Career Development as a Mediator of Psychological Empowerment & Innovative Output for Women in STEM

Soni Ignatius & Jaya Mathew

This research finds the relationship of career development, psychological empowerment, and innovative output in the STEM fields for women employees. Data was collected from 401 women employees in select cities through an experimental survey. SPSS and SEM Amos were used to analyze the data. Descriptive statistics was found for the data before regression. The findings indicate that the relationship between psychological empowerment and innovative output is mediated by career development. Workplace can continue to provide psychological empowerment programs for female employees to promote the participation of more women in STEM careers. This paper used the Value Percept Theory and Social Exchange Theory to explain psychological empowerment in STEM sector in India. And both of these are a novelty of this paper.

Soni Ignatius is a Research Scholar at the Academy of HRD, Ahmedabad. E-mail: soniignatius@yahoo.co.in. ***Jaya Mathew*** is an Assistant Professor at NIFT, Kannur E-mail: jayadevasia1@gmail.com

Introduction

Even after two decades of efforts to achieve parity in the workforce, underrepresentation of women persists (Christie, O'Neill, Rutter, Young, & Medland, 2017). This essay investigates the methodical development of current women in STEM to reproduce model to mimic for future aspirants for a sustainable growth in involvement of women in STEM jobs. The variables under research were carefully chosen in order to understand the why and how of these STEM women who persevere despite all sociocultural issues they encounter on both a personal and professional level. Psychological empowerment, emotional agility, and learning agility all contribute to the ability to endure issues that arise at work.

Background of the study

Women's underrepresentation in STEM fields is well known.

Women's advancement in STEM disciplines has turned into a double-edged sword as they attempt to balance responsibilities at home and work. Discriminatory behavior at work is commonplace for STEM women (Kang & Kaplan, 2019). It includes prejudices like the prove-it-again mentality, which requires women to demonstrate their worth repeatedly. Women are forced to adopt more feminine characteristics at their jobs, which calls for more masculine traits, also called the tightrope bias. Motherhood, or the maternal wall bias, makes her even less competent and uncommitted to her profession after childbirth. When men and women both discriminate against women in traditionally masculine fields, this is known as tug-of-war bias (Williams, Phillips & Hall, 2016)

There is a common misconception that companies are gender-neutral. Their gendered inclination is covered by masking and concealing the nature of labor (Smith, 2013). And this is especially true for STEM positions, which tend to favor male characteristics. Additionally, most STEM jobs hide the physical labor component of their employment, exuding the image of man and the need to employ men for such roles. Thus, such a portrayal of an employee marginalizes the opportunities for hiring women for STEM roles and seeks to highlight a woman's weakness as a procreator through her body feminity. It also urges her to engage in feminism in the roles that require male traits and accept positions of subordination (Anderson, 2000). In industrial capitalist societies, which are, at least in part, constructed upon a profoundly ingrained foundation of gender difference, the positing of gender-neutral and disembodied organizational structures and work relations is a component of a broad control strategy (Acker, 2009; Andolsen et al ,1990)

Review of Literature

Psychological empowerment refers to people's innate ideas about their ability to work more productively and is based on the four principles of meaning, self-determination, competence, and influence. (Richardson, et al, 2018). Organizations strive hard to hire a diversified workforce that would cover all the gaps in terms of needed skill sets. As a result, it seeks to provide the appropriate resources to its employees at all times. Psychological empowerment mediates the relationship between person-organization fit and in-role performance. (Gregory, Albritton & Osmonbekov, 2010)

An empowered worker is conscientious in his career and meticulous in task execution.

To boost performance, organizations encourage extra work. (Onyishi, Ugwu & Ogbonne 2012). And the individual feels the urge to innovate at work by taking on additional roles (Williams, Phillips & Hall 2016). An empowered worker is conscientious in his career and meticulous in task execution. (Sun, 2016). Their working environment influences the degree of innovation used by the employees. Further, the impact of creative self-efficacy on innovative behavior was more

remarkable in workplaces with significant knowledge sharing. (Teng, Hu & Chang, 2019)

Information sharing leads to task-related and interactional dimensions of work-based learning. A supportive communication climate promotes innovative work behavior, an observation made among both genders. And women happen to reflect better innovative work behavior in a supportive communication climate as compared to men. (Arif, Zubair, & Manzoor, 2006). The heterogeneous nature of jobs instead of standardized jobs, which use different skills to perform various tasks, increases the innovative work behavior at the workplace (Luoh, Tsaur & Tang, 2013). Task-related learning positively correlates with innovative behavior, given the challenging nature of tasks. (Battistelli et al , 2019).

Psychological empowerment is related to positive self-evaluation qualities, and this correlation is as strong as environmental variables. Exposure to female STEM experts promoted positive implicit attitudes and more robust implicit identification with STEM, which leads to greater subjective identification and connectedness with these individuals.

Further, seeing same-sex experts drives greater self-efficacy and more effort in STEM, which in turn predicts enhanced self-efficacy, domain identification, and commitment to pursue STEM careers. Notably, women's self-concept benefited from contact with female experts even though negative stereotypes about their gender and STEM remained active. (Stout et al., 2011). Psychological empowerment as a motivational construct has also been identified as an intrinsic motivation to perform tasks that are more meaningful and rewarding (Thomas & Velthouse, 1990).

Innovative work behavior (IWB) is defined by Farr and Ford (1990) as a person's behavior that attempts to initiate and intentionally introduce new and helpful ideas, processes, products, or procedures (within a work role, group, or organization). IWB is clearly meant to offer some sort of advantage.

The intentional development, presentation, and use of new ideas inside a work role, group, or organization to improve role performance, the group, or the organization, according to Janssen (2000), is considered innovative work behavior. Additionally, innovative work behaviors are neither an explicit contract between the employees and the company nor expected of employees in their capacity. Furthermore, organizational reward systems do not explicitly recognize these actions because they are optional and are called extra-role behaviors (Organ,1988).

Innovative work behaviors are neither an explicit contract between the employees and the company.

The process of self-discovery, investigation, and decision-making that shapes a profession is known as career development. One must navigate successfully through different vocational possibilities

to choose and train for occupations that fit one's personality, talents, and interests. When someone is concerned about their career growth, they recognize their own advantages and weaknesses and put forth significant effort to develop their abilities. Additionally, it entailed looking for opportunities to progress, studying other roles and industries to determine which ones matched their strengths, and possibly even switching careers completely if they discovered one that was more fit. (Mckay, 2020)

Theory Development

This paper uses the Value Percept Theory and Social Exchange Theory to explain Psychological Empowerment. Theoretically, an employee appreciates particular things at work (Fagley & Adler, 2012). There are various components to a job, some of which are valued and considered more important than others. A worker will still feel joy and engrossment in his work if some of its components can fulfill the values, he holds close to his heart. If the employee cannot obtain what she values most from her job in the required amount, she begins to lose interest. Therefore, if a corporation invests in an employee's competency, it enhances her capability to perform on the job, boosting her self-esteem and positive self-image. She is satisfied that the company has faith in her ability to carry out the work and feels appreciated and wanted. She wants to return the favor and give the company her best (per Social Exchange Theory). If the employee is working on a job that she considers much more critical personally, it becomes more relevant for her, boosting her self-confidence (Quinn & Spreitzer, 1997). She will also find the job more satisfying and take a personal interest in finishing it rather than simply doing it as part of her regular office duties. If necessary, she may draw on her own resources, i.e., her inner power, to finish the work that she considers personally significant or soul-satisfying. If the employee gets autonomy working on a job that she considers much more critical personally, it becomes more relevant for her, boosting her self-confidence (Cummings & Oldham, 1997). She will have a strong sense of self-confidence and the feel-good factor about self will also increase exponentially. Therefore, she will be further motivated to use her previously unutilized skills, such as those related to networking and analysis typically not expected of her in her regular work capacity, to complete the task as directed by her management.

An employee is highly motivated and happy when the company gives her a task that will significantly impact the business in terms of revenues, policy creation, compliance, or customer impact (Sageer, Rafat & Agarwal, 2012). She also feels that the company has more confidence in her abilities now. Hence, she will work harder to complete the task. Employees who value impact should be maneuvered by their motivation to work hard and become the ones to take the first steps that have such an effect. Such acts of setting performance standards for themselves may also guide their future undertakings. This support enables the employee to think creatively or discover new

methods of working toward her goal of finishing the assignment entrusted to her.

Research Objective &Design

The objective of this research is to explore the mediating effect of career development on psychological empowerment and innovative output.

Women working in STEM were selected as sample respondents and given a comprehensive questionnaire adapted from existing scales to fulfill the aim of the study. The questionnaire had two sections. The first part of the survey had a 5-point Likert scale question for the three variables under investigation. The second section elicited answers to personal questions to understand their current status as far as demographics are concerned. The questionnaire ended with three open-ended questions to seek their opinions on the status of women in STEM fields.

This study uses measures for the survey adopted from established scales in human resource management. After reviewing the recognized scales, a 23-question questionnaire was created. The scale Muduli developed in 2017 for workforce agility served as the basis for the 12 elements that make up the psychological empowerment questionnaire. Six elements make up the questionnaire on innovative output, which was created by Jong and Hartog in 2008 to gauge employee creative output. The Hathorn and Brusoni scale was used to measure career Development (2012). There were sixteen items on the scale.

Sampling Frame, Size &Method

Women who worked in science, technology, engineering, and mathematics made up the sampling unit. Of the questionnaire mailed to 675 STEM women, only 401 responses were received and found to be fit for use as the sample for this study. As a result, the response rate was 59.4% from the respondents. The questionnaire to women staff of the various businesses identified for the study was sent via Google Forms. The purpose of the survey was verbally explained while handing the selected women hard copies of the questionnaire. Most respondents had work experience of 1 - 5 years (Table 1).

The snowball sampling technique was adopted. It is a non-probability sampling technique. Women employees at the entry level, middle level, and senior level were considered for establishments in the fields of Science, Technology, Engineering and Mathematics in cities of Hyderabad, Chennai, Bangalore and Calicut.

The HR managers or the leaders of the departments were individually approached in all the firms in different areas of the cities of Hyderabad, Chennai, and Bangalore. The present study's objectives were also communicated to some HR, and operational leaders, who were also contacted via phone and emails. To promote participation among STEM women, the researcher also individually followed up via e-mails and phone calls to chosen department heads and operational leaders.

To avoid common method bias which might occur since the data regarding dependent and independent variables were being collected from the respondents at one point (Podsakoff, Mackenzie, Lee & Podsakoff, 2003), the Harman test was conducted. The main factor accounted less than 50% of the variance. Hence, the data does not suffer from common method bias.

Demographic Variables of Respondents (*N*=401)

The data collected were coded, tabulated, and analyzed with the help of SPSS version 23.0. 22-27 years age group comprises 17.45% of the respondents while 18.7% belong to 28-33 years. 23.09% of the respondents belong to 34-39 years age group. 16.45% comprises 40-45 years age group and 45 and above years constitute 24.36%.

39.15% of respondents have a PG while 39.4% have a PhD and 13.96% have a graduate degree. 77.1% of the respondents are married while 22.90% are single. 94.50% of the respondents are regular employees while the rest are on contract. 53.11% of the respondents are working in the private sector while 31.17% are government employees and 8.9% are employees in semi-government offices.

35.14% of women were working in the engineering field while 26.18% were working in the fields of sciences. 22.04% were working in the field of mathematics while 9.2% were working in the field of technology.

35.91% respondents were having a work experience of above 4 years while 30.90% were having a work experience of 3 to 4 years. 27.68% were having work experience of 2 to 3 years and . 60% of the respondents have less than 2 people dependent on them while rest had 3 to 5 dependents. 61.30% lived in a joint family while others belonged to nuclear families.

42.14% of the respondents had a family size of 4 members, while 35.41% of them had a family size of 3 members. Whereas 17.7% had more than 5 members in a family. 28.67% had two children while 15.70% had 3 children and 50% had only a single child. Fathers of 84.47% of respondents had an influence on their career choices while 5% had their mothers tell them what to do. 3.4% were influenced by their siblings in matters of careers.

The data were analyzed by using SPSS 23 and AMOS 20. SEM was used for testing the hypothesis. Preliminary analysis of data was carried out before testing the proposed hypothesis. The data were checked for normality (Hair et al., 2006). The normality of the data was tested by skewness and kurtosis. If the skewness is between 1/2 and +1/2, the distribution is approximately symmetric.

Table 2 shows the correlation among psychological empowerment, innovative output and career development. The table shows that psychological empowerment is positively correlated with innovative output ($r = 0.455$, $p<0.01$). It is also seen in the table that career development is

Table 1 Descriptive Statistics

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
PE	401	4.159	0.578	-0.103	0.122	-1.059	0.243
CD	401	4.319	0.3769	-0.24	0.122	-0.56	0.243
IO	401	4.617	0.3162	-0.332	0.122	-1.029	0.243

PE=Psychological empowerment, CD=Career development, IO =Innovative output

Table 2 Correlation Table

	Mean	Std. Deviation	PE	CD	IO
PE	4.159	0.578	1		
CD	4.319	0.3769	.210**	1	
IO	4.617	0.3162	.455**	.337**	1

PE=Psychological empowerment, IO =Innovative output, CD=Career development
** Significant relationship

positively correlated with innovative output ($r = 0.337$, $p<0.01$).

Exploratory Factor Analysis (EFA)

To determine to what extent the observed indicators are linked to the construct, both EFA and confirmatory factor analysis (CFA) were used to ascertain the factorial and construct validity of each scale. The appropriateness of factor analysis is determined by examining the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. Bartlett's test of sphericity should be significant ($p<0.05$), and the KMO measure of sampling adequacy should range from 0 to 1, with 0.60 suggesting the minimum value for a good factor analysis (Hair et al. 1998).

The EFA key statistics on the final solutions of retained indicators for each proposed construct are presented in Table 3. The results of the KMO-MSA revealed that the data are appropriate to be factor analyzed. All the items that have factor loadings greater than the 0.50 accepted levels are retained for the analysis.

Table 3 EFA Analysis

Variable	Original items	EFA items	Eigen values	Variance (%)	KMO-MSA	Factor loading range
PE	12	5	1 and above	74.50	0.893	.815-.904
CD	16	5	1 and above	46.90	0.499	.419-.705
IO	6	4	1 and above	73.02	0.572	.454-.717

PE=Psychological empowerment, IO =Innovative output, CD=Career development

SEM

SEM is a statistical technique that is a mix of a measurement model (CFA) and a structural model. It studies the causal linkages among multiple predictor and criterion variables (Byrne, 2010).

Measurement Model

CFA was conducted on all the constructs of the study (Table 4). All the constructs achieved an acceptable level of fit with some model re-specification. The fit measures of the hypothesized model are presented in Table 4 with goodness-of-fit index, comparative fit index and root mean square error of approximation values and they were found acceptable. (e.g., Tabachnick & Fidell, 2007; Kline, 2005).

Table 4 Fit Measures of Study Variables

Construct	χ2	DF	χ2 /df	GFI	CFI	RMSEA
PE	4.111	4	1.028	0.996	1	0.008
CD	3.375	5	0.675	0.997	1	0
IO	0.646	1	0.646	0.999	1	0

PE=Psychological empowerment, IO= Innovative output.CD=Career development

To evaluate the discriminant validity of the study's focal variables, we conducted a construct-level confirmatory factor analysis. The proposed three-factor model (PE=Psychological empowerment, IO =Innovative output, CD=Career development) demonstrated a good fit with the data compared to other models. Our model fits the data better than alternative models confirming that Psychological empowerment, Innovative output, and Career development were distinct constructs as shown in Table 5.

Table 5 Assessment of Three Factor Model

Models	χ2	DF	χ2 /df	GFI	CFI	RMSEA
One factor model (IO + CD+PE)	319.483	76	4.204	0.888	0.865	0.089
Two factor model (CD+IO); PE	228.775	75	3.05	0.922	0.914	0.072
Three factor model CD; IO; PE	205.904	74	2.782	0.93	0.927	0.067

PE=Psychological empowerment, IO =Innovative output, CD=Career development

Fig. 1. Proposed Research Model

The hypothesis formulated is as follows as per this model:

H_1: There is no significant relationship between Psychological empowerment and Innovative output.

Descriptive Statistics Table 4 presents the descriptive statistics and correlations between study variables. They were all in the expected directions, indicating preliminary support for the relationships depicted in Fig. 1.

Testing Direct & Mediated Effects

We followed Baron and Kenny's (1986) four-step process for testing mediating effects; in particular, first three criteria must be satisfied to confirm mediating effects. These steps are:

1. The independent and dependent variables must be significantly related (Hypothesis 1).

2. The independent and mediating variables must be significantly related.

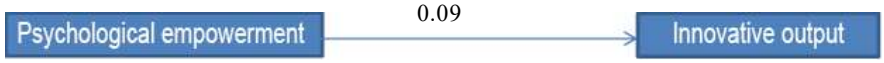
3. The mediator and dependent variables must be significantly related.

4. The relationship between the independent variable and dependent variable should be non-significant or weaker when the mediator is added (Hypothesis 2).

For these four conditions of mediation, we tested a non-mediated model against the full-mediated model and a partially mediated model (Fig. 2 for the alternative models: Models 1, 2 and 3). The non-mediating model included the direct path from psychological empowerment to innovative output without CD (Model 1). The full-mediating model included an indirect path from psychological empowerment to innovative output through CD (Model 2). The partial mediating model included both direct and indirect paths from psychological empowerment to innovative output (Model 3).

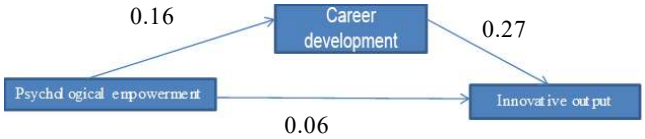
Fig. 2. Alternative Models

Model 1. Non-mediating Model



Model 2 Full-mediating Model

Model 3 Partial-mediating Model



Direct Effects: The non-mediating model (Model 1) showed a good fit with the data:

$\chi 2 = 98.44$, df = 24, $\chi 2$ /df = 4.102, GFI = 0.952, AGFI = .909, NFI = .944, CFI = 0.957 and RMSEA = 0.088.

Psychological empowerment was found to be positively related to innovative output (â = 0.089, $p < 0.001$). This step supported our first hypothesis and the first condition of mediation.

Indirect Effects: The full-mediating model (Model 2) showed a better fit with the data:

$\chi 2 = 162.853$, df = 73, $\chi 2$ /df = 2.231, GFI = .948, AGFI = .925, NFI = .914, CFI = .950 and RMSEA = .055.

Psychological empowerment was found to be positively related to career development ($\beta = 0.19$, $p < 0.001$) and career development was found to be positively related to innovative output ($\beta = 0.52$, $p < 0.001$).

This step supported the second and third conditions of mediation. Compared with the non-mediating model (Model 1), the full-mediating model (Model 2) exhibited better fit indices and higher beta value. Taken together, these findings confirmed the mediating role of career development in psychological empowerment – innovative output relationship (Hypothesis 2).

To further examine the type of mediation (full versus partial mediation), we tested the partial mediating model (Model 3). This model showed the best fit with the data: $\chi 2 = 158.446$, df = 72, ÷2 /df = 2.201, GFI = .948, AGFI = .925, NFI = .916, CFI = .952 and RMSEA = .055.

As per this model, psychological empowerment was found to be positively related to career development ($\beta = 0.158$, $p < 0.001$) and career development was found to be positively related to innovative output ($\beta = 0.062$, $p < 0.001$).

However, in the presence of career development when we examined the effects of psychological empowerment on innovative output, the effects of career development on innovative output ($\beta = 0.06$, $p < 0.05$) became weaker, albeit still significant. This step supported the fourth condition of mediation and suggested partial mediation by career development in psychological empowerment – innovative output relationship. The values of fit indices for our models are presented in Table 6.

Hypotheses Testing

Hypothesis testing was conducted based on the model. First, the significance of each hypothesized path in the research model was determined. SEM output reported standardized parameter estimates for all specified paths along with standard errors and test statistics for each path. The effect of a particular independent variable on its outcome variable could be determined by examining the respective absolute magnitude of the standard path coefficient (Hair et al., 2006).

Table 6 Alternative fit Model

Models	$\chi 2$	DF	$\chi 2$ /df	GFI	CFI	RMSEA
Model 1: career developmentdoes not mediates psychological empowerment – innovative output relationship	98.44	24	4.102	0.952	0.957	0.088
Model 2:career developmentfully mediates psychological empowerment – innovative output relationship	162.853	73	2.231	0.948	0.95	0.055
Model 3:career developmentpartially mediates psychological empowerment – innovative output relationship	158.446	72	2.201	0.948	0.952	0.055

The relationships between the constructs were examined based on the t-values or critical ratio values associated with the path coefficients among variables. Each of the hypotheses listed below (Table 7) was examined based on the findings:

Table7 Hypothesis testing

Hypothesized path	Estimate	S.E.	C.R.	P	Hypothesis
CD<—-PE	0.152	0.049	3.129	0.002	Accepted
IO<—-CD	0.404	0.164	2.467	0.014	Accepted
IO<—-PE	0.079	0.029	2.691	0.007	Accepted

PE=Psychological empowerment, CD=Career development, IO =Innovative output

Hence, the null hypothesis that there is no significant impact of the independent variables on the dependent variable innovative output is rejected. Thus, we accept the alternate hypothesis H_1.

Findings & Conclusion

According to the research reviews, psychological empowerment enables workers to exercise significant autonomy at work. An employee can deeply explore many components of the work, think creatively about various facets of the problem at hand, and come up with solutions when she is psychologically free to focus entirely on the job. (Basadur, 2004). Additionally, this will produce innovative

Psychological empowerment enables workers to exercise significant autonomy at work.

outputs that can be more pertinent than the traditional approach or methods. Since young minds can consider all the possibilities before settling on the ideal one to accomplish the task, innovation at work becomes simple. (Aguilar, 2013; Wagner, 2012). And considering the existing situation, it turns out to be the best course of action.

Our empirical investigation has also validated the same. Therefore, it is in the interest of the organizations to support employees psychologically by giving them all the facilities required to execute their work and the individual liberty to decide on the methods to be used to complete their tasks in unconventional ways. Such initiatives will increase their productivity exponentially and allow for the development of truly innovative solutions before an organization decides on a specific course of action, believing it to be the most financially feasible from all perspectives and desirable and practical to all stakeholders.

The need to create a psychologically empowering workplace that encourages innovation and enhances productivity is strengthened by employees' perceptions of how the organization promotes career advancement among its employees (Özarallý, 2015). When a business lays out a clear career path for potential employees or offers opportunities for an employee to develop her career over time in an organization, the employee feels psychologically empowered. Such attempts to grow the employees within the organization results in enhanced efforts to produce more innovative and creative output, which is rewarding for the individual and benefits the organization as a whole.

Limitations of the Study

Only the STEM women in companies having branches in Chennai, Bangalore, Hyderabad, and Pondicherry city are included in this study. It is assumed that the responses provided by the respondents are sincere and represent their actual experiences. Only those who agreed to contribute their insightful responses were solicited. Social desirability may be a problem because employees might be reluctant to express their true opinions in order to project a positive image of themselves or of their organizations (Restubog, Zagenczyk, Bordia & Tang (2013). By gathering information from various sources, future research may be able to lessen the problem of CMV.

Further Research

For better generalization of the findings, the study might be carried out in many Indian cities that have businesses that cater to the STEM sectors of science, technology, engineering, and mathematics.

A small number of industries was the focus of the study, but it is possible to perform comparative research across a variety of verticals, including steel, chemicals, and medicines, for a true picture of the status of women in STEM. Longitudinal analysis might be used in future studies to uncover new viewpoints and dimensions to innovate further.

References

Acker, J. (2009), "From Glass Ceiling to Inequality Regimes", *Sociologie du travail*, 51(2): 199-217.

Andolsen, B. H., Gudorf, C. E., Pellauer, M. D., Baier, A. C., Progress oj Sentiments, A., & Acker, J. (1990)." Hierarchies, Jobs, Bodies: A Theory of Gendered Organizations," *Gender and Society* 4: 139-58.

Alvesson, M. & Berg, P.O. (1992), Corporate Culture and Organizational Symbolism. New York: Walter de Gruyter and Company.

Andersen, M. L. (1987), "Changing The Curriculum in Higher Education. Signs:" *Journal of Women in Culture and Society*, 12(2):222-54.

Anderson, E. (2000), "Feminist Epistemology and Philosophy of Science", in Edward N. Zalta (ed.), The Stanford Encyclopedia of Philosophy (Spring 2020)

Arif, S., Zubair, A. & Manzoor, Y. (2012), "Innovative Work Behavior and Communication Climate Among Employees of Advertising Agencies. FWU Journal of Social Sciences, 6(1), 65.

Aguilar, M. R. (2013), "Creating Innovators. The Making of Young People Who Will Change the World", *icade. Revista de la Facultad de Derecho,*89: 266-68.

Battistelli, A, Odoardi, C.Vandenberghe, C., Di Napoli, G., Piccione, L (2019), "Information Sharing and Innovative Work Behavior: The Role of Work-based Learning, Challenging Tasks, and Organizational Commitment", *Human Resource Development Quarterly*,30 (3):361-81.

Baron, R. M. & Kenny, D. A. (1986), "The Moderator–mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations" *Journal of Personality and Social Psychology,* 51(6): 1173.

Basadur, M. (2004), "Leading Others to Think Innovatively Together: Creative Leadership.", *The Leadership Quarterly*, 15(1): 103-21.

Byrne, B. M. (2013), Structural Equation Modeling with Mplus: Basic Concepts, Applications, and ProgramminA, Routledge. New York

Christie, M., O'Neill, M., Rutter, K., Young, G., & Medland, A. (2017). Understanding Why Women Are Under-represented in Science, Technology, Engineering and Mathematics (STEM) Within Higher Education: A Regional Case Study. Production, 27(spe), e20162205.

Cummings, A. & Oldham, G. R. (1997), "Enhancing Creativity: Managing Work Contexts For the High Potential Employee", *California Management Review,* 40(1): 22-38.

Dawn Rosenberg Mckay (2020), "What Is Career Development? "(online) available from https://www.thebalancecareers.com/what-is-career-development-525496)

De Jong, J. P. & Den Hartog, D. N. (2008), "Innovative Work Behavior: Measurement and Validation", *EIM Business and Policy Research*, 8(1): 1-27.

Fagley, N. S. & Adler, M. G. (2012), "Appreciation: A Spiritual Path to Finding Value and Meaning in the Workplace", *Journal of Management, Spirituality & Religion,* 9(2): 167-87.

Farr, J. L. & Ford, C. M. (1990), "Individual Innovation" In M. A. West & J. L. Farr (Eds.), Innovation and Creativity at Work: Psychological and Organizational Strategies. John Wiley & Sons.

Gregory, B.T, Albritton, D.M, Osmonbekov, T (2010), "The Mediating Role of Psychological Empowerment on the Relationships between P–O Fit, Job Satisfaction, and In-role Performance", *Journal of Business & Psychology*, 25(4),639-47.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006), Multivariate Data Analysis (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Hathorn M, & Brusoni M. (2012), Career Development Survey. Research Study Prepared For the 2012, Career Development Roundtable. Retrieved from: https://www.optimis-hcm.com/data/file/CareerDevSurvey-CDR.

Janssen, O. (2000), "Job Demands, Perceptions of Effort reward Fairness and Innovative Work Behavior", *Journal of Occupational and Organizational Psychology*, 73(3): 287-302

Kang, S. K. & Kaplan, S. (2019), "Working Toward Gender Diversity and Inclusion in Medicine: Myths and Solutions", *The Lancet*, 393(10171): 579-86.

Luoh, H. F, Tsaur, H, Tang, Y (2013), "Empowering Employees: Job Standardization and Innovative Behavior". *International Journal of Contemporary Hospitality Management*, 26(7):1100-17.

Mukherjee, B. S. & Ray, A. (2010), "Innovative Work Behavior of Management: Implications Regard Stressful Challenges of Modernization Public and Private Sector Organizations", *Academy of Management Journal,* 37: 580-607.

Muduli, A. (2017), "Workforce Agility: Examining The Role of Organizational Practices and Psychological Empowerment", *Global Business and Organizational Excellence,* 36(5): 46-56.

Onyishi, I. E., Ugwu, F. O. & Ogbonne, I. P. (2012), "Empowering Employees for Change Oriented Behaviors: The Contribution of Psychological Empowerment to Taking Charge at Work", *European Journal of Social Sciences*, *27*: 301-08.

Organ, D. W. (1988), "A Restatement of The Satisfaction-performance Hypothesis", *Journal of Management,* 14(4): 547-57.

Özarallý, N. (2015), "Linking Empowering Leader to Creativity: The Moderating Role of Psychological (felt) Empowerment", *Procedia-Social and Behavioral Sciences, 181, 366-376. Psychology, 98*(1): 158–68.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y. & Podsakoff, N. P. (2003), "Common Method Biases in Behavioral Research: a Critical Review of The Literature and Recommended Remedies", *Journal of Applied Psychology*, 88(5): 879.

Quinn, R. E. & Spreitzer, G. M. (1997), "The Road to Empowerment: Seven Questions Every Leader Should Consider", *Organizational Dynamics*, 26(2): 37-49.

Restubog, S. L. D., Zagenczyk, T. J., Bordia, P., & Tang, R. L. (2013), "When Employees Behave Badly: The Roles of Contract Importance and Workplace Feminism in Predicting Negative Reactions to Psychological Contract Breach", *Journal of Applied Social Psychology,* 43(3): 673-86.

Richardson, L., Poole, L., Fenn, K. & Scior, K. (2018), "Standing Up for Myself: A Psychosocial Group Intervention to Increase the Capacity of People with Intellectual Disabilities to Manage and Resist Stigma", Research paper presented at Symposium: STIGMA

Sageer, A., Rafat, S. & Agarwal, P. (2012), "Identification of Variables Affecting Employee Satisfaction and Their Impact on The Organization", *IOSR Journal of Business and Management,* 5(1): 32-39.

Shoss, M. K., Eisenberger, R., Restubog, S. L. D. & Zagenczyk, T. J. (2013), "Blaming The Organization for Abusive Supervision: The Roles of Perceived Organizational Support and Supervisor's Organizational Embodiment", *Journal of Applied Psychology*, 98(1): 158.

Smith, L. (2013), "Working Hard with Gender: Gendered Labor for Women in Male-dominated Occupations of Manual Trades and Information Technology (IT)", *Equality,*

Diversity and Inclusion: An International Journal, 32(6): 592-603.

Stout, J. G., Dasgupta, N., Hunsinger, M. & McManus, M. A. (2011), "STEMing The Tide: Using Ingroup Experts to Inoculate Women's Self-concept in Science, Technology, Engineering, and Mathematics (STEM)", *Journal of Personality and Social Psychology*", 100(2): 255.

Sun, X. (2016), "Psychological Empowerment on Job Performance—Mediating Effect of Job Satisfaction", *Psychology,* 7(04): 584.

Tabachnick, B. G., Fidell, L. S. & Ullman, J. B. (2007), Using Multivariate Statistics. Boston, MA: Pearson.

Teng, C. C., Hu, C. M. & Chang, J. H. (2020), "Triggering Creative Self efficacy to Increase Employee Innovation Behavior in the Hospitality Workplace", *The Journal of Creative Behavior,* 54(4): 912-25.

Thomas, K. W. & Velthouse, B. A. (1990), "Cognitive Elements of Empowerment: An "Interpretive" Model of Intrinsic Task Motivation", *Academy of Management Review*, 15(4): 666-81.

West, M. (2001), "Management of Creativity and Innovation in Organizations", *Research in Organizational Behavior*, 10(1): 123-67.

Williams, J. C., Phillips, K. W. & Hall, E. V. (2016), "Tools For Change: Boosting The Retention of Women in The STEM", *Journal of Research in Gender Studies*, 6(1):