

## The Moderating Effect of Age, Gender, And Experience in the Impact of Emotional Intelligence on OCB

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### ABSTRACT

**Purpose:** Research objective to assess moderating role of demographic factors such as age, gender, as well as experience, on linkage among EI (emotional intelligence) and OCB (organisational citizenship behaviour).

**Design:** The research has been done for senior level employees of IT service organizations like managers, executives and team leads in India having experience of at least 2 years. Sample of 550 employees has been selected utilizing simple random sampling technique. Google Forms has been utilised to collect data, or a closed-ended questionnaire was created for data collection. The IBM SPSS AMOS is the software used for developing a “partial least square structural equation model (PLS-SEM)” for assessment of impact at 5% level of significance.

**Findings:** The evaluation of proposed PLS-SEM model defines that EI have positive impact on OCB level as more emotionally aware and knowledgeable persons tend to have better motivation for contributing towards the organization. Also, integrating the role of demographics in the model, the analysis identified that demographic factors don't directly influence OCB resulting in restricting organizations from integrating demographic-specific strategies. Instead, as the current experience level of employees has positive moderating influence on relationship among EI and OCB, thus, more IT service organizations could focus on enhancing the experience of employees in the organization by having mentorship programs, diverse projects allotment to employees, or providing training for enhancing the skillset. These efforts will help employees feel more belonged and motivated towards improving the organization's performance.

**Originality:** The research helps to broaden the body of literature in fields of OCB and EI. As the moderating role of demographics was not assessed and also evaluation for the linkage between EI and OCB was not present for the IT service sector in India, thus, findings of the research are valuable for IT service organizations in India to improve the EI level of employees. Even in practice organizations could use the findings for designing their HR policies to derive better OCB level among employees.

**Keywords:** Organizational citizenship behaviour (OCB), emotional intelligence (EI), age, gender, experience, PLS-SEM

### INTRODUCTION

The continuous change in today's business environment has created the need to develop the competencies that enable employees and managers to operate efficiently and effectively to achieve individual and organisational goals. EI is one such competency which defines the ability of an individual to express, appraise, or perceive emotion; capability of generating or accessing emotional knowledge, and the potential of regulating emotion for promoting intellectual and emotional growth (Goleman, 2005; Kemkar and Jain, 2017). Previous researchers (Gupta, 2016; John, 2020; Kapadwala and Joseph, 2023) have identified role of EI in supporting IT service sector through its significant contribution to stress management, job performance, leadership effectiveness and organizational performance. Also, studies have shown that the dimensions of EI like empathy, emotional stability,

self-motivation and self-awareness have contributed to influencing managerial effectiveness (Kemkar and Jain, 2017). Further, EI is linked with the ability to reduce organizational role stress and improve creativity, emotional resilience, and decision-making skills among IT service sector employees (Rathore and Ahuja, 2015; John, 2020; Kapadwala and Joseph, 2023).

Another perspective is the significant role of OCB in organizational effectiveness (Goel and Singh, 2023; Singh and Banerji, 2022). According to Matthew and V.A. (2020), OCB is described as people's behaviour that is flexible, not instantly and clearly acknowledged by a formal incentive system, and that promotes effective and successful organisational functioning. There are mainly 5 dimensions of OCB like courtesy, civic virtue, sportsmanship, conscientiousness, virtue. According to Mohapatra, Satpathy, and Patnaik (2019), these factors taken together characterise the impact of OCB. According to researcher Kusumajati (2014), OCB contributes towards employee creativity, organizational performance, and job satisfaction. Apart from this, studies also have shown that OCB has contributed to positively influencing employee creativity, deriving improved productivity, increasing the adaptability of the organization, and enhancing stability (Chhabra and Mohanty, 2016; Saravanan, 2018; Mohapatra, Satpathy and Patnaik, 2019; Singh, Rawat and A., 2023). Thus, OCB is an important aspect of the organization.

While discussing the EI of employees, the researchers highlighted the role of demographic factors. Pooja and Kumar (2016), Nagar (2017), and Gautam and Khurana (2019) highlighted the positive contribution of age and work experience in EI. These studies mentioned EI as a competency developed based on life experience. In this case, older persons typically have greater EI levels than younger ones because they have more life experience. Similarly, work experience of an individual defines the skillset and knowledge of the person. Therefore, with the presence of more knowledge and skill, a person tends to have a higher EI. Focusing on the influence of gender, Uslu (2020) mentioned that females have higher EI in comparison to males. According to a study by Shrestha (2022), EI is impacted by demographic factors involving education, age, service year, salary, designation, but not by gender or marital status. Thus, demographical characteristics of an individual have a role in influencing the EI of a person.

India's IT services industry makes a significant economic impact. Accounting for 7.5% of Indian GDP in FY 23 as well as an expected contribution of 10% by 2025 in India's GDP, the focus of the sector is towards preparing itself for the next phase of the IT revolution (IBEF, 2023). However, the sector has the presence of problems such as employment risk, skill gap, workload, higher turnover intent, lower organizational commitment, and women employment discrimination (Chaturvedi and Chand, 2022; Kanwar, Singh and Kodwani, 2012; Gaikwad, 2021). A focus on OCB could help in addressing these challenges and even researcher Kusumajati (2014) identified the positive contribution of OCB in organizational performance, thus, the IT service sector of India could employ the strategies for boosting OCB.

Researchers have independently identified how demographics affect EI and how EI affects OCB, but they have not focused on using demographics as moderating variables in relationship among EI and OCB. As India is an economy with a diverse group of people, demographics have a crucial role in influencing behaviour of employees (Singh and Banerji, 2022). To achieve the success of the organization, there is a need to have effective management of the diverse workforce. For this, the requirement is to have an understanding of the role of demographics. Thus, the objective of current research is to close this gap by evaluating moderating impact of demographics between OCB and EI.

#### **Aim of the study**

This study aims to examine the moderating effect of age, gender, and experience on the impact of emotional intelligence on OCB.

## **LITERATURE REVIEW**

### **EI**

EI could be defined as the social intelligence form which focuses on ability of people to manage emotions and understand as well as recognize them in himself or others (Mayer and Salovey, 1993; Yadav and Jain, 2020). The concept of EI accepts the role of emotion in influencing individual life and compared to the standard intelligence concept, EI defines emotion's influence on the relationships, success, and well-being of an individual (Habib, Naqi and Ali, 2021). As stated by Doe, Ndinguri, and Phipps (2015), EI is ability to think more clearly. This involves being able to recognise or control emotions for personal development, as well as having access to and comprehending emotions and emotional knowledge. Though EI is significant for all individuals, but it has a special role in the workplace. As organizations can improve the well-being of the employees and increase their productivity by focusing on EI, therefore, consideration of the role of EI is required (Phaugad and Rajan, 2017).

Researchers in existing studies identified that there is the existence of many factors which contribute to influencing the EI of an employee. According to a study by Soomro et al. (2022), job satisfaction and organisational commitment are the elements that influence EI. Further, ÖztüMurlenk (2019) defined the significant role of the education level of employees in affecting the EI for the service sector employees in the U.S. Lakshmi and Sekhar Rao (2018) defined that EI not only have an influence on the career and workplace but it also influences the professional life of an individual. The factors which majorly constitute this impact are anger, anxiety control, achievement orientation, adaptability, transparency, and emotional self-efficacy. Another study by BabithaK, Murugesan and SanithaK (2020) mentioned that work-life balance, educational factors, personal factors, demographic factors have major influence on EI of employees. Supporting this, Thapa, Akashe and Bhattarai (2023) also mentioned the role of socio-demographic features like qualification, EI training, marital status, work experience, age and gender on EI of employees. Herein, the relationship of EI was derived from marital status, EI training, social media engagement, and work experience. Hence, the presence of EI in employees is essential for improving their efficiency and deriving better organizational performance.

### **OCB**

OCB defines the discretionary and voluntary actions taken by employees which are benefitting the organization and are beyond the role requirement (Tambe, 2014; Azmi, Desai and Jayakrishnan, 2016). In simple terms, OCB is the phenomenon wherein the individual behaves in a manner which is beyond the scope of the assigned tasks. The researchers defined OCB with its two main characteristics. Firstly is the requirement of voluntary behavior i.e. the engagement of the employee in the task should be willingness-based and not direct by any external coercion. The second aspect is that the action should have some valuable contribution to the organization like a positive influence on the effectiveness and functioning (Ravina, 2023). According to existing research, these volunteer contributions improve job satisfaction, organisational and individual performance, building relationships with others, and gaining a competitive advantage (Yadav and Punia, 2013; Kernodle and Noble, 2013). Thus, for improving the management practices and the organizational performance focus on OCB is essential.

Though OCB is identified as a relevant concept for organizational effectiveness, but for supporting the integration of OCB practices, researchers identified different factors which affect OCB (Goel and Singh, 2023; Singh and Banerji, 2022). Islam, Akter and Afroz (2015) mentioned that altruism, organizational loyalty, courtesy, problem concern, conscientiousness, sportsmanship, civic virtue, self-development, and organizational compliance are the factors which affect OCB. Kusumajati (2014) defined the role of superior-subordinate interaction quality, personality traits, and organizational support role in influencing OCB. Bismala (2019) discussed the significance of a positive organizational climate, effective leadership, and job satisfaction of employees in motivating employees to deliver more than formal tasks. Adding to this, Putra (2020) and Fathiyah and Pasla (2022) defined leadership, personality, engagement, commitment, empowerment, employee morale, and work motivation as the factors which tend to enhance the OCB among employees. Hence, OCB presence in an employee helps boost organizational productivity, thus, organizations need to focus on factors affecting OCB to increase contribution of employees in organization.

### **Role Of Age, Gender and Experience in EI**

The EI of an individual changes over the lifetime due to the change in a person's physiology, experience accumulation, motivation, and intelligence. Among these changes, the demographics of a person are the relevant source of influencing the EI of an individual (Khan and Minbashian, 2017). Studies (Shrestha, 2022; Nagar, 2017; Sergio, Dungca and Ormita, 2015; In their investigation on the relationship between demographics and EI, Gautam and Khurana (2019) found that demographic parameters significantly affect EI. The importance of demographic factors in determining an individual's EI is defined by the presence of significant impact, even though the impact of various elements differs. According to ÖztiMurlenk (2019) and Pooja and Kumar (2016), age is factor which determines people's capacity for emotional regulation and change adaptation. As older people have the experience of managing their own emotions and comprehending others' emotions, thus, EI competence could increase with age. Thapa, Akashe and Bhattarai (2023) discussing gender roles in EI mentioned that higher EI scores were attained by females compared to males as females are more emotionally developed. Uniyal and Uniyal (2020) mentioned about work experience role in EI by defining that experience allows an individual to become more self-aware, better at working with others, better at managing themselves, and better at handling conflict or communicating due to the encountered chances, opportunities, and obstacles in the workplace. Therefore, higher work experience results in raising the EI level of an individual. Though different researchers have explored the influence of other demographic factors too like marital status or qualification, but impact of these variables witnessed contrary findings. Studies such as Thapa, Akashe and Bhattarai (2023) defined no role of marital status and qualification, while Pooja and Kumar (2016) showed the presence of impact. As age, gender, and work experience were mostly consistent, thus, they are identified as mainly the demographic factors influencing EI.

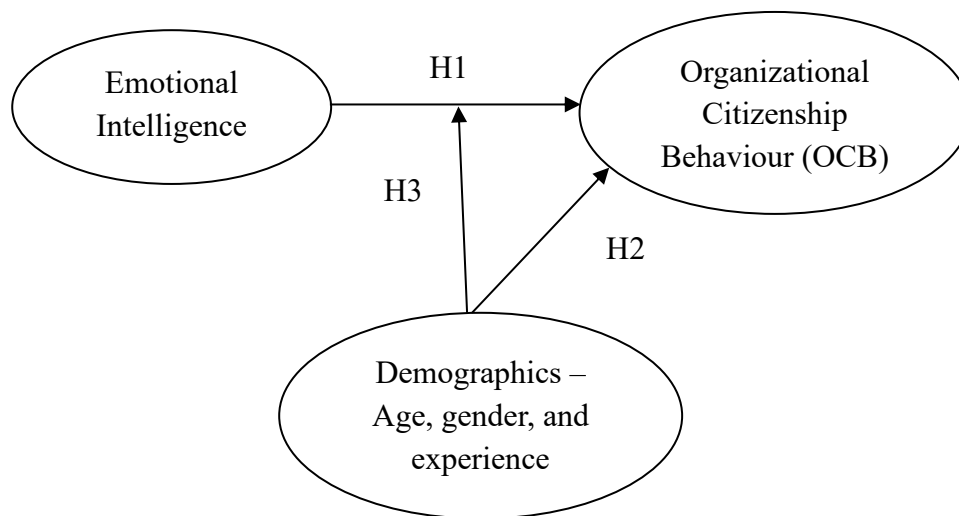
### **Empirical review**

Pooja and Kumar (2016) empirically assessed the linkage between demographic variables and the EI for the Indian service sector by examining the perception of 424 employees using SPSS software. The analysis of the responses revealed that gender, age, work experience, educational qualification, management level have contributed to influencing EI. Sharma and Mahajan (2017) examined how bank employees' EI and OCB relate to one another. With the examination of 673 employees' perceptions of the State Bank of India in J&K, the analysis depicted that there is a presence of positive influence of EI on OCB. According to these studies, when employees' emotions are appropriately communicated, their productivity rises, which enhances the performance of the organisation. Turnipseed (2018) assessed the relationship between OCB and EI while controlling for locus of control. 290 employed students' perceptions were evaluated, and the results showed that the organisational and individual OCB are positively affected by EI dimensions of managing, comprehending, and perceiving emotions. Anwar et al. (2017) investigated relationship among OCB and EI for workers at eleven commercial banks in Peninsular Malaysia. The analysis of 293 workers demonstrates that the elements of EI, involving emotion appraisal, emotion regulation, emotion usage, have a favourable impact on OCB..

The perceptions of 360 middle-level managers for Uttarakhand's businesses were investigated by Gautam and Khurana (2019). Examination of data using SPSS software identified that gender has a significant role in EI as females have more EI compared to males. Age has a positive impact on EI i.e. older people have more EI. Also, work experience positively influences EI as more experienced managers tend to have higher scores of EI. Nagpal, Kumar and Ravindra (2020) assessed the perception of more than 500 IT organisation employees in Bengaluru, India to identify effect of demographic factors on EI. According to the study, demographic variables significantly affect EI. Similarly, Thapa, Akashe and Bhattarai (2023) assessed the linkage between demographic factors and EI for 397 employees of organizations in Kathmandu Valley, Nepal. Employees' EI is positively impacted by sociodemographic characteristics, according to an analysis of parameters involving gender, marital status, age, qualifications, EI training, work experience.

### **Conceptual framework**

Study's conceptual framework, as determined by the review of previous research, may be expressed as



**Figure 1.** Conceptual framework.

As per the literature review, the figure above indicates that there are two types of connections among OCB and EI. One is the clear connection among OCB and EI. Another is how the relationship among OCB and EI is influenced by the moderating influence of demographic variables.

### Research Gaps & Hypothesis

The EI existence in an organization not only helps in improving the relationship of the employees with the organization but also makes employees feel valued in the organization. As identified by many researchers (Sharma and Mahajan, 2017; Turnipseed, 2018; Anwar et al., 2017), this sense of being valued results in having a positive influence on the employee's willingness to work more than the assigned tasks. This defines presence of positive linkage among EI and OCB. Even while discussing EI, the researchers (Gautam and Khurana, 2019; Nagpal, Kumar and Ravindra, 2020; Thapa, Akashe and Bhattarai, 2023) identified that over the lifetime, the EI of individual changes and one of the factors which majorly influence the EI is the demographic aspects. Gender, age, as well as work experience have a significant effect on EI. However, despite understanding the role of demographics in changing employee behaviour, the exploration of demographics' role in influencing the OCB level or the linkage between EI and OCB has not been done. Also, as the Indian IT industry needs to improve its OCB to overcome the persisting challenges of employee motivation or turnover, thus, further there is a study gap in having examinations for IT service sector in India.

Following hypothesis will be evaluated to close this research gap and satisfy the study's requirements.

H1: EI among employees results in raising the OCB among employees

H2: Demographic factors have significant influence on the OCB among employees

H3: Demographic factors have moderating effect on relationship among EI and OCB among employees

### RESEARCH METHODOLOGY

The research objective is the examination of moderating impact of demographic factors on linkage among OCB and EI. The research was done using the positivism paradigm and epistemology philosophy as the methods enable the exploration of the existing information and the statistical evaluation of the theoretical details. The research design has been explanatory to support need for research of having empirical evaluation using hypothesis testing. Herein, the deductive approach was used for discussing the broader linkage of EI and OCB concerning IT service organizations in India only.

**Data**

The research objective to have evaluation of linkage between OCB and EI for the employees considering the moderating impact of demographic variables, thus, herein quantitative data was selected. The data allowed the researcher to determine the association among demographic parameters, EI, and OCB, as well as to statistically evaluate linkage.

As focus of research is employees of IT service organizations in India, so, the desired criteria was to have the inclusion of only those organizations wherein at least 50 employees are present. Targeted population of research has been senior-level employees like managers, team leads, or executives who have a total experience of at least 2 years. The experienced employees helped the researcher in getting more adequate information about the EI and OCB linkage. The study was restricted to the Delhi NCR region to reach employees from all across India due to time and resource limitations. Herein, from the specified population, a sample needs to be selected for assessment. To minimise bias in data gathering and preserve unpredictability, the researcher chose to pick the sample using a straightforward random sampling technique. Cochran's formula has been used to determine study's sample size at 95 percent confidence interval, using a 65% population attribute proportion and a 4% error margin. Derived sample size has been 546, but for better approximation, the sample of 550 employees was considered for study.

**Data collection**

For a collection of the desired sample data, a closed-ended questionnaire was designed. As the close-ended questionnaires enable statistical examination of the responses and even help in collecting only relevant information for the study, thus, the close-ended questionnaire was selected for the study (Rosala, 2024; Taherdoost, 2020). The two primary portions of the designed questionnaire were inferential and demographic sections. While the inferential section contained the study's two primary variables, OCB and EI, the demographic section asked questions about respondents' demographic traits. Herein, 40 items were included to represent two constructs. Table 1 shows the no. of items included per construct and the sources based on which these items were developed.

**Table 1.** Questionnaire constructs.

Constructs	Items per construct	Sources
OCB	24	(Kushwaha, 2019; Meilani et al., 2020; Tambe and Shanker, 2015).
EI	16	(Garg et al., 2023; Khatun and Salleh, 2020; Muhammad Abdul Rasheed, 2014; Zungu, 2022)

To collect the data, initially, the organizations were contacted and briefed about research purpose and details. Once confirmation from organization was derived for the participation of their employees, then using Google Forms the questionnaire was circulated to the selected respondents. Initially, the response rate was very low. But as the specified sample size was 550, thus, respondents were connected again and again and even emails were circulated for their responses to reach the desired sample size. Finally, after three rounds the sample of 550 employees was collected.

**Data Analysis**

IBM SPSS and IBM SPSS AMOS were utilised to analyse data that has been gathered from respondents. Herein, demographic of respondents was assessed using the frequency analysis with IBM SPSS. The analysis revealed that the selected respondents are well educated and are mostly the ones who are either executives or managers so are mostly from age 30-40 years or 40-50 years. Even the current experience of the sample is below 5 years while total experience is mostly between 5-10 years and 10-15 years.

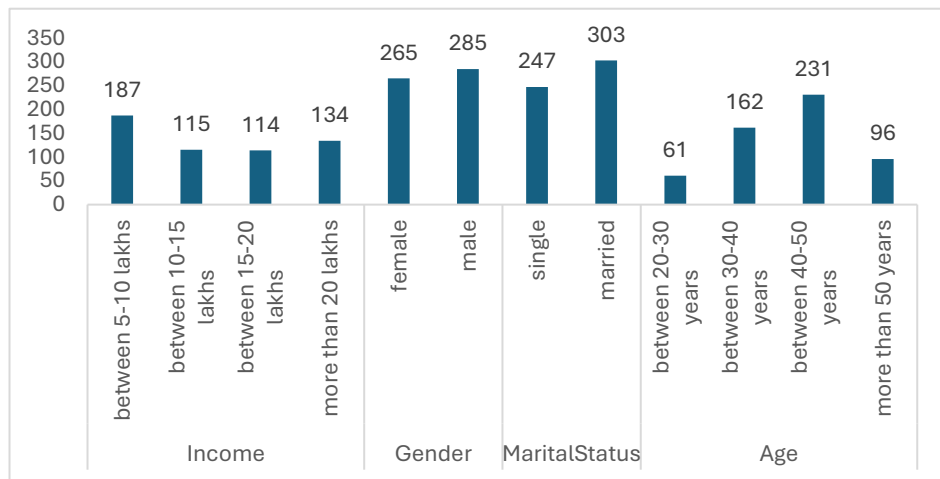


Figure 2. Demographic analysis.

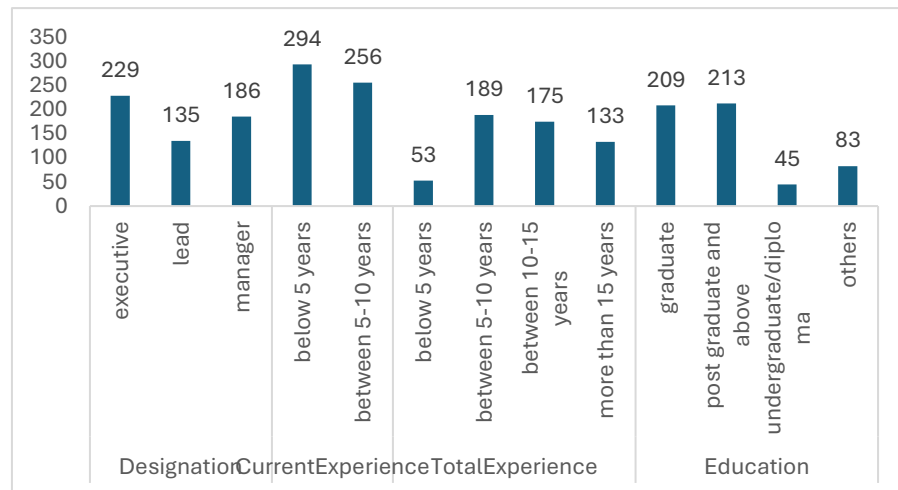


Figure 3. Demographic analysis.

The demographic analysis showed that as the selected sample is well experienced and educated, thus, the sample was suitable for making deductions about the linkage between EI and OCB as the sample would be well aware of the working of the organization.

For the inferential section, a PLS-SEM-based model has been developed. Based on model, the assessment of proposed hypothesis was done at a 5% level of significance. Herein, the interaction effect between demographics and EI was also included in the model to assess moderating impact of demographics on linkage among OCB and EI.

### Reliability and validity

The focus of the researcher was not just on building the model for objective fulfilment but on deriving more reliable and valid findings. Herein, reliability of model was assessed by utilizing the CR (composite reliability) and Cronbach alpha test. Additionally, “average variance extracted (AVE)” was utilized to evaluate convergent validity of model. Additionally, square root of AVE and intercorrelation among the components were used to determine discriminant validity. Finally, the RMSEA, GFI, NGI, IFI, PGFI, PNFI, and PCFI indices were used to assess model fitness of PLS-SEM model. Data analysis

According to the literature study, previous research has shown that there are demographic characteristics that affect EI and that EI influences OCB in employees. With age, gender, current experience, and total experience as moderating variables, a PLS-SEM model is created here to illustrate relationship among EI and OCB. Interaction effect among the demographic and EI is included in PLS-SEM model.

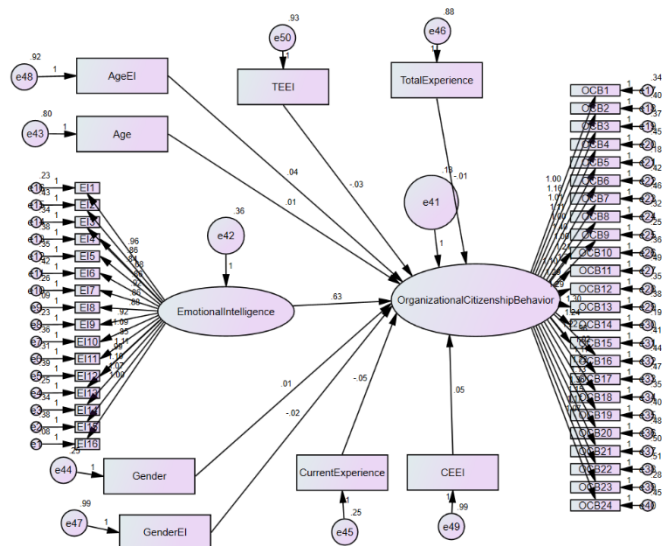


Figure 4. PLS-SEM model.

The above fig. presents the linkage stated in conceptual framework of research. Before proceeding with impact examination, the requirement is to have an understanding of reliability as well as validity of model. thus, herein, initially, measurement model outcomes will be discussed, followed by discussion of the structured model.

### Measurement model

Chan and Lay (2018) and Hair et al. (2022) while discussing development of PLS-SEM model stated that verification of the reliability as well as validity of model is essential to define whether the findings are effective. Cronbach alpha and composite reliability are two distinct indices that can be utilised to assess a model's dependability, according to Hair et al. (2022). Cronbach alpha is internal consistency measure which defines the interlinkage between the items used for measuring the construct. A value of more than 0.6 reveals that the items are efficient in measuring the selected construct. After that, CR was defined as the construct's overall dependability measure by Hair et al. (2022) and Cheung et al. (2023). These investigators recommended that value of more than 0.6. Further, Yang and Liu (2023) and Hair et al. (2022) also mentioned validity of model. Herein, these researchers mentioned that convergent validity is the extent of measuring the interlinkage between the different items of the construct. The criteria for the convergent validity are having an AVE value of more than 0.5. Herein, table 2 illustrates that factor loading of each of selected constructs is more than 0.5, revealing significance of the item in measuring the respective construct. Further, value of CR and Cronbach's alpha is  $> 0.6$  for both constructs, showing existence of reliability in the measurement of the construct. Further, even the value of AVE is 0.5 or more, thus showing presence of convergent validity in measurement of OCB and EI.

Table 2. Reliability and validity of OCB and EI.

Statements	Codes	Factor loading	CR	AVE	Cronbach alpha
<b>Organizational Citizenship Behaviour (OCB)</b>					



“Attendance at work is above the norm” for me	OCB1	0.67	0.96	0.50	0.96
“I do not take extra breaks	OCB2	0.70			
I obey company rules and regulations even when no one is watching	OCB3	0.66			
I’m one of the most conscientious employees”	OCB4	0.66			
I believe in giving an honest day’s work for an honest day’s pay	OCB5	0.78			
I spend a lot of time complaining about trivial matters	OCB6	0.75			
I always focus on what’s wrong rather than the positive side	OCB7	0.61			
I tend to make “mountains out of molehills”	OCB8	0.75			
I always find fault with what the organization is doing	OCB9	0.79			
I am the classic “squeaky wheel” that always needs greasing	OCB10	0.70			
I attend meetings that are not mandatory but are considered	OCB11	0.70			
I attend functions that are not required, but help the company's image	OCB12	0.76			
I keep abreast of changes in the organization	OCB13	0.74			
I read and keep up with organization announcements, memos, and so on	OCB14	0.84			
I take steps to try to prevent problems with other workers	OCB15	0.71			
I am mindful of how my behaviour affects other people’s jobs	OCB16	0.62			
I do not abuse the rights of others	OCB17	0.62			
I try to avoid creating problems for workers	OCB18	0.70			
I consider the impact of his/her actions on coworkers	OCB19	0.71			
I help others who have been absent	OCB20	0.65			
I help others who have heavy workloads	OCB21	0.71			
I help orient new people, even though it is not required	OCB22	0.65			
I willingly help others who have work-related problems	OCB23	0.76			

I am always ready to lend a helping hand to those around me	OCB2 4	0.65			
<b>Emotional Intelligence (EI)</b>					
I have a good sense of why I have certain feelings most of the time.	EI1	0.77	0.9 5	0.53	0.94
I have a good understanding of my own emotions.	EI2	0.62			
I really understand what I feel.	EI3	0.66			
I always know whether or not I am happy.	EI4	0.55			
I always know my friend's emotions from their behaviour.	EI5	0.66			
I am a good observer of others' emotions.	EI6	0.65			
I am sensitive to the feelings and emotions of others.	EI7	0.71			
I have a good understanding of the emotions of people around me.	EI8	0.87			
I always set goals for myself and then try my best to achieve them.	EI9	0.76			
I always tell myself I am a competent person.	EI10	0.74			
I am a self-motivated person.	EI11	0.67			
I would always encourage myself to try my best.	EI12	0.73			
I am able to control my temper and handle difficulties rationally.	EI13	0.77			
I am quite capable of controlling my own emotions.	EI14	0.75			
I can always calm down quickly when I am very angry.	EI15	0.72			
I have good control of my own emotions.	EI16	0.91			

Lastly, examining the constructs' correlation with square root of AVE could be used to gauge discriminant validity of construct. Table 3 illustrates that as value of AVE is more than the correlation value, therefore the discriminant validity is present in the measurement of the construct, and the selected constructs could be used further for the evaluation of the linkage between EI and OCB and moderating effect of demographic variables amid relationship.

### **Structural Model**

Statistical model utilised to examine correlation between variables is called structural model. As results of structural model help in hypothesis testing, thus, before statistically assessing the hypothesis, the fitness of the model is checked. The original model state in Figure 4 stated the linkage between EI, OCB, as well as demographic factors (current experience, age, gender, total experience), but assessment of model fitness indices revealed that model is not adequately fit. To overcome this, the model was modified by using the covariance. Herein, the covariance-based linkage between the error terms was stated based on the modification indices values derived in AMOS.

**Table 3.** Model fitness.

Model fitness	Value
CMIN/DF	5.65
RMSEA	0.9
PGFI	0.59
IFI	0.78
CFI	0.78
PNFI	0.68
PCFI	0.71

Hair et al. (2018), while discussing goodness of fit of structural model stated that in cases wherein 3-4 criteria are fulfilled, the model is said to be fitted and adequate for the hypothesis testing. Herein, though the value of IFI and CFI is below the recommended level of 0.9 or more, but for RMSEA, the value is within the recommended limit, i.e. less than 0.10. Also, for PNFI, PGFI, PCFI values are more than 0.5. CMIN/DF value is more than 5 but still close to 5. Therefore, it can be said that the defined structural model is effective and could be used for assessment of linkage.

#### **Impact of EI on OCB**

**First part of the research objective is linkage between EI and OCB.**

**Table 4.** Impact of EI on OCB.

	Coefficient	Standard error	T-value	P-value	Result
EI → OCB	0.53	0.04	12.74	0.00	Significant

According to the regression results, there is extremely minimal bias in the impact measurement, as seen by the linkage's standard error value of 0.04. Even though p-value is  $< 0.05$ , T-value in this case is greater than the T-value at the 95% CI, which is 1.96. As a result, the first hypothesis' null hypothesis—that is, that employee EI has no bearing on their OCB level—is rejected. The coefficient value indicates that there is positive correlation among OCB and EI.

#### **Demographic factors impact on OCB**

The second part of the research is focused on assessing linkage among demographic factors and OCB.

**Table 5.** Demographic factors impact on OCB.

	Coefficient	Standard error	T-value	P-value	Result
Age → OCB	0.01	0.03	0.55	0.58	Not-Significant
Gender → OCB	0.01	0.03	0.34	0.73	Not-Significant
Current Experience → OCB	-0.05	0.04	-1.29	0.20	Not-Significant
Total Experience → OCB	-0.02	0.03	-0.62	0.54	Not-Significant

As can be seen from the above table, the null hypothesis that demographic factors have no effect on OCB is not rejected, even though the standard error value for each demographic factor is low because p-value is  $>0.05$ . This confirms that demographic factors do not influence the OCB.

#### **Moderating the impact of demographic variables on the relationship between EI and OCB**

Finally, to define moderating effect of demographic variables on linkage among OCB and EI, impact of interaction between EI and demographic factors is determined.

**Table 6.** The moderating impact of demographic factors on linkage between EI and OCB.

	<b>Coefficient</b>	<b>Standard error</b>	<b>T-value</b>	<b>P-value</b>	<b>Result</b>
Gender-EI Interaction $\square$ OCB	-0.02	0.02	-1.48	0.14	Not-Significant
Current experience – EI interaction $\square$ OCB	0.04	0.02	2.06	0.04	Significant
Age- EI Interaction $\square$ OCB	0.03	0.02	1.32	0.19	Not-Significant
Total experience – EI interaction $\square$ OCB	-0.02	0.03	-0.74	0.46	Not-Significant

The table shows that gender, age, and total experience have a p-value of more than 0.05, showing no moderating impact of these variables on linkage among EI and OCB. However, with current experience, the p-value is less than 0.05, which shows that current experience has a moderating influence on OCB. The coefficient value of the linkage is also positive, revealing presence of positive relationship among OCB and current experience and EI interaction.

#### **DISCUSSION**

The research objective to determine how demographic characteristics affected the relationship between OCB and EI for employees in Indian IT service organisations. To meet the present purpose, three hypotheses were stated. The first hypothesis focused on evaluating the linkage between EI and OCB. The existing studies (Sharma and Mahajan, 2017; Turnipseed, 2018; Anwar et al., 2017) have assessed relationship among OCB and EI and even identified the presence of a positive linkage between the variables. However, most of these studies were not done in India or for IT service organizations. As in the growing digitalized economy, the IT sector has major role in the growth of the nation and the presence of barriers in the form of lack of employee motivation or high employee turnover could result in reducing the productivity of the organization; therefore, there is a need to know the significance of EI. The evaluation of the first hypothesis demonstrated that senior staff members understand significance of EI and even embrace its role in OCB.

Second hypothesis of research aimed to assess impact of demographic factors on OCB. As existing studies lack in evaluating this linkage, thus, herein, the empirical assessment of the selected 550 employees from IT service organizations in India was done. The analysis confirmed that demographic factors do not influence OCB. Therefore, it could be understood that in IT service organizations, the variation in the demographics of the employees is not influencing their intent to work more than the specified task; instead, it could be some other factors, like EI as identified in the previous hypothesis, which contribute to OCB. Thus, instead of focusing directly on demographics, the organizations need to integrate strategies aimed at increasing EI to improve OCB among employees.

Finally, the last hypothesis of the study includes demographic factors as the moderating variable between EI and OCB. Existing studies (Gautam and Khurana, 2019; Nagpal, Kumar and Ravindra, 2020; Thapa, Akashe and

Bhattarai, 2023) defined that demographics like age, gender and work experience have a role in influencing the EI level of the employees. However, the moderating role of demographics still has not been explored. To fill this gap, the empirical findings evaluated the linkage and identified that gender, age, total experience don't have moderating role in linkage among EI and OCB, but experience of the employee in the current organization tends to have positive effect on linkage between EI and OCB. Thus, this suggests to the organizations that the employees who were associated with company for more yrs are valuable as they tend to have more intent to contribute towards the company. Therefore, while designing the strategies for EI enhancement, the companies could focus on the new joiners to improve their EI and also could focus on providing more incentives to experienced employees to further encourage them.

## **CONCLUSION**

The study's objective was to investigate how demographics may moderate the relationship between OCB and EI for Indian IT service companies. The existing literature synthesis identified that EI is essential for organizations as it helps improve decision-making skills, emotional resilience, and the creativity of employees. Also, the examination of OCB defined that the presence of OCB helps in deriving better stability, organizational productivity, and better adaptability of employees; therefore, focus on OCB is essential. Even the existing researchers have explored the role of demographics on EI by defining that age, gender, and experience have contributed to improving the EI level of an organization. However, there was still a lack of focus on inclusion demographics as the moderating factor or assessing the EI influence on OCB for the IT service organizations; thus, the present research was done to fill this gap and identify role of demographics. Application of PLS-SEM model in the study enhanced the effectiveness of the study as the model not only helped in integrating the direct linkage between EI and OCB, but also included the impact of demographic factors on OCB and impact of interaction effect (demographic factors and EI) on OCB. In consideration of the interlinkage between variables, the study identified positive relationship among OCB and EI. Additionally, current experience moderating role between EI and OCB was determined. The results of the study support previous research and offer further details on the relationship between OCB and EI, which aids organisations in raising employee OCB levels.

## **Implications for practice**

Study's results contribute to body of literature by offering empirical support for relationship among OCB and EI in IT services industry. Positive linkage confirms significant role of EI in benefiting organization. Also, as the selected demographic factors do not influence OCB thus it encourages researchers to further consider other demographic factors like education and income for understanding their role in interaction among EI and OCB.

Implications of the study are not just theoretical, instead, there are many policy-based implications too of the findings. Finding of research that EI have positive influence on OCB has an organisation-level implication. This finding supports organizations in corporate policy development, wherein EI development and training programs are mandated. This training will help in developing the behaviour among the employees which improves their organizational performance. Another implication of the study is associated with the non-role of demographic factors in influencing OCB level. This finding ensures organizations that the HR policies should focus on equality and inclusivity in the EI training and development programs. The focus of the programs should not be demographic-specific but more standardized. Lastly, as the research identified moderating positive role of current experience on linkage among OCB and EI, thus, the IT service organisations could adopt a mentorship program wherein policies are focused on enabling the existing employees to learn more skills, have more experiential learning and work on diverse projects. These efforts will add more value to current experience, thus resulting in leveraging the positive influence of current experience on OCB.

## **Limitations and scope for further study**

The study focused on evaluating moderating effect of the demographics linkage between EI and OCB for the IT service organizations of India. Though the study empirically assessed the linkage as the included sample in the study is only 550 for representing employees from IT service organizations in India, thus, one main limitation of study is small sample size of research due to limited time and financial resources. To overcome this, future studies could focus on including more than 1000 employees in the study and even having a comparison of different

metropolitan regions in India to have a better understanding of variation in OCB level among employees. Another limitation of research has been theoretical restriction of research. Herein, only 3 demographic variables are included as the moderating variable, and also, the impact assessment of EI on OCB is not done dimension-wise. Though the existing findings are still relevant but the availability of dimension-wise information could help organizations to further tailor their strategies. Therefore, future studies could have a dimension-wise assessment of the impact and also have the inclusion of many other relevant demographic variables like income, designation or education level. These explorations will provide the researcher with more in-depth information about the concepts of EI and OCB.

## REFERENCES

1. Anwar, Md.A. *et al.* (2017) 'Assessing organizational citizenship behaviour through constructing emotional intelligence,' *Asia-Pacific Journal of Business Administration*, 9(2), pp. 105–117. <https://doi.org/10.1108/apjba-05-2016-0049>.
2. Azmi, F.T., Desai, K. and Jayakrishnan, K. (2016) 'Organizational Citizenship Behavior (OCB): A Comprehensive Literature review,' *Sumedha: Journal of Management*, 5(1), pp. 102–117. <http://www.indianjournals.com/ijor.aspx?target=ijor:sjm&volume=5&issue=1&article=010>.
3. BabithaK, C., Murugesan, G. and SanithaK, K. (2020) 'A study on the influence of emotional intelligence on employee performance,' *Semantic Scholar* [Preprint]. <https://www.semanticscholar.org/paper/A-Study-on-the-influence-of-Emotional-Intelligence-BabithaK-Murugesan/a1a9118331d97e7ff6855425ba345ae46776676c>.
4. Bismala, L. (2019). *Factors Affecting Organizational Citizenship Behavior: A Literature Review, Proceedings of the Proceedings of the 1st International Conference on Economics, Management, Accounting and Business, ICEMAB*. <https://doi.org/10.4108/eai.8-10-2018.2288740>.
5. Chan, S.H. and Lay, Y.F. (2018) 'Examining the reliability and validity of research instruments using partial least squares Structural equation Modeling (PLS-SEM),' *Journal of Baltic Science Education*, 17(2), pp. 239–251. <https://doi.org/10.33225/jbse/18.17.239>.
6. Chaturvedi, N. and Chand, P.K. (2022) 'Worrywarts of employees in the information technology sector of India,' *ECS Transactions*, 107(1), pp. 9543–9544. <https://doi.org/10.1149/10701.9543ecst>.
7. Cheung, G.W. *et al.* (2023) 'Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations,' *Asia Pacific Journal of Management* [Preprint]. <https://doi.org/10.1007/s10490-023-09871-y>.
8. Chhabra, B. and Mohanty, R.P. (2016) 'Moderating role of locus of control in the relationship between job satisfaction and organisational citizenship behaviour: a study of the Indian IT sector,' *International Journal of Indian Culture and Business Management*, 13(3), p. 288. <https://doi.org/10.1504/ijicbm.2016.078834>.
9. Doe, R., Ndinguri, E. and Phipps, S. (2015) 'Emotional intelligence: the link to success and failure of leadership,' *The Academy of Educational Leadership Journal* [Preprint]. <https://www.semanticscholar.org/paper/Emotional-Intelligence%3A-The-Link-to-Success-and-of-Doe-Ndinguri/c9936bf2cbb19dac3ca5c27510b5cfe1b49578bf>.
10. Fathiyah, F. and Pasla, N.B.N. (2022) 'Factors affecting Organizational citizenship Behavior (OCB) in Jambi Province Government employees,' *Jurnal Prajaiswara*, (2), pp. 127–136. <https://doi.org/10.55351/prajaiswara.v2i2.24>.
11. Gaikwad, K.L. (2021) 'A study of problem faced by women employees in IT/E-commerce sector in Aurangabad city,' [www.academia.edu](http://www.academia.edu) [Preprint]. [https://www.academia.edu/45497360/A\\_study\\_of\\_problem\\_faced\\_by\\_women\\_employees\\_in\\_IT\\_E-commerce\\_sector\\_in\\_Aurangabad\\_city](https://www.academia.edu/45497360/A_study_of_problem_faced_by_women_employees_in_IT_E-commerce_sector_in_Aurangabad_city).
12. Gautam, A. and Khurana, C. (2019) 'Demographic Variables as Indicators of Emotional intelligence: A study of selected enterprises of Uttarakhand,' *Journal of Management*, 6(1). <https://doi.org/10.34218/jom.6.1.2019.002>.

13. Goel, P. and Singh, A. (2023) 'The mediating role of organisational learning capabilities between workplace happiness and organisational citizenship behaviour,' *Journal of Workplace Learning* [Preprint]. <https://doi.org/10.1108/jwl-06-2023-0100>.
14. Goleman, D. (2005). *Emotional intelligence: Why it can matter more than IQ*. Bantam.
15. Gupta, S. (2016) 'Emotional intelligence and work life balance of employees in the information technology industry,' *Arabian Journal of Business and Ar a Management Review*, 6(3). <https://www.hilarispublisher.com/open-access/emotional-intelligence-and-work-life-balance-of-employees-in-the-information-technology-industry-2223-5833-1000201.pdf>.
16. Habib, M., Naqi, S., Muhammad Ali and Ali, M. (2021) 'Emotional intelligence: understanding, assessing, and cultivating the key to personal and professional success,' *Sir Syed Journal of Education & Social Research*, 6(2). <https://pdfs.semanticscholar.org/b038/245ca6de53efc523456a2f305144a0aeef40.pdf>.
17. Hair, J. F. et al. (2018) *Multivariate data analysis*. 8th edn. Cengage India Private Limited.
18. Hair, J.F. et al. (2022). *Partial Least Squares Structural Equation Modeling (PLS-SEM) using R, Classroom companion: business*. Sage Publications. <https://doi.org/10.1007/978-3-030-80519-7>.
19. IBEF (2023) *Information Technology India, Top IT companies in India - IBEF*. <https://www.ibef.org/industry/information-technology-india>.
20. Islam, M.S., Akter, S. and Afroz, F. (2015) 'Factor affecting organizational citizenship behaviour of corporate sector in Bangladesh,' *European Journal of Business and Management*, 7(31), pp. 7–17. <https://iiste.org/Journals/index.php/EJBM/article/download/26948/27631>.
21. John, S. (2020) 'Role of emotional intelligence in leadership Effectiveness in service sector,' *International Journal of Trend in Scientific Research and Development*, 4(3), pp. 521–524. <https://www.ijtsrd.com/papers/ijtsrd30573.pdf>.
22. Kanwar, Y.P.S., Singh, A.K. and Kodwani, A.D. (2012) 'A Study of Job Satisfaction, Organizational Commitment and Turnover Intent among the IT and ITES Sector Employees,' *Vision*, 16(1), pp. 27–35. <https://doi.org/10.1177/097226291201600103>.
23. Kapadwala, S. and Joseph, S. (2023) 'Emotional intelligence in the IT industry: A study on emotional intelligence among IT professionals,' *Cardiometry*, (25), pp. 756–763. <https://doi.org/10.18137/cardiometry.2022.25.756763>.
24. Kemkar, M. and Jain, K. (2017) 'Emotional intelligence for the service sector,' *International Journal of Creative Research Thoughts (IJCRT)*, 5(4), pp. 778–783. <https://ijcrt.org/papers/IJCRT1134563.pdf>.
25. Kernodle, T.A. and Noble, D. (2013) 'Organizational citizenship Behavior: Its importance in academics,' *American Journal of Business Education*, 6(2), pp. 235–240. <https://doi.org/10.19030/ajbe.v6i2.7688>.
26. Khan, M. and Minbashian, A. (2017) 'The Effect of age and work experience on Emotional intelligence: A Meta-Analytic Review,' *Proceedings - Academy of Management*, 2017(1), p. 15324. <https://doi.org/10.5465/ambpp.2017.15324abstract>.
27. Kusumajati, D.A. (2014) 'Organizational Citizenship Behavior (OCB) Karyawan pada Perusahaan,' *Humaniora*, 5(1), p. 62. <https://doi.org/10.21512/humaniora.v5i1.2981>.
28. Lakshmi, K.N. and Sekhar Rao, K.S. (2018) *A study on Role of emotional intelligence on Employee performance*, *International Journal of Civil Engineering and Technology*, pp. 440–448. [https://iaeme.com/MasterAdmin/Journal\\_uploads/IJCIET/VOLUME\\_9\\_ISSUE\\_3/IJCIET\\_09\\_03\\_044.pdf](https://iaeme.com/MasterAdmin/Journal_uploads/IJCIET/VOLUME_9_ISSUE_3/IJCIET_09_03_044.pdf).
29. Mathew, J. Marry and V.A, Santhosh. (2020) 'Dimensions of Organizational Citizenship Behavior (OCB) in Contemporary Workplaces: A Critical review of theoretical and Empirical literature,' *Solid State Technology*, 63(1). <https://www.semanticscholar.org/paper/Dimensions-Of-Organizational-Citizenship-Behavior-A-Mathew-V.A./32b56605d4ad97564b9fafd913af5bd3ec716443>.
30. Mayer, J.D. and Salovey, P. (1993) 'The intelligence of emotional intelligence,' *Intelligence*, 17(4), pp. 433–442. [https://doi.org/10.1016/0160-2896\(93\)90010-3](https://doi.org/10.1016/0160-2896(93)90010-3).
31. Mohapatra, M.D., Satpathy, Dr.I. and Patnaik, Dr.B.C.M. (2019) 'Impact of dimensions of Organizational Citizenship Behaviour on Job Satisfaction in Information Technology sector,' *International Journal of*

- Innovative Technology and Exploring Engineering*, 8(12), pp. 2503–2508. <https://doi.org/10.35940/ijitee.I3435.1081219>.
32. Nagar, M. (2017) 'Role of demographic factors in emotional intelligence: An Empirical study of bank Managers,' *Indian Journal of Commerce and Management Studies*, VIII(3), pp. 26–32. <https://doi.org/10.18843/ijcms/v8i3/04>.
33. Nagpal, P., Kumar, A. and Ravindra, H. (2020) 'Employee Engagement – Impact of demographic variables in Indian IT sector,' *Semantic Scholar* [Preprint]. <https://www.semanticscholar.org/paper/Employee-Engagement-%E2%80%93Impact-of-Demographic-in-it-Nagpal-Kumar/a30a164e1f54139f494bb381fbb58faf81999dfa>.
34. ÖztüMurlenk, S. (2019) 'An empirical study on personal factors affecting emotional intelligence levels of employees in the U.S,' *Business & Management Studies: An International Journal*, 7(4), pp. 1605–1620. <https://doi.org/10.15295/bmij.v7i4.1149>.
35. Phaugad, A. and Rajan, A.K. (2017) 'Role of emotional intelligence at workplace,' *International Journal of Trend in Scientific Research and Development*, Volume-2(Issue-1), pp. 1574–1577. <https://doi.org/10.31142/ijtsrd8285>.
36. Pooja, P. and Kumar, P. (2016) 'Demographic variables and its effect on emotional intelligence: A study on Indian service sector employees,' *Annals of Neurosciences*, 23(1), pp. 18–24. <https://doi.org/10.1159/000443552>.
37. Putra, B.S. (2020). *The factors influencing organizational citizenship behavior, Series: Advances in Social Science, Education and Humanities Research Proceedings of the 5th ASEAN Conference on Psychology, Counselling, and Humanities (ACPCH 2019)*. <https://doi.org/10.2991/assehr.k.200120.017>.
38. Rathore, S. and Ahuja, V. (2015) 'Examining the impact of Emotional Intelligence on Organizational Role Stress,' *International Journal of Human Capital and Information Technology Professionals*, 6(1), pp. 51–63. <https://doi.org/10.4018/ijhcitp.2015010105>.
39. Ravina (2023). Unveiling the Impact and Dynamics of Organizational citizenship Behavior in Educational Environments: A Comprehensive Narrative Review. *International Journal for Multidisciplinary Research*, 5(6). <https://doi.org/10.36948/ijfmr.2023.v05i06.10502>.
40. Rosala, M. (2024). *Open-Ended vs. Closed Questions in User Research*. <https://www.nngroup.com/articles/open-ended-questions/>.
41. Saravanan, K. (2018). *Impact of organizational citizenship behavior on employee creativity among the employees of information technology sector in Chennai*, *Journal of Emerging Technologies and Innovative Research*. Journal-article, pp. 448–450. <https://www.jetir.org/papers/JETIR1806861.pdf>.
42. Sergio, R.P., Dungca, A.L. and Ormita, L.A.G.-L. (2015) 'The Demographic Variables and Emotional Intelligence as Correlates of Work Values: A Cross-Cultural Examination towards Organizational Change,' *Journal of Economics, Business and Management*, 3(2), pp. 167–175. <https://doi.org/10.7763/joebm.2015.v3.175>.
43. Sharma, K. and Mahajan, P. (2017) 'Relationship between emotional intelligence and organisational citizenship behaviour among bank employees,' *Pacific Business Review International*, 9(11). [http://www.pbr.co.in/2017/2017\\_month/May/03.pdf](http://www.pbr.co.in/2017/2017_month/May/03.pdf).
44. Shrestha, N.I. (2022) 'Role of demographic Factors on emotional intelligence of Tribhuvan University's faculty members,' *Pravaha*, 28(1), pp. 89–96. <https://doi.org/10.3126/pravaha.v28i1.57976>.
45. Singh, A. and Banerji, R. (2022) 'Happiness at work, organization citizenship behaviour and workplace diversity: a study on Indian private sector bank employees,' *Industrial and Commercial Training*, 54(3), pp. 460–475. <https://doi.org/10.1108/ict-05-2021-0037>.
46. Singh, R. Kumar, Rawat, N. and A., V. (2023) 'Role of Organizational citizenship behaviour in Firm Performance: A Cross-Sectional Perspective,' *Journal of Informatics Education and Research*, 3(1). <https://doi.org/10.52783/jier.v3i1.44>.
47. Soomro, F.A. et al. (2022) 'Factors affecting emotional intelligence at workplace performance,' *International Journal of Technology Diffusion*, 13(1), pp. 1–19. <https://doi.org/10.4018/ijttd.315581>.



48. Taherdoost, H. (2020) 'Designing a questionnaire for a research paper: A comprehensive guide to design and develop an effective questionnaire,' *Asian Journal of Managerial Science*, 11, pp. 8–16. <https://hal.science/hal-03741836/document>.
49. Tambe, S. (2014) 'A Study of Organizational Citizenship Behaviour (OCB) and its dimensions: A literature review,' *Semantic Scholar* [Preprint]. <http://dspace.vpmthane.org:8080/jspui/bitstream/123456789/3769/1/research%20paper%20%281%29.pdf>.
50. Thapa, P., Akashe, S. and Bhattarai, H. (2023) 'Impact of demographic factors on emotional intelligence in selected organization in the Kathmandu Valley,' *International Journal of Management and Administration*, 7(13), pp. 55–68. <https://doi.org/10.29064/ijma.1197541>.
51. Turnipseed, D.L. (2018) 'Emotional intelligence and OCB: The moderating role of work locus of control,' *The Journal of Social Psychology/Journal of Social Psychology*, 158(3), pp. 322–336. <https://doi.org/10.1080/00224545.2017.1346582>.
52. Uniyal, S. and Uniyal, A. (2020) 'Impact of work experience on emotional intelligence at workplace,' *International Journal of Advanced Research*, 8(1), pp. 668–674. <https://doi.org/10.21474/ijar01/10347>.
53. Uslu, O. (2020) 'How demographic factors associate with employees' emotional intelligence?,' *Journal of Faculty of Economics and Administrative Sciences*, 11(21). [https://www.researchgate.net/publication/341794263\\_How\\_Demographic\\_Factors\\_Associate\\_with\\_Employees'\\_Emotional\\_Intelligence](https://www.researchgate.net/publication/341794263_How_Demographic_Factors_Associate_with_Employees'_Emotional_Intelligence).
54. Yadav, P. and Punia, B. (2013) 'Organisational Citizenship Behavior : A review of antecedent, correlates, outcomes and future research directions,' *Semantic Scholar* [Preprint]. <https://www.semanticscholar.org/paper/Organisational-Citizenship-Behavior-%3A-A-Review-of-Yadav-Punia/07f50260332be3e8dd3b2d592de876fd8665c5ed>.
55. Yadav, R. and Jain, S. (2020) 'Understanding and Developing Emotional Intelligence,' *Semantic Scholar* [Preprint]. <https://www.semanticscholar.org/paper/Understanding-and-Developing-Emotional-Intelligence-Yadav-Jain/2548ef3b95b2bba41f0932e4bb00edf21edac130>.
56. Yang, X. and Liu, X. (2023) 'Path analysis and mediating effects of influencing factors of land use carbon emissions in Chang-Zhu-Tan urban agglomeration,' *Technological Forecasting & Social Change/Technological Forecasting and Social Change*, 188, p. 122268. <https://doi.org/10.1016/j.techfore.2022.122268>.