a. Predictors: (Constant), im, Psyc_Emp

ANOVA[s]

Model		Sum of squares	*df*	Mean square	*F*	Sig.
1	Regression	14216.091	2	7108.045	297.165	.000[a]
	Residual	6601.780	276	23.919		
	Total	20817.871	278			

a. Predictors: (Constant), im, Psyc_Emp

b. Dependent variable: *ec*

Coefficients

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.
	B	Std. error	Beta			
1	(Constant)	3.273	1.683		1.944	.053
	Psyc_Emp	.524	.047	.524	11.224	.000
	im	.716	.089	.374	8.007	.000

a. Dependent variable: *ec*