

The Impact of Emotional Intelligence and Occupational Stress on Academic Performance of University Teachers': Insights from Bangladesh

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Abstract

The purpose of the study is to assess the impact of emotional intelligence and occupational stress on academic performance of university teachers' in Bangladesh and data were collected adopting stratified sampling technique through a structured questionnaire from university teachers in Bangladesh. 224 questionnaires were selected and usable to proceed for final analysis. SPSS-20 version was used to analyze data for testing the frequency, reliability, validity and hypothesis as well as machine learning algorithms was used to visualizing and clustering data through adopting Principal Component Analysis (PCA). Findings of the study revealed that emotional intelligence of the faculty members of universities in Bangladesh have moderate positive correlation ($r=0.424$) with teachers' academic performance and occupational stress has negative correlation ($r=-0.036$) with teachers' academic performance as well as linear regression analysis exposed that emotional intelligence and occupational stress are significant predictors of teachers' academic performance ($\beta = 0.424$, $p \leq 0.05$) and ($\beta = -0.036$, $p \leq 0.05$). Major limitations of the research is small sample size and lack of respondents' eagerness to fill up the questionnaire. The study has several implications for education researchers, government of Bangladesh (Ministry of Education, University Grants Commission), education policy makers, university teachers, education service providers (University) for accelerating teaching learning pedagogy as well as effectiveness in order to ensure quality education.

Introduction

In recent era, the emotion of teachers' has become a significant topic of interest or study area in educational research perspective. Education plays a vital role in forming a society as well as a nation that leads to change the world. The quality of teaching- learning at tertiary level completely relies upon the university teachers whereas the quality assurance in higher education

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has become an important global trend in recent years. With the advancement of globalization, emergence of new technology and educational reforms, the educational institutions face challenges relating to ensuring quality education, effective teaching learning pedagogy and outcome in order to meet local and global demand. Moreover, societal pressure on teachers increased due to poor academic performance both teachers and students, decreasing educational quality, students' fickle attitude towards education, deviation of demands and expectations of guardians and huge workload with too much responsibility made it difficult to cope up with those challenges (Asrar-ul-Haq, et al., 2017). To deal with those challenges, teachers face huge physical and psychological pressure that lead to occupational burnout because teaching is the most stressful occupation in the world (Johnson, et al., 2005); (Brog, 1990). Those challenges can be easily coped up through growing up their emotional and professional know-hows (Ignat & Clipa, 2012). Education is the most effective tool to meet up those challenges whereas emotions of teachers are integral part not only to develop physical and mental growth of individuals but also to develop goals of organizational settings as the socio-cultural context of the society (Miyagamwala, 2015). Moreover, teaching is an emotional endeavor with intense emotional work. So, teaching is the combined effort of knowledge, pedagogical skill and emotional intelligence (Hargreaves, 1998). Teachers are recognized in all over the world as so-called emotional labor that they use emotional expression (knowledge, skill & experience) in teaching learning pedagogy. Therefore, the significance of emotional intelligence occupational stress and emotional labor of teachers' performance has been recognized internationally in considering the relevance. Stress in teaching affects the commitment and quality of teaching (Kyriacou & Chien, 2004). Quality of higher education is the great concern in Bangladesh now-a-days to develop skilled workforce pools. The root point for ensuring quality education is the effective teaching learning at tertiary level where university teachers play a vital role in developing the educational quality. Teachers are the emotional labor where the emotional skills of teachers are the key factors of effective performance (Hargreaves, 1998). Emotional intelligence is considered soft skill. So, soft skills are important job-related skills that involve little or no interaction with machines and whose application on the job is quite generalize. For effective and efficient performance, both hard skills (functional Skills) as well as soft skills (emotional skill) are crucial. According to a study conducted by Harvard University noted that 80% of achievements in career performance are determined by soft skills and only 20% by hard skills (Wikipedia, 2019). This research emphasizes the significant impact in the change in performance of university teachers' for the advancement of the organizational goal settings. Emotional intelligence develops the employee's self-awareness, self-confidence and creativity as well as increase trust and integrity and improves relationship with others in the organizational and workplace settings (Asrar-ul-Haq, et al., 2017); (Kannaiah & Shanthi, 2015). Better understanding among teachers and students, introduction of modern teaching methods and dedication of teachers and students can improve the culture of higher education in Bangladesh (Moneum & Baniamin, 2010). Role of teachers' is crucial for developing attitudes and behaviors of their students because emotional intelligence is positively associated with performance (Cote & Miners, 2006). Critical and essential need of more research on teachers' emotional intelligence is required because teaching and emotion are correlated each other (Schutz & Zembylas, 2009). Emotional intelligence is completely a psychological factor appears much profound impact on the employees' performance and abilities greatly in the workplace settings and classroom both at organizational and individual levels (Carmeli, 2003); (Petrides, et al., 2004). Individuals with high emotional intelligence are tending to show better job performance and satisfaction in their organizational settings in comparison to individuals with low emotional intelligence (Law, et al., 2004); (Lyons & Schneider, 2005); (Roony & Viswesvaran, 2004); (Miyagamwala, 2015). Former ability based model (Solovey & Mayer, 1990); (Mayer & Salovey, 1997) and later mixed model (Goleman, 1995); (Bar-On, 1997);

(Goleman, 1998) as well trait based model (Petrides & Furnham, 2000) (Bar-On, 2010); (Bar-On, 2002) evolved to recognize the emotional intelligence. This study is based on the influence of mixed model that is combined both ability and trait based model developed by Denial Goleman in 1995, a set of skills and competencies deriving leadership abilities, measured the emotional intelligence on performance through applying five dimensional attributes considering emotional self-awareness, emotional self-regulation, emotional self-motivation, emotional empathy and social skill. On the one hand, major constraints for evaluating occupational stress dimensions are heavy workload, students' misbehavior, poor colleague relations, professional recognition needs, inadequate financial benefits, improper working condition, administrative pressure and time as well as resource margins are the considerable stress factors in teaching profession (Boyle, et al., 1995); (Tahir, 2011). Teachers' academic performance indicators showing classroom performance (disciplined in attending class, completing course on time, applying individual learning and problem solving principles, encouraged to ask question, use motivational tool in learning, make lesson more interesting), Evaluation performance (unbiased and on time script evaluation and publish result), Satisfaction (quality of job, quality of students, performance of students). (Asrar-ul-Haq, et al., 2017); (Miyagamwala , 2015); (Hanifi, et al., 2017); (Rahmat, et al., 2014); (Mehmood, et al., 2013); (Tajudin, et al., 2014). So, emotions are quite complex psychological feelings that help to emphasize the reasoning of individual expressions (Gayathri & Meenakshi, 2013). Teachers' emotional skills were categorized into five dimensional model (i.e. emotional relationship, interpersonal awareness, emotional intrapersonal beliefs, emotional interpersonal guidelines and emotional management) required in the classroom (Harvey & Evans, 2003) . Hence, Teachers' ability of utilizing emotions in performing emotional labor required to be improved for teaching and learning in the classroom where teachers' emotional intelligence is below standard (Corcoran & Tormey, 2012); (Fried, 2011).

The relationship between emotional intelligence, occupational stress and teacher' academic performance is the cause and outcome concerned integration, although emotions are integral part in everyday organizational life. Moreover, the objective of the study mainly in two folds: firstly to assess the relationship between emotional intelligence, occupational stress and teachers' academic performance and secondly to demonstrate the impact of emotional intelligence and occupational stress on academic performance of university teachers' in Bangladesh. The residual part of this study is structured as follows: the second chapter describes the previous studies that focuses empirical and theoretical literatures, the following chapters proposed model of the study, and later one covers the methodological issues, the fifth chapter describes the main analysis and results, and finally, it provides concluding remarks with recommendations, limitations, implications and guidelines to future research direction to the wide range of stakeholders to whom this study will serve.

Emotional intelligence

Emotional intelligence summarizes two different words "Emotion" and "intelligence". Emotion refers to strong and intuitive feelings associated with thoughts and behavioral responses from reasoning or knowledge. Intelligence means ability or capacity to acquire, understand and make judgments to apply knowledge and skills based on reasoning. Emotional intelligence is the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions' (Salovey and Mayer, 1990 p. 189). It is the set of abilities that account for how people's emotional perception and understanding vary in their accuracy. More formally, emotional intelligence as the ability to perceive and express emotion, integrate emotion in thought, believe and motive with emotion, and control emotion in the self and others. Besides, it is the ability to sense, understand, value

of emotions that recognize the trust, creativity and influence on self as well as others. So, emotional intelligence is the capacity of individual to recognize and evaluate the emotion of self as well as of others. Moreover, emotional intelligence is more powerful tool than IQ (Goleman, 1995).

Review of Literature:

Emotional Intelligence and Teachers' Job Performance

“Emotional Intelligence (EI) is referred to as the extent to which a person adequately deals with affective information” (Mayer, Caruso, & Salovey, 2000, 2016). Some researchers have hypothesized this concept as a trait, and others have abstracted it as an ability (Lopes, 2016; Mayer, Roberts, & Barsade, 2008). EI is a special branch of psychological concept that has emerged as a research area in the last couple of decades (Dev, Ismail, Omar-Fauzee, Abdullah, & Geok, 2012; Petrides & Furnham, 2003), and has been endorsed as an individual difference variable that plays a role in various types of human performance and behaviors (Itzkovich & Dolev, 2017; Van Rooy & Viswesvaran, 2007). A number of researchers paid an enormous thoughtfulness regarding the field of EI and job performance. Lyons and Schneider (2005) emphasized an ability-based model (perceiving, integrating, understanding and managing emotions) of emotional intelligence that contributed to appraising performance. The study revealed that a high level of EI would impart challenges and enhance performance and vice-versa. A number of researchers had attempted a wide range of research to identify the impact of EI and teachers' job performance. Asrar-ul-Haq, Anwar, and Hassan (2017) used an emotional intelligence model proposed by Salovey and Mayer (1989-1990) for assessing the performance of teachers' in higher education institutions in Pakistan. The result indicated that emotional intelligence has a significant impact on the teacher's job performance. Key research findings revealed that emotional self-awareness, self-confidence, achievement, developing others and conflict management have a positive and significant relationship with the teacher's job performance. Again, a study conducted by Mayer and Cobb (2000) found that EI caused to appear on job performance (success) and interpersonal reactions and furthermore, EI (self-control of mood, and self-presentation and empathy) with affective trait domains influenced on work success (Fox & Spector, 2000).

In a fast-moving and rapidly changing world, the education system experiencing major reforms and changed which directly impacting to teachers' job performance (Mohamad & Jais, 2016). In order to sustain high performance and competitive advantage, emotional intelligence should be developed and improved through a systematic and consistent approach (Bar-On, 1997; Goleman, 1998; Mohamad & Jais, 2016; Perkins, 1995). A study conducted by Noor and Hanafi (2017) found that, Self-awareness, self-regulation, self-motivation and social skill (relationship management) have partial as well as overall substantial effect on job performance among university teachers in Malaysia and on the other hand, high emotional intelligence of the faculty members measured very satisfactory rate in job performance based on performance reported in the Philippines (Viscarra, Meer, & Meer, 2017). James and Jaymohan (2018) applied a mixed model of emotional intelligence used to examine the relationship between emotional intelligence and faculty performance and found the partial and overall significant relationship among EI and job performance. Furthermore, a significant positive relationship found between emotional intelligence and employees' job performance in public and private higher educational institutions in Pakistan (Ahmed, Sabir, Rehman, Khosa, & Khan, 2016). In addition, each component of emotional intelligence has a positive significant effect on the educational performance of faculty members' and no significant difference found between emotional intelligence of faculty members and performance at Urmia University in terms of

gender, designation and year of experience (Rahmat, Ghalavandi, & Jesarati, 2014). But on the contrary, a study led by Dhani and Sharma (2017) revealed that a significant gender difference exists in Emotional Intelligence and Job performance which suggested that female employees score more on EI than their male counterparts. The study also revealed that females are better performers than men in light of Emotional Intelligence. Again, a study portraits gender differences in emotional intelligence of university teachers at Pakistan considering Bar-On emotional Quotient Inventory and comprising five dimensions of overall emotional intelligence: intrapersonal, interpersonal, stress management, adaptability and general mood and found that both male and female gender groups got equal EQi scores in considering sub-dimensions and overall emotional intelligence as well as handling difficult situations (Shehzad & Mahmood, 2013).

Some of the most prominent researchers identified traits as one of the major catalysts for EI. Trait emotional intelligence identified moderated relationship with cognitive abilities and academic performance as well as revealed high trait Emotional Intelligence reflected high academic performance and deviant behavior and low trait EI reflected low academic performance and variety of deviant behavior of pupils at British secondary education (Petrides, Frederickson, & Furnham, 2004). Quality of teaching largely relies upon the teaching effectiveness with the increasing demand for globalization. A positive and significant relationship found between emotional intelligence skills and teaching effectiveness in the study among lecturers at Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor. Having high emotional intelligence skills, lecturers had high self-confidence and commitment towards their job (Hassan, Jani, Som, Hamid, & Azizam, 2015). On the other hand, an investigation had done where the effect of emotional intelligence evaluated on academic achievement of students at Universiti Teknologi Mara (UiTM) through analyzing self-emotional appraisal, others' emotional appraisal, understanding of emotion and regulation of emotion dimensions and found two aspects i.e. self-emotional appraisal and understanding of emotion significantly and positively associated with the students' academic achievement (Mohzan, Hassan, & Halil, 2013). A noble teacher must be emotionally intelligent in every dimension and the research indicated a theoretical aspect that higher levels of emotional intelligence related to a wide range of positive outcomes better performance at the workplace, job satisfaction, etc. (Miyagamwala, 2015). Teachers' teaching effectiveness of public and private university teachers in Malaysia are verified through adopting two variables self-management skill and personal leadership skill. Statistical analysis revealed self-management was the most important predictor of personal leadership because a significant impact of teaching effectiveness found by utilizing two variables (Jani, Shahid, Thomas, & Francis, 2015). An interrelationship between emotional intelligence, cognitive intelligence, and job performance was examined through evaluating the constructs i.e. agreeableness, conscientiousness, emotional stability, extraversion, openness to experience, leader-member exchange, cognitive intelligence, task performance and organization citizenship behavior (OCB). The association between emotional intelligence and task performance becomes more positive as cognitive intelligence decreases, as well as the association between emotional intelligence and organization citizenship behavior (OCB), becomes more positive as cognitive intelligence decreases (Côté & Miners, 2006).

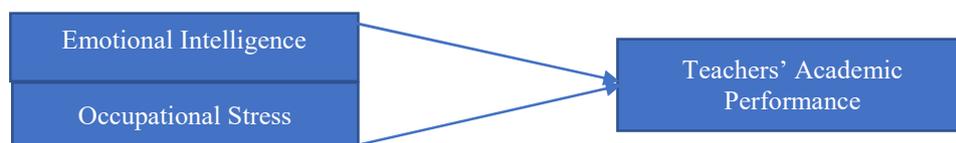
Occupational Stress and Teachers' Job Performance

In the 1950s a groundbreaking research conducted by Selye (1956) on psychological stress leads the entire field of social science in a fresh manner on the term 'stress'. In this sequence the research on teacher's job satisfaction, teachers' concerns and anxieties and other related fields popped-up. But up until mid-1970s research topic like 'stress in teaching' was not so

prominent (Coates & Thoresen, 1976; J Dunham, 1976; Kyriacou & Sutcliffe, 1977). After the 1980s the number of studies related to ‘stress in teaching’ had grown rapidly (Kyriacou, 1987, 2001). But after the 1990s and onward, the research literature on teacher stress had become ample (Jack Dunham & Varma, 1998; Kyriacou, 2000; Vandenberghe, Huberman, & Huberman, 1999).

Teacher stress can be marked as the involvement by a teacher of spiteful, undesirable feelings, such as anger, angst, tension, foiling or depression, bring about from some phase of their work as a teacher (Kyriacou, 2001). Today the role of the teacher became too much complicated and difficult at the same time (Williams & Burden, 1997). Heavy workload, student misbehavior, professional recognition needs, time or resource constraints and poor colleague relations were the major constraints for evaluating the dimensions of teachers’ occupational stress and found workload as well as student misbehavior caused for most of the variances in foretelling teaching stress (Boyle, Borg, Falzon, & Baglioni Jr., 1995). Besides a number of studies pointed out some other major stressors for building up teachers’ occupational stress. Some of the prime factors are: lack of motivation; time pressures and amount of work; muddle through changes; being evaluated by others; interpersonal relationship with coworkers; classroom management difficulties; self-esteem and job status; role conflict and abstruseness; poor working conditions; lack of workplace social support etc. (Alarcon, 2011; Benmansour, 1998; Cooper & Travers, 2012; Guglielmi & Tatrow, 1998; Hakanen, Bakker, & Schaufeli, 2006; Montgomery & Rupp, 2005; Pithers & Soden, 1998). Again, some research argued that, teaching stress is triggered due to some intrinsic factors (pay scale or package, job’s status, domestic problems and economic problems) and extrinsic factors (physical resources, working conditions, students’ misbehavior, administrative pressure and relationship with colleagues) that had a positive and substantial effect on academic performance of teachers (Tahir, 2011). It is very much important to keep in mind that, the sources of stress faced by an individual person are unique to him or her and will subject to the exact complex relations between their persona, values, expertise, and state of affairs (Kyriacou, 2001). In this sequence, a number of research focused on the consequences of this occupational stress which ultimately lead towards the notion of teacher burnout, which may be seen as a state of emotional, physical and attitudinal fatigue which may develop in teachers who have been unsuccessful in handling commendably with stress over a longer period of time (Guglielmi & Tatrow, 1998; Vandenberghe et al., 1999). Again, A substantial amount of literature suggests that the sustained involvement in occupational stress may lead to provisional and prolonged illness and resulting towards burnout (Maslach, 1998; Maslach, Schaufeli, & Leiter, 2001), reduced work commitment and performance (Abel & Sewell, 1999; Kokkinos, 2007), absenteeism, and may contribute to leave the profession (Jepson & Forrest, 2006; Kyriacou, 2001).

Research Model and Hypothesis Development



Hypotheses are developed based on intensive review of literature and research questions as on previous studies.

Q-1- Is there any significant relationship between emotional intelligence and teachers’ academic performance?

Q-2-Is there any significant relationship between occupational stress and teachers’ academic performance?

Q-3-Is there any significant influence of emotional intelligence on teachers' academic performance?

Q-4-Is there any significant influence of occupational stress on teachers' academic performance?

H₀1: There is no significant relationship between emotional intelligence and teachers' academic performance.

H₀2: There is no significant relationship between occupational Stress and teachers' academic performance.

H₀3: There is no significant influence of emotional intelligence on the teachers' academic performance.

H₀4: There is no significant influence of occupational stress on the teachers' academic performance.

Method

Research settings

Research settings includes the nature of population and data collection included in the study. The study is empirical cum exploratory in nature. The population of this study is all the faculty members who are engaged in teaching and research in different public and private universities operating in Bangladesh. Participants in the study are the teaching staffs of the selected sample universities operating in Bangladesh. In this study, a stratified sampling technique is used for data collection in the study because population are alienated into separate groups in order to trace out the actual consequence. A total of 380 self-administered questionnaire were distributed to the faculties' of twelve universities (8 public and 4 private) operating in Bangladesh. The twelve universities are being selected based on purposive sampling technique. Out of the distributed questionnaire, only 248 questionnaire were returned whereas the resulting response rate 65 per cent. Twenty-four incomplete questionnaires were dropped from the analysis. Finally, 224 questionnaires were selected to proceed for final analysis.

Questionnaire design and development:

The researcher applied multiple techniques to collect primary data (i.e. structured questionnaire where both open and closed ended questions were included, informal discussion and observation). The structured survey questionnaire method was used to collect the desired data for assessing the latent constructs in the developed model. Questionnaire was designed and developed based on intensive review of the literature. (Goleman, 1995) ; (Goleman, 1998) ; (Asrar-ul-Haq, et al., 2017); (James & S., 2018); (Ahmed, et al., 2016) ; (Chipumuro, 2015); (Hanifi, et al., 2017); (Mehmood, et al., 2013). At the start of designing research works, a panel review was arranged which consisted of experts' from different fields i.e. researchers, academician, prominent educationalists for evaluating, correcting and justifying the latent constructs and its statements. The questionnaire was developed in English by the expert translator including a panel of English language teachers at university level in order to ensure the translation validity of the questionnaire for a proper understanding of the respondents. The survey method is used to collect data through a questionnaire where the questionnaire is divided into two parts that consist of 58 questions; Part-A (9 questions) and Part-B (49 questions). Part-A covers demographic information of the university teachers' regarding their gender, age,

marital status, education, year of experience, designation, faculty, university type and monthly income. On the other hand, Part-B contains questions concerning the measurable constructs of Emotional Intelligence, Occupational Stress and Teachers' Academic Performance in the developed research model using 5-point Likert scale from (1) "strongly disagree" to (5) "strongly agree". Emotional intelligence dimension consists of 27 item of questions under five heads considering emotional self-awareness, self-regulation, self-motivation, empathy and social skill. The occupational stress and teachers' academic performance dimensions contains 10 and 12 items of questions respectively in the study.

Statistical analysis

SPSS-20 version was used to analyze data for testing the frequency, reliability, validity, hypothesis and Python Anaconda version-3 as well as Machine learning algorithms was used to visualizing and clustering data through adopting Principal Component Analysis (PCA).

Variable settings

The study integrates dependent and independent variables only. This study explores two independent variables (emotional intelligence and occupational stress) and one dependent variable (Teachers' academic performance). The variables has been set based on the intensive review of literature. Out of the total population, the sample size of 224 respondents is targeted to conduct the study. In the sample size, 147 respondents are male faculty members and 77 respondents are female faculty members taken from twelve different public and private universities in Bangladesh respectively.

Independent variables

Emotional Intelligence Measurement Dimensions

Emotional self-awareness, Emotional self-regulation/control, Emotional self-motivation Emotional empathy and Social skill (Goleman, 1995) ; (Goleman, 1998) ; (Asrar-ul-Haq, et al., 2017); (James & S., 2018); (Ahmed, et al., 2016) ; (Chipumuro, 2015); (Hanifi, et al., 2017); (Mehmood, et al., 2013); (Tajudin, et al., 2014).

Occupational Stress Measurement Dimensions

Heavy workload with huge responsibilities, student misbehavior, professional recognition needs, time or resource constraints, poor colleague relations, pay scale or package and economic problems, job's status, time and physical resources constraint, improper working environment, students' misbehavior, administrative pressures (Boyle, et al., 1995) (Tahir, 2011); (Tajudin, et al., 2014).

Dependent Variable

Teachers' academic/job performance (Asrar-ul-Haq, et al., 2017); (Miyagamwala , 2015); (Hanifi, et al., 2017); (Rahmat, et al., 2014); (Mehmood, et al., 2013); (Tajudin, et al., 2014).

Result and Discussion**Socio demographic information**

Table 1
Socio-demographic information of respondents

Characteristics and its category		Frequency	Valid %
Gender	Male	147	65.6
	Female	77	34.4
Age	Below 25 Years	4	1.8
	26-30 Years	88	39.3
	31-35 Years	63	28.1
	Above 35 Years	69	30.8
Marital Status	Single	49	21.9
	Married	174	77.7
	Separated	1	0.4
Education	Master Degree	163	72.8
	M Phil	12	5.4
	PhD	42	18.8
	Post-Doctoral	7	3.1
Year of Experience	0-5 Years	113	50.45
	6-10 Years	67	29.9
	11-15 Years	23	10.27
	16-20 Years	7	3.13
	Above 20 Years	14	6.25
Designation	Lecturer	101	45.09
	Assistant Professor	72	32.14
	Associate Professor	24	10.71
	Professor	27	12.06
Faculty Types	Faculty of Science and Engineering	99	44.20
	Faculty of Arts	59	26.33
	& Social Science		
	Faculty of Business	66	29.47
University types	Public	145	64.73
	Private	79	35.27
Monthly income (In Taka)	Below BDT 45,000	105	46.88
	BDT 46,000-60,000	59	26.33

BDT 61,000-80,000	33	14.73
Above BDT 80,000	27	12.06

Demographic profile of the respondents in Table-5.1 represents nine demographic items in order to describe characteristics of demographics. From the aspect of gender, majority of the respondents are male (65.6%) and the rest are female (34.4%) respondents out of 224 respondents. As for age, the highest number of respondents is in the range of 26-30 years old with 88 respondents (39.3%), followed with the range 31-35 years old 63 respondents (28.1%), respondents age above 35 years old are 69 (30.8%) and the age below 25 years old are 4 (1.8%). In term of marital status, majority of the respondents are married 174 (77.7%) and unmarried 49(21.9%). In considering the educational qualification, most of the respondents are holding only Master degree 163 (72.8%) and the rest of the respondents holding M. Phil 12 (5.4%), PhD 42 (18.8%) and Post-Doctoral 7(3.1%) fellowship respectively. As for the years of experience, highest number of respondents' 113 (50.15%) lies in the range 0-5 years of working experience and lowest number of respondents 7 (3.13%) lies in the range of 15-20 years. In term of designation, most of the respondents are lecturer 101 (45.09%) and rest of respondents are assistant professor 72 (32.14%), associate professor 24 (10.71%) and professor 27 (12.06%) of different public and private universities. Data are accumulated from respondents of different faculties, faculty of science and engineering 99 (44.20%); faculty of arts and social science 59 (26.33%) and faculty of business 66 (29.47%). Majority of the respondents are the faculty members of public universities 145 (64.73%) and the rest of them are private universities 79(35.27%). In term of monthly income, highest number of the respondents' earnings are in the below BDT 45,000 with 105 (46.88%) and lowest number of respondents' earnings are in the above BDT 80,000 with 27 (12.06%).

Reliability and Validity Test

The measuring of accuracy and consistency of research instruments (especially questionnaires) known as validity and reliability. Evaluation of reliability and validity is crucial before testing the hypothesis (Hair Jr., et al., 1998; 2014; Hire Jr., et al., 2016). The consistent internal reliability was assessed by using Cronbach's alpha and composite reliability. The acceptable value limit of Cronbach's alpha and composite reliability is 0.70 or more to attain the internal consistence (Hair, Jr., et al., 1995). So, the value of Cronbach's alpha and composite reliability below 0.60 indicates lack of internal reliability and consistency (Hire Jr., et al., 2016). So, Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group and it is considered to be a measure of scale reliability. Based on the reliability tests, the average Cronbach's alpha reliability coefficient of three indicators was 0.769, indicated as good internal consistency among the 49 items in the questionnaires for this study indicated in Table 2.

Table 2
Reliability Score for Variable

Variable	Item Number	Cronbach's Alpha
Emotional Intelligence	27	.837
Occupational Stress	10	.746
Teacher's Academic Performance	12	.723

Hypothesis Testing

H₀₁: There is no significant relationship between emotional intelligence and teachers' academic performance.

The analysis employed the Pearson Correlation method, and exposed that there is moderate significant and positive relationship between emotional intelligence and academic performance among respondents with a correlation coefficient (r) of 0.424 which was significant at the 0.05 level (p= 0.000). Hence, the H₀₁ was rejected. This result is as illustrated in Table 3.

H₀₂: There is no significant relationship between occupational Stress and teachers' academic performance.

The Pearson Correlation analysis for H₀₂ found that the correlation coefficient (r) was -0.036 and was significant at 0.05 (p = 0.000). The analysis revealed that there was a negative and moderate significant relationship between occupational stress and teachers' academic performance among respondents. Therefore, the H₀₂ was rejected as indicated in Table 3.

Table 3
Pearson Correlation Result between Teaching Effectiveness with Emotional Intelligence and Job Stress

Variable	Teacher's academic performance(TAP)		
	Correlation (r)	Sig. t	P-Value
Emotional Intelligence	0.424	0.05	0.000
Occupational Stress	-0.036	0.05	0.000

H₀₃: There is no significant influence of emotional intelligence on the teachers' academic performance.

Regression analysis was used to test the influence of emotional intelligence on teachers' academic performance. The regression analysis results in Table 4 indicate that emotional intelligence is positively and significantly influenced on teachers' academic performance. This finding rejected H₀₃.

Table 4
Regression of Emotional Intelligence

Variable	R	R ²	F	Beta (β)	Sig
Emotional Intelligence	.424	.179	48.548	.424	0.00

Based on Table 4, the regression results found that emotional intelligence variable is contribute to teachers' academic performance which has correlation coefficient (R) of 0.424. The variable emotional intelligence [$F = 48.548, p \leq 0.05$] was able to contribute to 17.9% of the variance in explaining teachers' academic performance. Thus, the variable of emotional intelligence was the significant contributor on teacher's academic performance (Beta = 0.424, $p \leq 0.05$).

H₀₄: There is no significant influence of occupational stress on teachers' academic performance.

A regression analysis is used to evaluate exactly how well the occupational stress predicts on the teachers' academic performance. Table 5 presents the regression results for the sample in this study. Finding shows that the regression coefficient ($\beta = -0.036$). The variable occupational stress [$F = 0.288, p \leq 0.05$] was able to contribute -0.1% of the variance in explaining teachers' academic performance. Thus, the variable of occupational stress was the significant contributor on teaching effectiveness (Beta = -0.036, $p \leq 0.05$). Therefore, the H₀₄ was rejected which is indicated in Table 5.

Table 5
Regression of Occupational Stress

Variable	R	R ²	F	Beta (β)	Sig
Occupational Stress	-0.036	-0.001	.288	-0.036	0.000

Principal Component analysis Results

The questionnaires have been used to collect the data. The survey consisted of 58 questions: 9 questions are used to pronounce socio-demographic information, 27 items of question are relating to emotional intelligence under 5 dimensions, 10 questions are related to occupational stress and 12 are Teachers' academic performance related questions. The 224 data set were analyzed using Python Anaconda and Machine learning algorithms. At first, data were imported and pre-processed using Pandas packages and used standard scaling for standardizations of data. For dimensionality reduction Principal Component analysis (PCA) algorithm of unsupervised machine learning was used.

Principal Component Analysis (PCA) is a statistical procedure that uses an orthogonal transformation which converts a set of correlated variables to a set of uncorrelated variables. We can then execute a Principal Component Analysis to the obtained data frame. This will reduce the number of features from the number of aisles to 2, the number of principal components we have chosen. The total number of variables of the data were reduce in two principal component. The first 14 principal components of 224 datasets are given below:

	0	1
0	-2.32769	0.383687
1	-1.3133	2.31918
2	-3.92352	0.274364
3	-0.186116	0.377921
4	2.82378	0.382054
5	-4.20257	0.920155
6	-0.796488	-0.669968
7	-0.0956223	-0.24791
8	4.40208	-2.00217
9	1.67849	0.655628
10	-2.82277	-3.28733
11	-3.45568	0.434218
12	-0.788669	-0.135403
13	-1.20851	1.3784
14	-1.13942	1.97356

Figure 2. First 15 principal component

In figure 2, each respondents were represented by index sequentially. Column 0 and column 1 represent correspondingly principal component 0 and principal component 1. Emotional intelligence 5 dimensions with 27 items, occupational stress including 10 items and 12 teachers' performance items, all these features reduced as two features or variables. Each row represents each respondent individually. Since each component is the projection of all the points of the original dataset and we assumed each component is representative of the dataset. Next step is clustering.

We visualize datasets using scatter plot and in scatter plot x-axis is represented by principal component 0 and y-axis is represented by principal component 1.

The visualization of data

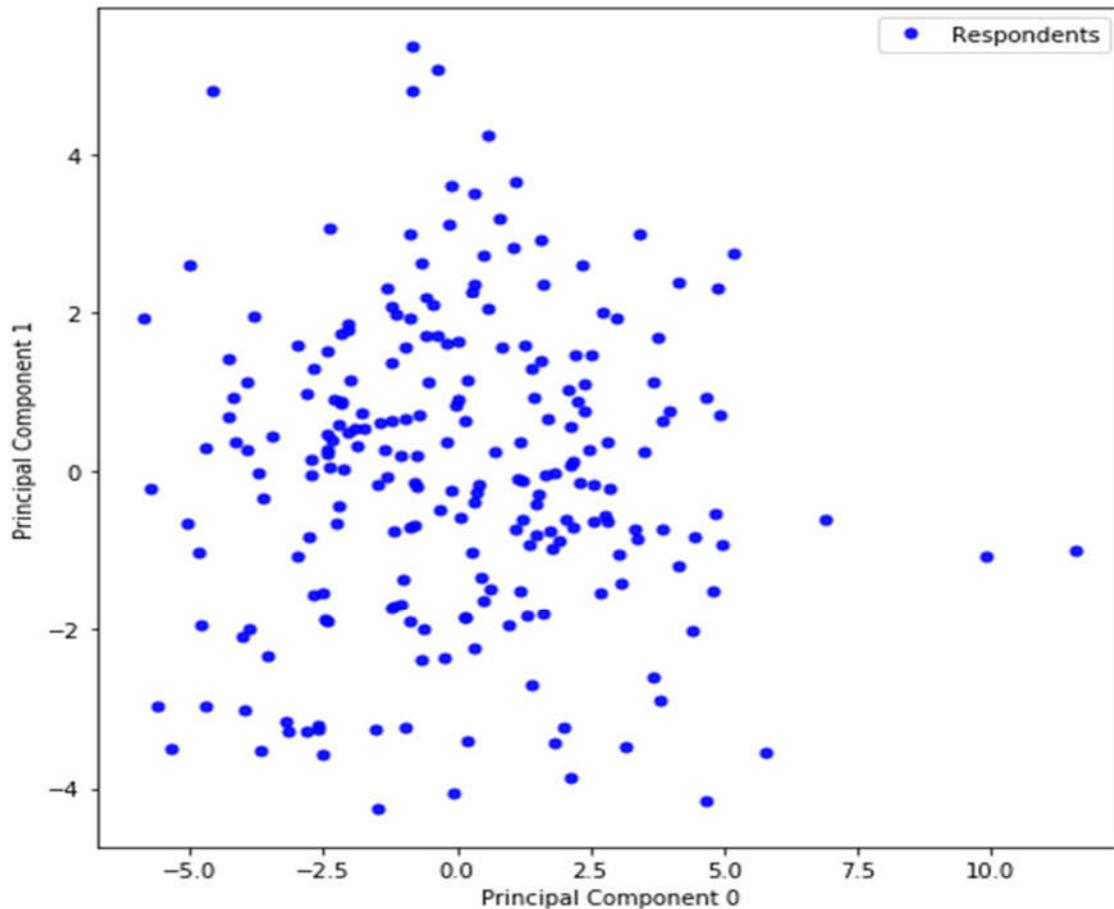


Figure 3. Scatter plot of data using PCA

In this plot each blue marker is the representation of each teacher and that still contains most of the information of the teachers'. Because PCA transformed a large set of variables into a smaller one that still contains most of the information in the large set. Reducing the number of variables of a data set naturally comes at the expense of accuracy, but the trick in dimensionality reduction is to trade a little accuracy for simplicity.

Clustering

Here, four different group of teachers' were created based on their emotional intelligence, occupational stress and performance and named these group or segments as

1. Cluster 0
2. Cluster 1
3. Cluster 2
4. Cluster 3

Teacher's that are in the same group should have similar properties, while data points in different groups should have highly dissimilar properties. The teachers' in cluster 1 should have similar properties but who are in the cluster 2 have different properties than cluster 1. So let's explore the results of clustering.

Visualization of cluster done by scatter plot and different color's as follows:

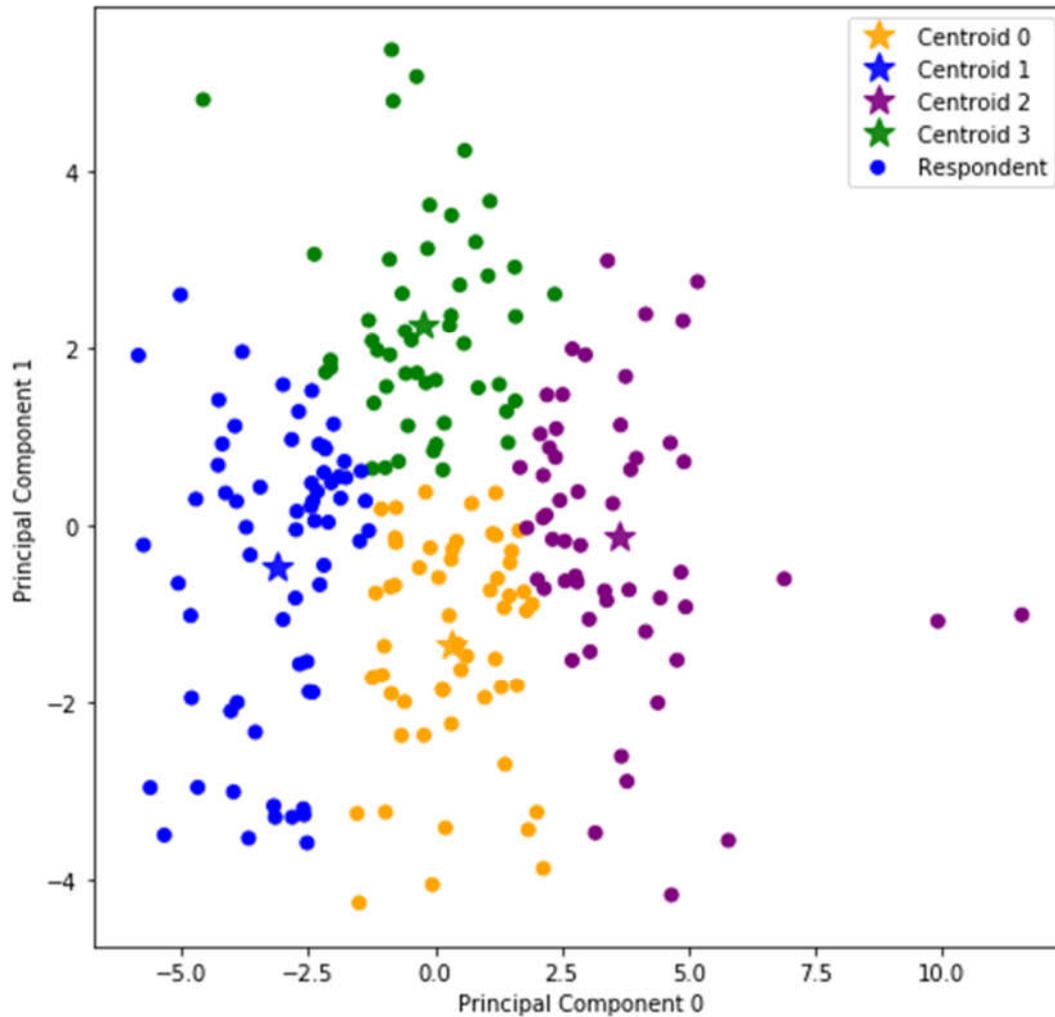


Figure 4. Scatter plot of Cluster

Here $K=4$, that means the total data are divided into 4 segments and each segment of different color's represent each cluster. The portion of Orange color of the scatter plot represent cluster 0, Blue portion represent cluster 1, Purple portion represent cluster 2 and Green portion of scatter plot represent cluster 3. The Star marker of middle of each segment id represent centroid's of that cluster.

The centroid's of each cluster's

Table 6

Cluster's Centroid

Cluster Name	Principal components 0 (X_values)	Principal components 1 (Y_values)
Cluster 0	0.32411875	-1.33316482

Cluster 1	-3.13851851	-0.45401711
Cluster 2	3.65581838	-0.12933096
Cluster 3	-0.23594162	2.26841253

Clustering is used in this data segmentation; where we try to find out teachers that are similar to each other whether in terms of emotional intelligence, occupational stress and academic performance. From above scatter plot of cluster segmentation we can measure the average of emotional intelligence, occupational stress and academic performance of teachers and get a table as follows:

Table 7

Average score of emotional intelligence, occupational stress and teacher’s academic performance in each cluster.

Cluster Name	Color of cluster in scatter plot:	Emotional Intelligence:	Occupational Stress:	Teacher’s Academic performance:	Total Teachers’ in each Cluster:
Cluster 0	Orange	3.95	3.79	4.01	56
Cluster 1	Blue	4.37	3.64	4.27	65
Cluster 2	Purple	3.60	3.26	3.69	54
Cluster 3	Green	4.05	2.77	4.20	49

Here, emotional intelligence and academic performance of teachers’ score above 4.20 is regarded as high level, between 4.00 and 4.20 is considered as medium level and below 4.00 is low level. And teachers’ occupational stress score above 3.70 is regarded as high level, between 3.00 and 3.70 is considered as medium level and below 3.00 is low level.

The figure 4: scatter plots of cluster shows the distribution of the 4 clusters. And from Table 6, we could interpret them as the following teacher segments:

1. Cluster 0: Teacher’s with medium emotional intelligence, high occupational stress and medium academic performance.
2. Cluster 1: Teacher’s with high emotional intelligence, medium occupational stress and high academic performance.
3. Cluster 2: Teacher’s with low emotional intelligence, medium occupational stress and low academic performance.
4. Cluster 3: Teacher’s with high emotional intelligence, low occupational stress and high academic performance.

Concluding Remarks

Teachers have direct interaction with the students in order to disseminate knowledge in the classroom as well as socio-emotional development in effective manner (Miyagamwala, 2015). For this reason, teachers should be emotionally intelligent as well as be stable for effective teaching learning outcome. Hence, the emotionally intelligent teachers are highly effective in order to perform their duties as well as motivate the students to make them successful (James & S., 2018). So, EI skills play significant roles in increasing teaching performance and effectiveness. High emotional intelligence of teachers leads to improve performance and vice-versa (Mehmood, et al., 2013). So, EI has general ability to clarify the workplace performance and creates innovativeness in people that leads to change job performance and workplace behavior (Joseph, et al., 2015). Moreover, emotionally intelligent individuals cares for their qualities and trust that lead to concentrate on learning and vision (Joseph & Newman, 2010). Emotional intelligence helps oneself to make decision in academic aspects like class room management, create teaching-learning atmosphere and so on as well as plays a significant role in managing stress (academic and personal life), making interpersonal relationship with others, team building that lead to improve overall quality of life. Findings of the study revealed that emotional intelligence of the faculty members of universities in Bangladesh have moderate positive correlation ($r=0.424$) with teachers' academic performance and occupational stress has negative correlation ($r= -0.036$) with teachers' academic performance as well as linier regression analysis exposed that emotional intelligence is the significant prognosticator of teachers' academic performance ($\beta = 0.424, p \leq 0.05$) higher level of emotional intelligence of university teachers leads to higher level of academic performance. High level of emotional intelligence related to uphold challenges and reflect high integrity that lead to enhance positive interactions with the performance (Dhani, et al., 2016); (Asrar-ul-Haq, et al., 2017); (Lyons & Schneider, 2005) Moreover, occupational stress is also a significant predictor of teachers' academic performance ($\beta= -0.036, p \leq 0.05$) (Abel & Sewell, 1999; Kokkinos, 2007); (Boyle, et al., 1995) (Tahir, 2011); (Tajudin, et al., 2014). So, The result of this research would be useful for the authorities (Ministry of education of Bangladesh, University Grants Commission and Accreditation Council of Higher Education Commission), who are involved in developing the teaching-learning strategies, will be got informed the importance of emotional intelligence and occupational stress on teachers' academic performance at tertiary level. Moreover, they can arrange different training and seminars on teaching-learning pedagogy and implement different policies and regulations to develop emotional intelligence of teachers' as well as to mitigate for the university teachers in Bangladesh. Adequate teacher student ratio and facilities can alleviate teaching stress at tertiary level in Bangladesh because teaching is the most stressful profession in the world. Actually, this research is emphasized on the higher educational institutions that is focused on causal analysis between emotional intelligence occupational stress and teachers' academic performance. Replication of the study can be possible in any other sector by the future researchers. Future research design can be done adopting large sample size, comparative analysis between private and public universities, cross country analysis for better understanding of emotional intelligence occupational stress and academic performance of university teachers. Further research can be conducted using different dependent variables (i.e. organizational productivity, employee morale, organizational change, employee satisfaction, employee training and performance) with mediating (occupational stress and self-leadership) as well as moderating effect (gender, work of experience etc.). So, education is the principle driver for socio-economic development of a country, especially the higher education, that quality in higher education should be ensured that is largely relies upon the quality of teachers who are directly involved in disseminating knowledge for building up an advanced society as well as a country. Effective teaching methods, emotional awareness of faculties, self-confidence or self-

motivation, self-regulation or self-control, effective social skill, classroom management and lesson planning with good teaching style are the antecedents of quality education in higher institutions (Mehmood, et al., 2013). With the rapid growth of public and private universities in Bangladesh, the number of teachers are increasing in higher educational institutions over the years. So, developing the level of emotional intelligence and plummeting the level of occupational stress of faculties in higher educational institutions should be guaranteed in order to effective academic performance for safeguarding quality education at tertiary level.

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