INTERPLAY OF PERSONALITY TRAITS, EMOTIONAL INTELLIGENCE AND INNOVATIVE BEHAVIOR AMONG THE LEADERS

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Abstract: The study analyses the relationship between the five factor personality traits, emotional intelligence, and innovative behaviour. Moreover, the mediation of emotional intelligence in the relationship between the big five personality traits and innovative behaviour is studied. In order to test the hypothesized relationships, data was collected from 331 leaders and project managers from the Pakistan's software companies. According to the findings of this study, extraversion, agreeableness, emotional stability, conscientiousness, and openness to experience significantly affect the innovative behaviour. Extraversion, emotional stability, conscientiousness, and openness to experience are also strongly related to the emotional intelligence. However, one the personality traits i.e., agreeableness has no significant effect on the emotional intelligence variable. Relationships between all personality traits and innovative behaviour are found to be significantly mediated by the emotional intelligence. Implications and constraints of the study are also highlighted in the research article.

Keywords: Personality traits, emotional intelligence, innovative behaviour, creativity

INTRODUCTION

The current era in the corporate world is defined by the competitiveness, rapid globalization, empowered customers, innovation in the products and services and quality assurance (Alhamuddin et al., 2022). In addition to many challenges, shortened life cycles of technologies and products are also affecting the industries around the globe specifically software development industries. In South Asian region, Pakistan is one of the growing countries, therefore, it is a good example to gain some insight into the regional software industry (Rehman et al., 2021). Pakistan has sustained 20% to 30% growth in its revenue despite the economic downturn due to COVID pandemic (Farid, 2018) yet performance gaps are still huge in comparison with Pakistan's neighbouring country, India (Sahoo and Dash, 2017). In South Asian region, India provides 98% of IT services, however, Pakistan has been considered as an expensive and poor-quality IT service provider (Hauge and Chang, 2019).

Innovation is considered as a key element to increase the efficiency, productivity and financial outcome of software industry (Jawad et al., 2019). Furthermore, innovative ideas, gathering knowledge, independent thinking are considered drivers of entrepreneurial behaviours among employees (Gamage & Tajeddini, 2022). For the software companies it is said that "no innovation, no survival". Hence, organizations are paying special attention to the innovation among their human resources that ultimately leads to organizational level innovation. Success and performance of organizations including software development industry are highly dependent on the creative and novel idea generation and implementation by the workforce (Purc and Laguna, 2019).

Two terms are frequently found in literature regarding workforce innovation. The first one is creativity that represents the origination of useful and unique ideas (Amabile et al., 1996). The second term is innovative work behaviour which signifies a whole process of innovation from problem identification, the generation of ideas, gathering support for ideas and the application of creative ideas. Thus, innovative work behaviour is a broader notion that also includes creativity in its conceptualization Hence, this study is focusing on a broader framework of innovative work behaviour that includes the creativity component as well in its conceptualization.

Innovative behaviour is an imperative attribute for the leaders and entrepreneurs of current century (Astrini, et al., 2020; Vessey *et al.*, 2014) since leader is the one who nurtures the creativity among his followers (Amabile, 1998). Moreover, actions and decisions of the leaders directly affect the organization's performance. Therefore, innovative behaviour of the leader is highly emphasized for the progress and sustainability of their ventures (Lan, Xia and Yang, 2021). There are many real-world examples such as Steve Jobs, Bill Gates, John F. Welch, whose innovative approaches have made their organizations world frontrunners. Realising the importance of innovation, Steve Jobs once mentioned in his speech that innovation is the main factor that distinguishes between leaders and follower (Jobs, 2012).

Du et al. (2021) stated in his study that innovation is considered to be influenced by numerous external and personal factors. Past research has empirically proven the role of personality in predicting in numerous workplace behaviours such as workplace bullying, workplace delinquencies, workplace creativity etc. (Lee at al., 2005; Cohen, 2014; McCormick et al., 2019). This study has attempted to investigate the effects of personality traits on innovative behaviour of the leaders. For evaluating the personality of the leaders, the big five personality model is adopted after carefully analysing the pros and cons of different personality models.

Another key attribute that is often associated with the leaders is emotional intelligence (Ahuja, 2016; Miao, Humphrey & Qian, 2018). One of the bestseller articles of Harvard Business Review (HBR) "What makes a leader?" by Daniel Goleman highlights the significance of emotional intelligence for the leaders (Goleman, 2004). The ability of an individual to be high in emotional intelligence positively affects his behaviours at workplace (Prati & Karriker, 2018). In past, numerous workplace behaviours have been studied in relation to emotional intelligence however effect of emotional intelligence on innovative work behaviour is still an overlooked constituent. Hence, the current study evaluates the effects of leader's capability to manage his personal and others' emotions on his innovative behaviour at workplace.

Studying the effects of personality on emotional intelligence is another interesting relationship to assess because in the past a lot of disagreements have been occurred among psychologists and academicians about the personality-emotional intelligence association (Mayer and Salovey, 2007; Hebert, 2011; Van et al., 2017; Petrides et al., 2018; Di Fabio and Kenny, 2019). Researchers have attempted to define emotional intelligence construct as one of the personality traits (Petrides and Furnham, 2001; ŞİRİN and ŞİRİN, 2016; Petrides et al., 2018). Whereas another school of thoughts attempted to distinguish emotional intelligence from personality traits through conceptualizing emotional intelligence as ability rather than personal attribute (Mayer et al., 2016; Drigas and Papoutsi, 2018). However, constituting this research on the ability model of Salovey and Mayer (1990) and social cognitive theory of Bandura et al. (1977), this study has endeavoured to investigate the effects of emotional intelligence components on innovative behaviour phases. Mediating role of emotional intelligence in the relationship between personality traits and innovative behaviour is also assessed in this study. We are studying the framework through the lens of Social-analytical theory (Hogan & Blickle, 2013). In brief, this study revolves around the innovative behaviour of leaders and its antecedents, considering it essential for the survival of the corporate sector and especially high-tech industries in the present era.

LITERATURE REVIEW

Innovative Behaviour: Innovation is an old concept; in fact, it is as old as mankind itself. Man started innovating from the time when he stepped on the earth. In the present era only, those organizations are considered successful who innovate and keep pace with the present economic situation. As far as the definition of innovation is concerned, despite the ever-increasing importance of innovation, researchers couldn't make consensus on any single conceptualization. One of the oldest definitions of innovation in the organizational context was given by Schumpeter (1934): "innovation is reflected in novel outputs: a new product; a new process of production; or a new organizational structure, which can be summarized as doing things differently". He defined innovation as "creation and implementation of new combinations of service, work processes, products and markets" (Schumpeter, 1934, p.78). In early literature innovation is used as synonym to invention (Steiner, 1965). But contemporary studies clearly distinguish both terms as: innovation refers to commercialization of a new idea while invention refers to introduce something new (Kashani and Roshani, 2019).

Individual innovation can be studied in diverse ways but in this particular research, only behavioural aspects of individuals' innovation are considered at workplace. In literature, it termed as innovative behaviour or innovative work behaviour. Researchers have defined innovative behaviour through two stages that are creativity-oriented or development-oriented innovative behaviour and implementation-oriented innovative behaviour ((Essen, Leede, & Bondarouk, 2022; Dorenbosch *et al.,* 2005). Creativity-oriented innovative behaviour refers to activities like exploring opportunities and possibilities; recognizing them and generating novel ideas (Mulder, 2015). Besides, implementation-oriented innovative behaviour indicates promotion and realization of those ideas; gathering support for those ideas and finally executing those ideas at the workplace (Mulder, 2015). One of the earliest and most famous definitions of innovative behaviour was presented by West and Farr (1989, p. 16) in the following words: "The individual's actions to generate introduce and implement beneficial novelty in the organization".

Following them Scott and Bruce (1994) also defined innovative behaviour through the following stages. The first stage of innovative behaviour presented by Scott and Burce (1994) is idea generation. The sense to do something new arises when an individual identifies some problem or looks out for new opportunities. The problem might be in the form of performance gaps in the product and service of the organization (Shanker et al., 2017). When the problem is identified, individual thinks to resolve the issue and generate novel ideas for addressing the problem. This stage involves generation of creative ideas, so it is defined as "creativity" that is usually confused with the term innovative behaviour (Lee et al., 2020). The next step after idea generation is selling the idea or actually implementing it. A lot of uncertainty is found regarding the success of an idea. Only creative ideas with marginal impact and idiosyncratic ideas can be easily implemented. While most of the creative ideas face a lot of resistance due to a number of reasons (Tanveer and Hassan, 2020). For successfully implementing the innovative ideas there is a need for champions who can build coalitions, gather support, remove roadblocks, convince other employees, negotiate with them and gather required resources (Sung and Kim, 2021). Idea implementation or application is the core of innovative behaviour that makes it different from the creativity. In this stage, ideas are transformed into reality. Different authors have identified different behaviours that results in successful implementation of creative ideas as persistent, proactive, self-efficacy etc (Song, 2021).

Emotional Intelligence: Evolution of the term emotional intelligence can be found in 20th century when Thorndike (1920) defined the social intelligence as “the ability to understand and manage men and women; boys and girls to act wisely in human relations” (Thorndike, 1920, p. 228). Leeper (1948) supported the idea of Thorndike (1920) by claiming that emotional processes contribute in the logical reasoning also. The term emotional intelligence for the first time was coined by the Salovey and Mayers (1990). They described emotional intelligence as: “the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional meanings and to reflectively regulate emotions so as to promote both better emotion and thought” (Salovey and Mayers, 1990). The term came into limelight when Goleman (1995) published his famous book “Emotional Intelligence: Why it can matter more than IQ? In his book, he defined emotional intelligence as: “the capacity for recognizing our own feelings and those of others, for motivating ourselves and for managing emotions well in ourselves and in our relationships”. As the name suggests, emotional intelligence is a combination of emotions and intelligence. According to Esen and Bulut (2022), emotional intelligence is the ability to understand emotions. Understanding is the attribute of intelligence. The research has confirmed that highly emotionally intelligent people can establish healthy relationship which may lead to better understanding among people as well (Naz et al., 2019). Furthermore, emotional intelligence can be defined as capability of utilizing feelings or emotions so product emotions and intelligence attributes collectively define term emotional intelligence. Kunnanatt (2004, p. 490) defined emotional intelligence through two major attributes that are understanding and utilizing emotions. He defined emotional intelligence in the following words: “the sum total of the mental capabilities that enable a person in understanding his or her own and others’ emotions correctly, in real time and in using these emotions intelligently to produce personally and socially desirable transactional outcomes” (Kunnanatt, 2004, p. 490). Following the idea of emotional intelligence given by Kunnanatt (2004), hence, emotional intelligence can be described as competency or ability that involves number of components e.g., understanding, perception, utilization and managing of self and others’ emotions effectively (Schutte et al., 2013). Davies et al., (1998) and Wong and Law (2002) defined emotional intelligence through four components: regulation of emotions; self-emotion appraisal; use of emotions and others’ emotion appraisal. These components are widely accepted by the researchers till today (Kurdi and Hamdy, 2022). Therefore, emotional intelligence is conceptualized through these four components in this research. From the time, concept of emotional intelligence is evolved till now; it is widely studied in the leadership literature. Major emphasis of emotional intelligence is to enable others to complete their jobs and tasks effectively that it is the prime concern of the leaders (Xianjun, 2022). A leader, who scores low in the emotion’s management skill, is exposed to the risk of poor performance among employees, wastage of resources, lacking organizational commitment and motivation among employees. Hence, in this research, emotional intelligence ability of the IT leaders is studied.

Personality Traits: For layman, personality is something observable among other individuals but not quantifiable or measurable. However, psychologists have studied human personality in so much depth from its conceptualization to measurement that their work is treated as a separate discipline known as personality psychology (Atherton, et al., 2021). Robbins et al., (2009) defined personality "as sum total of ways in which an individual reacts to and interacts with others". Hartmann (2011) defined personality as steady characteristics that formulates the notion of self in an individual and guides his behaviour. Recent definition of personality, given by Schultz and Schultz (2016) also signifies the same idea that was presented by Allport (1961) several years ago. They defined personality as "the unique, relatively enduring internal and external aspects of a person "character that influence behaviour in different situations" (Schultz and Schultz, 2016, p. 9).

Numerous researchers and psychologists have agreed on universally accepted personality framework known as the big five personality traits or five factor model (FFM) (Graham et al., 2020). The big five personality model is an extraction and collection of all the personality traits presented by different researchers in different time eras (McDougall, 1932; Norman, 1963; Borgatta, 1964; McCrae and Costa, 1985; Costa and McCrae, 1992). The first generally agreed trait of personality is known as Extraversion that was named by Eysenck (1973). Barrick and Mount (1991) identified that highly extravert individuals are active, talkative, assertive, social, ambitious, energetic and outgoing. The second trait of personality is Neuroticism and the majority of personality psychologists have agreement on this trait too. It is often known as antonym of emotional stability. Neuroticism and extraversion traits are also called big two traits of Eysenck. Costa and McCrae (1992) explained neuroticism as "variances of individual tendency to experience suffering and defined as emotionally insecure and uneven". The third trait of personality is Agreeableness that is defined as likability and amicability (Tupes and Christal, 1961; McCrae and Costa, 1985). Agreeable individuals are often very cooperative with others and expect the same in return (Rothmann and Coetzer, 2003). The next trait on personality is known as Conscientiousness but few of have named it dependability or conformity (Hogan, 1986). These individuals are considered to have full control on themselves and active in planning and organizing (Barrick and Mount, 1991). The next one is openness to experience which elucidates the degree to which an individual is imaginative. It denotes the personality traits such as curious, sensitive, creative, aesthetic, independent minded and artistic (Barrick and Mount, 1991).

Researchers have recognized several other personality attributes e.g., religiosity, seductiveness, thriftiness, conservativeness, egoism, honesty, humility that are not covered by the big five personality model (Feher and Vernon, 2021; Thielmann et al., 2021). But besides all the criticisms, the Big Five Personality Model is considered an adequate taxonomy to measure the personality (Cuadrado, Salgado and Moscoso, 2021; Bergner, 2020). And the proof is that even after 20 to 30 years of its discovery, it is still popular, widely studied and cited in the literature, from all over world (Barańczuk, 2019; Judge et al., 2013).

After reviewing the literature on the innovative behavior of leadership, it is found that there are two major loopholes or gaps in past research that require attention of the researchers. First, past studies are focusing on only one aspect of innovative behavior that is idea generation phase while other phases are not being much emphasized in the research (Lee et al., 2020; Shafi et al., 2020). Secondly, past research has investigated the effect of different leaders‟ behaviors or characteristics on followers‟ innovativeness while, their own abilities to present innovative ideas, gathering support and implementing them, is ignored in literature (Azim et al., 2019; Cai et al., 2020; Castro et al., 2012). Thus, considering these gaps, this study purely focused on the

innovative behavior of the leaders. For enabling the software houses to choose their leadership wisely, this study investigated and analyzed the effect of personality on the innovative behavior. Despite the assertion, personality innovative behavior literature is still limited.
Secondly, evaluating the effect of emotional intelligence on innovative behavior is another issue of high prominence because role of emotions has empirically proven in numerous workplace outcomes (Aqqad et al., 2019; Codier, 2020). As innovative behavior is one of the most important workplace behaviors required and demanded in the current era, but unfortunately effect of emotional intelligence on innovative behavior is ignored in the literature as researchers and scholars pay more attention towards the relation of emotional intelligence and creativity (Castro, Gomesand Sousa, 2012; Ghaffari et al., 2013; Hahn et al., 2011). Therefore, realizing the significance of innovative behavior and emotional intelligence among leaders, effect of emotional intelligence will be studied on innovative behavior process.
Thirdly effect of emotional intelligence will be investigated on the innovative behavior. Both emotional intelligence and innovative behavior concepts became popular in the last decade as such numerous aspects are still undiscovered by researchers (Yang et al., 2021; Castro et al., 2012). Effect of emotional intelligence on workplace behaviors has been studied extensively by researchers but the relationship of emotional intelligence and innovative behavior still needs to be explored in depth. So, this study will attempt to investigate the effect of emotional intelligence on innovative behavior among leaders of software houses of Pakistan.

The research objectives delineate the main goals and intentions of this study that are specifically as follows:

1. To examine the effects of big five personality traits on the innovative behavior among leaders of software houses in Pakistan.

2. To examine the effects of big five personality traits on emotional intelligence among leaders of software houses in Pakistan.

3. To examine the effects of emotional intelligence on innovative behavior among leaders of software houses in Pakistan.

4. To examine the mediating role of emotional intelligence in the relationship between big five personality traits and innovative behavior among leaders of software houses in Pakistan.

Theoretical Framework: In past, numerous researchers attempted to study the relationship of personality and creativity, however, personality and innovative behaviour of the leaders is a less studied relationship. Although, a few researchers attempted to investigate the relationship of personality and innovative behaviour but their research approach and conceptualization of variables were different such as Su and Zhang, (2020) studied the effect of proactive personality on innovative behaviour. Similarly, Nasaj et al. (2022) investigated the effect of intrapreneurial personality on innovative behaviour. Stock et al., (2016) investigated the effect of the big five personality traits on the consumers' innovative behaviour. Effect of big five personality traits on creativity is studied abundantly. Such as Gocłowska et al. (2019) reported a positive and significant relationship of extraversion on creative performance. Recent studies on this relationship show that the extraversion trait helps individuals to think creatively in their daily working through their ability to socialize (Esfahani et al., 2012; Furnham and Bachtiar, 2008). Hence, it is hypothesized that:

H1: Extraversion trait is positively related to Innovative Behaviour.

In early literature, agreeableness trait was studied under the umbrella of low psychoticism (McCrae and Costa, 1985). Feist (1998) concluded in his study, creative people are more hostile and rebellious as compared to the agreeable individuals. Esfahani et al., (2012) concluded in their study that although there is a negative relation in the agreeableness trait of personality and creativity these results were found statistically insignificant. Considering the emphasis of researchers on negative association of agreeableness and innovativeness, following hypothesis is formulated:

H2: Agreeableness trait is negatively related to Innovative Behaviour.

Similarly, few researchers are of the opinion that psychoticism trait that includes conscientiousness is found to be related to creativity (Eysenck and Furnham, 1993; Esfahani et al., 2012). Stock et al., (2016) and Kao (2016) established that conscientious individuals are expected to be more involved in innovative activities in comparison with the others. Therefore, it can be hypothesized that:

H3: Conscientiousness trait is positively related to Innovative Behaviour.

Furnham and Bachtiar (2008) found that the neuroticism trait among individuals is negatively correlated with the creativity score of employees (Clark and DeYoung, 2014). Similarly, Esfahani et al., (2012) also empirically proved that individuals with high emotional stability are more involved in creative idea generation phase of innovation process. Supporting the rationality of arguments presented by Esfahani et al., (2012) and Patterson and Nova (2002) the following hypothesis is drawn on:

H4: Neuroticism is negatively related to Innovative Behaviour.

Openness to the experience trait of personality is considered as the most obvious predictor of creativity and workplace innovation. Individuals with high openness to the experience trait are even more imaginative, curious, cultured, broad minded, willing to question authority, unconventional, prefer their own way of doing work (Clark and DeYoung, 2014; Bakx, 2007). There are numerous early studies that have concluded a strong correlation and positive significant dependency of creativity on openness to experience (Van Tilburg, Sedikides and Wildschut, 2015; Li et al., 2015; Feist, 1998). Not only old literature but recent studies have also confirmed findings that openness to experience, and creativity have a positive relationship (Saihani et al., 2009; Tan et al., 2019). Stock et al., (2016) also concluded in their study that the openness to experience trait of personality is significantly associated with the idea generation phase of innovative behaviour. So, considering the researchers' view on the relationship, it can be hypothesized that:

H5: Openness to Experience is positively related to Innovative.

In past, researchers attempted to fit the emotional intelligence construct into the personality framework (Petrides et al., 2018; Bar-On, 2000). On the contrary, there are numerous researchers who spent their time and efforts to differentiate the construct of emotional intelligence from personality. Going one step ahead, the current study has attempted to predict the impact of personality on emotional intelligence.

In past, researchers presented a positive correlation in extraversion and emotional intelligence (Warwick and Nettelbeck, 2004; Matthews, et al., 2006; Austin et al., 2008; Newness et al., 2012). Moreover, Austin et al., (2008) and Nawi et al., (2015) also indicated that extraversion trait of personality positively predicts emotional intelligence. So, looking at the trend of previous studies, the following hypotheses are formulated on this relationship:

H6: Extraversion positively affects Emotional Intelligence.

The agreeableness trait refers to the personality attributes as warmth, cooperation, sensitivity to others' feelings, trust, sympathy and altruism (Vize, Miller and Lynam, 2021; Costa and McCrae, 1992). This trait of personality leads an individual in maintaining better relationships and effective communication with others (Holmes, 2020; Shaffer, 2004). Numerous studies in the past, have reported a positive correlation in the agreeableness and emotional intelligence (Zysberg, 2020; Szcześniak et al., 2020; Newness et al., 2012). Therefore, it can be hypothesized that agreeableness will positively and significantly predict emotional intelligence components:

H7: Agreeableness positively affects Emotional Intelligence.

The conscientiousness trait of personality refers to the personality attributes like vigilance, responsibility, discipline, carefulness, reliability, dependability and persistence (Minbashian, Beckmann and Wood, 2018; Barrick and Mount, 1991). Past studies have shown a strong significant correlation in conscientiousness and emotional intelligence components like mood regulation, emotion's appraisal and social skills (Delhom et al., 2019; Saklofskea et al., 2003). Similarly, Shefabhai, (2018) and Vakola et al., (2004) revealed a positive significant correlation in conscientiousness and overall emotional intelligence. Austin et al., (2008) have also concluded that conscientiousness positively predicts emotional intelligence. Hence, following hypothesis is formulated:

H8: Conscientiousness trait is positively related to Emotional Intelligence.

Emotionally stable individuals are considered to be full of positive emotions and can be better in getting along with others (Cuartero and Tur, 2021; Hogan and Holland, 2003). Therefore, it can be anticipated that neuroticism will negatively affect the components of emotional intelligence. It is concluded in past research that it most strongly correlated relationship among the other personality attributes. Therefore, it is hypothesized that:

H9: Neuroticism is negatively related to Emotional Intelligence.

Openness to experience trait is used to define intelligent human beings like creative minded, bright, smart etc. (Presbitero, 2018;). So, it can be expected from the open for experiences kind of individuals to be intelligent in understanding and appraising emotions too. There is numerous empirical evidence that support the positive correlation in the openness to experience trait of personality and emotional intelligence (Kappagoda, 2013; Nawi et al., 2012; Matthews, et al., 2006). Hence, following hypothesis is formulated:

H10: Openness to Experience is positively related to Emotional Intelligence

Although emotional intelligence and innovative behaviour both are highly important in the present era but literature on the relationship of emotional intelligence and innovative behaviour is scarcely studied. Emotional intelligence is basically a form of intelligence which indicates the capability of an individual to achieve. On the other hand, creativity that is one of the phases of innovative behaviour refers to ones "ability to produce novel ideas". So, both notions refer to the mental abilities of an individual. Few researchers consider creativity as a component of intelligence (Neubauer and Martskvishvili, 2018). Others have considered creativity and intelligence as partly overlapped variables (Frith et al., 2021) while few considered creativity and intelligence are neutral and are not dependent on one another (Wallach and Kogan, 1965). Employees with high emotional intelligence may engage themselves to seek innovative opportunities which may lead to innovative behavior (Naz et al., 2019). Boyatzis (2018) concluded in their study that intermediate psychological processes are one of the factors that lead an individual towards innovative behaviour. Hahn et al., (2011) stated that reading and managing emotions of others help them to perform their job creatively. Similarly, Castro et al. (2012) stated in their study that leaders" understanding of their own and their followers' emotions, lead them towards more creative outcomes and strategic decision making. Xu, Liu and Pang (2019) empirically proved that emotional intelligence is significantly associated with innovative work behaviour of a manager as strategic decision makers.

Therefore, it is hypothesized that:

H11: Emotional Intelligence is positively related to Innovative Behaviour.

Finally, mediation of emotional intelligence is tested in the relationship between big five personality traits and innovative behaviour. Relationship is supported by social-analytic theory that states individual personality can be defined from two viewpoints, one personal identity and other is reputation. Identity refers to who you actually are; reputation refers to who we think you are (Hogan & Blickle, 2013). So, an individual acts considering these two parameters. As per thoery behaviors are dictated by one's personality, self-percetion and others' perception about an individual. Hence, it is hypothesized that:

H12: Relationship of personality traits and innovative behavior is significantly mediated by emotional intelligence.

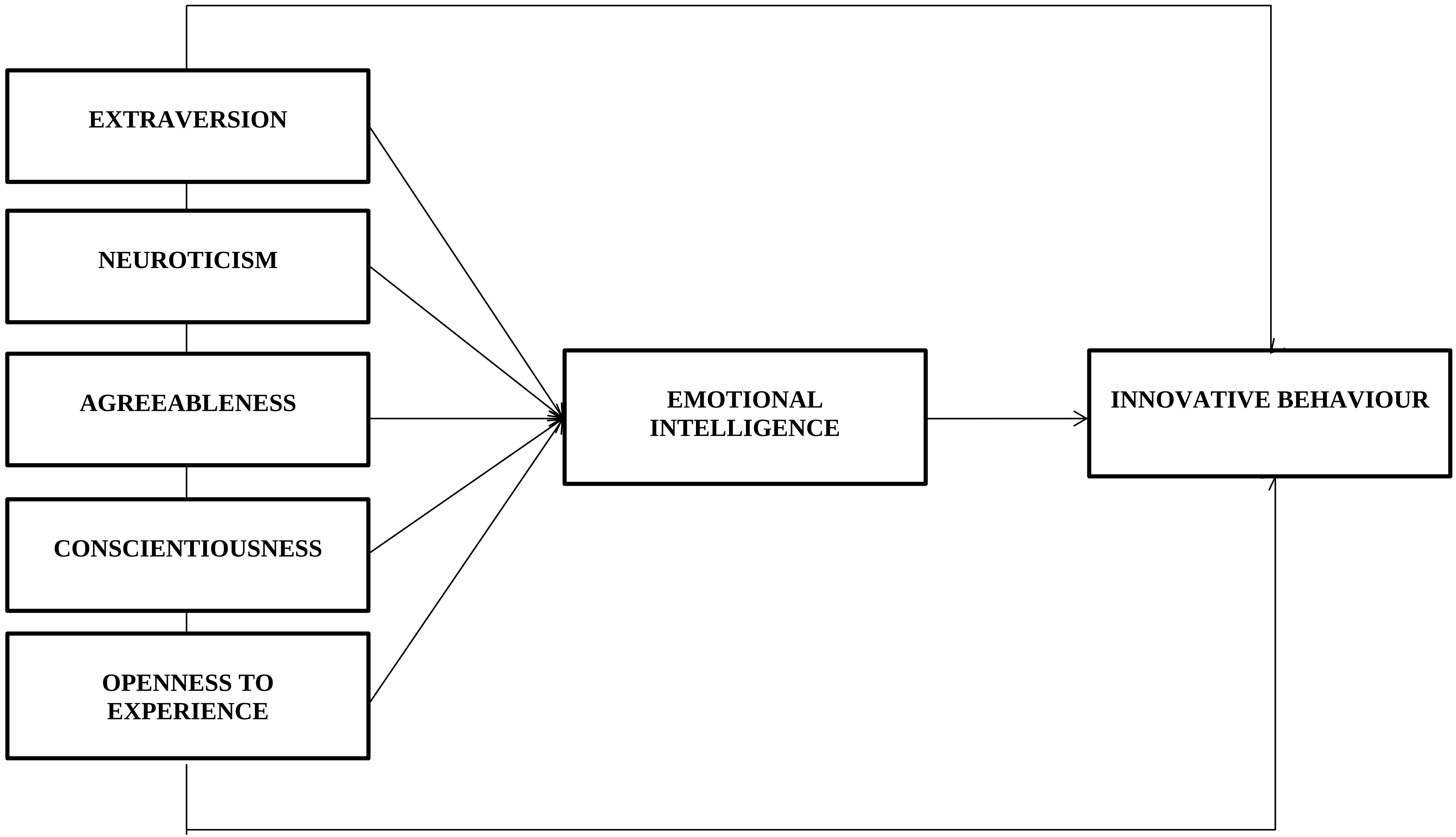

Figure 1: Framework of Study

RESEARCH METHODOLOGY

The target population of this study is the team leaders of the software houses in Pakistan. A list of software houses was generated from an official website of P@SHA, which stands for Pakistan Software Houses Association for IT and ITES. For this study, a simple random sampling technique was applied for sample selection. Applying the formula by Krejcie and Morgan (1970), the minimum sample size for this study was 331 team leaders. Table 1 presents the summary of the instrument adopted for this study.

Table 1: Summary of Instrument

Variables	Sources	No. of Items
Big Five Personality Traits	Donnellan et al. (2006)	20
Emotional Intelligence	Wong and Law (2002)	16
Innovative Behaviour	Kleysen and Street (2001)	14

Considering the nature of study and enormous advantages described by the academicians and scholars, questionnaire data collection technique was employed in this study (Hair et al., 2010; Sekaran, 2013). As the selected population is IT professionals and they are always digitally connected so questionnaires were electronically mailed to them. Their mailing address and other contact information was retrieved through their organizations' website or from numerous social media websites like Linkedin etc. In case of non-responsiveness, reminders were sent electronically and personally. Questionnaires were designed through google forms for making it convenient to fill for the respondents.

Timing of Data Collection

It took around three to four months in data collection. As employees associated with software houses are digitally well connected because of their nature of work. Therefore, list consists of HR managers and CEOs email addresses and contact numbers was aquired from P@SHA website. Email is sent to all the list members with the request to get the online questionnaire filled by the team leaders of their respective software house. Follow ups were made after two weeks through telephone calls, following the guidelines of researchers (Wensing, Mainz, Kramme, Jung, & Ribacke, 1999). Representatives of few software houses show their inability to get the questionnaire filled from team leaders of their particular software house due to number of reasons. So, an appointment is fixed with them and questionnaires are personally distributed among the team leaders.

Techniques of Data collection

Different strategies were adopted to make sure the maximum responses from the selected sample. Roth and BeVier (1998) emphasized to keep the length of questionnaire short to achieve maximum response rate. Galesic and Bosnjak (2009) concluded in their study that questionnaire that lasts 10 minutes, attracts higher number of responses therefore respondent friendly questionnaire is designed for this study that could be easily completed in 10 to 15 minutes. Secondly, questionnaire was divided into four sections: Section A: Personality, Section B: Emotinal Intelligence, Section C: Innovative Behavior, Section D: Demographical Informtaion. In online questionnaire, all the fields of all sections were mandotry to fill to make sure that no question remains unanswered. Fourthly, researchers emphasized to add demographical and 94 practical nature of questions in questionnaire to increase the probability of responses (Drummond, Sharp, Carsin, Kelleher, & Comber, 2008). Therefore, demographic section is added and it is made sure that questions asked are of practical nature. Fifthly, university affiliation is confirmed in the cover letter of questionnaire. During personal visits to software houses, letter issued by Universiti Teknologi Malaysia sponsoring the research, was shown to the top management to gain their cooperation in data collection process. Roth and BeVier (1998) also stated in their study that research projects with university affiliation attract more responses as compare to private organizations‟ affiliation. Lastly, following the guidelines of Jobber & O‟Reilly (1998) anonymity of respondents was assured in order to achieve higher response rate.

Initially, pilot study was conducted on the 10% of actual sample size. Few recommendations were made by the respondents such as using simple words instead of using fancy ones like chores, vivid, blue etc. from the questionnaire. Considering the suggestions of the respondents, these words were replaced with easy synonyms. The reliability and validity of the instrument was also established through filled responses. Employees associated with software houses are digitally well connected due to nature of their work. Therefore, the list consists of HR managers and CEOs email addresses and contact numbers was acquired from P@SHA's website. Emails were sent to all the list members with the request to get the online questionnaire filled by the team leaders of their respective software house. Follow ups were made after two weeks through telephone calls. Personal visits were also made to the software house. Furthermore, forum of linkedin was used to reach out the team leaders and project managers of software houses. Total 864 questionnaires were disseminated out of which 331 questionnaires were returned. After careful analysis only 306 questionnaires were found usable for further analysis that makes 35.4% response rate.

Data Analysis

At the first attempt, all the preliminary data analysis techniques like, coding of data, data screening, missing values analysis, normality assessments, Skewness and Kurtosis analysis, and an assessment of outliers were performed. Demographic and descriptive analyses were also conducted in the preliminary data analysis phase. In the demographical information, a region wide distribution of respondents, a gender wide distribution of respondents, a qualification wide distribution of respondents and an experience wide distribution of respondents were reported. In the second step, a descriptive analysis of each item and of each construct were performed that included the mean value, maximum, minimum value, sum of the responses and the standard deviation of each construct. Moreover, a correlation analysis was also conducted to get an initial idea about the direction of the relationships between variables.

Different statistical strategies were used; face validity, criterion validity, convergent validity, discriminate validity, inter-item reliability, composite reliability, internal consistency, and the multi co linearity and the unidimensionality of the data were evaluated to ensure the accuracy and appropriateness of the data. The CFA (confirmatory factor analysis) technique was used to check the common method biasness, reliability, validity and unidimensionality of the data. Moreover, CFA was also employed to evaluate the significance of a conceptualized model through the collected data.

For this study, the Structural Equation Modelling (SEM) technique was used to analyse each of the objectives stated in chapter 1. This study works on four objectives. The first three objectives investigate the direct effects of personality on innovative behaviour, personality on emotional intelligence, and emotional intelligence on innovative behaviour. The fourth objective is the mediating role of emotional intelligence in the relationship of personality and innovative behaviour.

This study has considered the MacKinnon Mediation Strategy. The MacKinnon (2008) test of mediation assesses the statistical significance of the X to M relation, *a* path and then the M to Y relation, *b* path as shown in figure 3.1. If both are statistically significant, there is evidence of mediation. MacKinnon (2008) claimed that the requirement that X is significantly related to Y (path *c'*) is an important test in any research study, but mediation can exist even in the absence of such a significant relation. According to MacKinnon, it is also important to consider opposing mediated effects and more complicated models, such that overall relations may not be statistically significant, yet mediation may still exist in a research study.

Confidence limits are important for understanding effects based on the distribution of the product or the bootstrapping. The bootstrapping technique was utilized for testing mediation significance. Bootstrapping is becoming a very popular tool for testing the significance of mediation. In this technique, hundreds of thousands of bootstraps are calculated for providing an approximation of the sampling distibution through random sampling with replacement. Different macros are available in SPSS to calculate bootstrapping moreover bootstrapping techinque can be applied in AMOS also. The Bootstrapping method provides a confidence interval through which the significance and non-significance of the mediation can be evaluated.

Preliminary Data Analysis: Process of data screening was performed to identify outliers and missing data. Normality and multi-collinearity of the data were also tested in preliminary data analysis. Out of 331 questionnaires, it was found that seven questionnaires were partially filled so these questionnaires were excluded from the data analysis. Mahalanobis distance test was conducted to detect multivariate outliers. Eighteen outliers were deleted and total 306 questionnaires were finalized for further analysis. Non-response bias and normality of the data was also tested.

Respondents' Demographic Characteristics: As table 2 shows that most of the respondents were young in their age with 14 to 16 years of qualification and less working experience. Level of variables studied in this research such as emotional intelligence and innovative behaviour might be varying with age, experience and qualification. Therefore, to investigate whether age, experience and qualification of the respondents affect the level of emotional intelligence components and innovative behaviour phases or not, hierarchical regression was conducted. Results of the hierarchical regression show that age and qualification don't affect the emotional intelligence and innovative behavior significiantly. Therefore, overall it is concluded that demographics of the respondents did not have any significant effect on most of the data regarding studied variables.

Table 2: Respondents' Demographical Analysis

Demographical Information		***Frequency***	***Percentage***
Gender	Male	257	84%
	Female	49	16%
	Total	306	100%
Age	20-30 years old	179	58.5%
	30-40 years old	94	30.7%
	40-50 years old	22	7.2%

	50-60 years old	11	3.6%
	Total	306	100%
Qualification	Bachelors	129	42.2%
	Masters	166	54.2%
	Others	11	3.6%
	Total	306	100%
Total Work Experience in Sofware Houses	Less than a year	70	22.9%
	1 to 5 years	131	42.8%
	5 to 10 years	61	19.9%
	Above 10 years	44	14.4%
	Total	306	100%
Total Work Experience in Other Sectors	Less than a year or no experience	155	50.7%
	1 to 5 years	88	28.8%
	5 to 10 years	36	11.8%
	Above 10 years	27	8.8%
	Total	306	100%

Correlation Analysis: Pearson correlation test was conducted to examine the relationship between personality traits, emotional intelligence and innovative behaviour. Results show that all personality traits are significantly correlated with innovative behaviour and emotional intelligence. Emotional intelligence is also significantly correlated with innovative behaviour. Correlation result are summed up in table 3.

Table 3: Correlation Analysis

Variables		Emotional Intelligence	Innovative Behaviour
Extraversion	Pearson Correlation	.297**	.285**
	Significance Level	.000	.000
Neuroticism	Pearson Correlation	-.265**	-.269**
	Significance Level	.000	.000
Agreeableness	Pearson Correlation	.213**	.214**
	Significance Level	.000	.000
Conscientiousness	Pearson Correlation	.182**	.227**
	Significance Level	.001	.000
Openness	Pearson Correlation	.388**	.328**
	Significance Level	.000	.000
Emotional Intelligence	Pearson Correlation	1	.583**
	Significance Level		.000
Innovative Behaviour	Pearson Correlation	.583**	1
	Significance Level	.000	

Factor Analysis: To test the measurement model, confirmatory factor analysis was performed. The purpose to test the measurement model is to check whether all the confirmed item of the constructs significantly contribute in the proposed model of the current study. Three items were deleted due to low factor loading. After refining the model, Model fitness information is satisfactory. Normed chi-square was 1.385; GFI and AGFI were 0.863 and 0.836 respectively. NFI was 0.885; TLI was 0.960 while CFI was 0.965. Value of RMSEA was 0.036.

Hypotheses Testing:

Hypotheses were tested through regression analysis. Table 4 presents the effects of personality traits and emotional intelligence on innovative behaviour. All of the personality traits are significantly affecting on innovative behaviour. Neuroticism negatively affects the innovative behaviour. Moreover, regression coefficient had the high significance value at 10% significance level for the effects of emotional intelligence on innovative behaviour.

Table 4: Effects of Independent Variables on Dependent Variables

Structural Path	Coefficient	Sig.
Extraversion →Innovative Behaviour	.146	.009
Neuroticism→Innovative Behaviour	-.195	.000
Agreeableness→Innovative Behaviour	.104	.056
Conscientiousness→Innovative Behaviour	.141	.008
Openness to Experience→Innovative Behaviour	.201	.000
Emotional Intelligence →Innovative Behaviour	.583	.000

Table 5 shows the effects of big five personality traits on emotional intelligence. All personality traits except agreeableness significantly affects emotional intelligence. Conscientiousness trait also had low significance however, coefficient was found significant at 10% significance level.

Table 5: Effects of Independent Variables on Mediator

Structural Path	Coefficient	Sig.
Extraversion → Emotional Intelligence	.155	.005
Neuroticism→ Emotional Intelligence	-.182	.001
Agreeableness→ Emotional Intelligence	.085	.111
Conscientiousness→ Emotional Intelligence	.089	.090
Openness to Experience→ Emotional Intelligence	.272	.000

Finally, table 6 shows the results of mediation testing following the mediation testing procedure recommended by (Preacher and Hayes, 2004). Indirect effects computed through the 1000 bootstrap samples show, that emotional intelligence significantly mediate between personality traits and innovative behaviour.

Table 6: Mediation Testing

Structural Path	Indirect Effects	Sig.
Extraversion→Emotional Intelligence →Innovative Behaviour	0.191	.000
Neuroticism→Emotional Intelligence →Innovative Behaviour	-0.096	.000
Agreeableness→Emotional Intelligence →Innovative Behaviour	0.093	.003
Conscientiousness→Emotional Intelligence →Innovative Behaviour	0.075	.002
Openness to Experience→Emotional Intelligence →Innovative Behaviour	0.134	.000

DISCUSSION AND CONCLUSION

The study was conducted with the objective to investigate the effects of big five personality traits on emotional intelligence and innovative behaviour. Moreover, mediating role of emotional intelligence in the relationship between personality traits and innovative is also tested. Findings shows that extraversion, agreeableness, conscientiousness and openness to experience traits are significantly affecting the innovative behaviour while neuroticism negative affects innovative behaviour. These findings are consistent with the past studies that claim extravert, agreeable, conscientious, emotionally stable and open for new experiences individuals have creative and innovative performance (Patterson *et al.,* 2009; Woods et al., 2018). Secondly, findings of this research shows that emotionally stable, extravert, conscientious and people who are open for new experiences also tend to be more emotionally intelligent. However, insignificant results were found in relation to agreeableness and emotional intelligence. One of the possible reasons might be that in order to conform and abide by others, sometimes individuals compromise on their own feelings and emotions (Timoney, 2019) that results in ignoring the first important component of emotional appraisal i.e., self-emotions appraisal. Therefore, overall insignificant results have been concluded in relationship between agreeableness and emotional intelligence trait. Results on the relationship between emotional intelligence and innovative behaviour shows that emotional intelligence significantly affects innovative behaviour. These findings are consistent with past research studies in which researches proved a positive relation in emotional intelligence and creativity (Ghaffari *et al.,* 2013; Noorafshan and Jowkar, 2013). Finally, significant mediation of emotional intelligence proved between big five personality traits and innovative behaviour. Findings of this study has confirmed that indivudal consider, appraise and regulate their own and others emotions while behaving innovatively so these finding support the claims of the social analytic theory.

Findings imply that management of software houses should retain and promote high extravert, high agreeable, high conscientious, emotionally stable, open for experiences and emotionally intelligent personalities as team leaders so that software houses could gain maximum advantages from their potential to behave innovatively at workplace. A thorough personality and emotional intelligence analysis must be conducted in recruitment and appraisal process to determine the innovation capabilities of candidates. Additionally, while appointing any employee in position of team leader for crucial projects, personality analysis of that employee must be evaluated to ascertain whether that employee possesses those personality traits that boost his innovation capabilities or not. In many developed countries, personality analysis is one of the recruitment practices (Schmidt, 2014). But in Pakistan generally and specifically in software development industry, a proper system to analyse of personality and emotional intelligence of the candidates for hiring firing practices is absent therefore it is recommended to software houses of Pakistan to conduct personality tests in recruitment, promotion and appraisal functions of human resource management (HRM). Moreover, management must try to retain emotionally intelligent employees to encourage innovative behaviour in their software houses. Additionally, proper training programs should be conducted to develop and enhance the emotional intelligence skills.

Mediating effect of emotional intelligence was also proved in relationship between big five personality traits and innovative behaviour. So, it implies that team leaders with high extraversion, agreeableness, conscientiousness, emotional stability and openness to experience must appraise their emotions, others' emotions, and regulate emotions for successfully performing innovation process. Therefore, it is recommended to software houses and P@SHA that proper training programs should be conducted to boost emotional intelligence among employees of software houses especially team leaders because emotional intelligence skill is considered essential for a leader as his behaviour influences all his followers directly. Therefore, it is recommended not only to software houses but also to P@SHA that proper training programs should be conducted to boost emotional intelligence among employees of software houses especially team leaders because emotional intelligence skill is considered essential for a leader as his behaviour influences all his followers directly.

The study has a few limitations as well. First a cross sectional research approach was used which refers to collection of data at one point of time. Where one school of thought supports the cross-sectional study design for empirical studies, other researchers are of the opinion that cross sectional studies limit the causal inferences and may affect the quality of research because of variation in responses. To overcome this limitation, future researchers might utilize longitudinal approach to validate causal effects in under study model. Secondly, variables were assessed through self-reported measures in this study. Self-reported measures were adopted considering the nature of variables as no one else other than the respondent himself can explain their personality, ability and behaviour more explicitly. But self-reported measures have some drawbacks like faked responses, social desirability issues, common method biasness and validity problems (Podsakoff and Organ, 1986). To overcome these drawbacks, it is recommended to future researchers to utilize alternative techniques like structured and semi-structured interviews, psychological tests for personality and emotional intelligence measurement; 360^{o} measurement in which data is collected from colleagues, upper management, subordinates and triangulation method in which multiple methods are employed to measure the required constructs. Finally, the data was collected from the team leaders working in software houses of Pakistan. Looking at the unique dynamics and demographical characteristics of the studied population, it is found that team leaders in software houses are young with the less working experience that might be due to the developing software industry in Pakistan therefore it is suggested to prospective researchers to study other industries as well if their objective is to study the variables in diverse population.

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APPENDIX

Personality **Source: (**Donnellan et al., 2006)	
1	I am the life of the party.
2	I don’t talk a lot.
3	I talk to a lot of different people at parties.
4	I keep in the background.
5	I sympathize with others’ feelings
6	I am not interested in other people’s problems.
7	I feel others’ emotions.
8	I am not really interested in others.
9	I get my tasks done right away.
10	I often forget to put things back in their proper place.
11	I like order.
12	I make a mess of things.
13	I have frequent mood swings.
14	I am relaxed most of the time.
15	I get upset easily.
16	I seldom feel down.
17	I have a bright imagination.
18	I am not interested in abstract ideas.
19	I have difficulty understanding abstract ideas.
20	I do not have a good imagination.
Emotional Intelligence **Source: (**Wong and Law, 2002)	
1	I have a good sense of why I have certain feelings most of the time.
2	I have good understanding of my own emotions.
3	I really understand what I feel.
4	I always know whether or not I am happy.
5	I always know my friends’ emotions from their behavior.
6	I am a good observer of others’ emotions.
7	I am sensitive to the feelings and emotions of others.
8	I have good understanding of the emotions of people around me.
9	I always set goals for myself and then try my best to achieve them.
10	I always tell myself I am a competent person.
11	I am a self-motivated person.
12	I would always encourage myself to try my best.
13	I am able to control my temper and handle difficulties rationally.
14	I am quite capable of controlling my own emotions.
15	I can always calm down quickly when I am very angry.
16	I have good control of my own emotions.
Innovative Behavior **Source: (**Kleysen and Street, 2001)	
1	I look for the opportunities to improve product, service, technology, and existing process and work relationship.

2	I recognize opportunities to make a positive difference in my work, department, and organization.
3	I pay attention to non-routine issues in my work, department or organization.
4	I define problems more broadly in order to gain better insight into them.
5	I generate idea or solutions to address the problems.
6	I push ideas forward, so they have a chance to be implemented.
7	I try to persuade others of the importance of new idea or solution.
8	I take risk to get support for new ideas.
9	I experiment with new ideas or solutions.
10	I test-out ideas or solutions to address unmet needs.
11	I evaluate strengths and weaknesses of new ideas.
12	I implement changes that seem to be beneficial.
13	I work the bugs out of new approaches when applying them to existing product, process, technology or service.
14	I incorporate new ideas for improving an existing product, process, technology or service into daily routines.