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Implementing Fuzzy Reasoning – Based Emotive Intellect Agenda for Assessing Influence of Emotional Literacy on Career Development

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Abstract: *Emotional Intelligence has become a problematic issue across the world, due to which both employers and employees are suffering. Rapid changes are occurring, which affects the employees' E.I. Despite these changes, it is difficult to predict the factors that help employees' career development. The findings of this research paper address the gap in the existing literature by screening Emotional Intelligence and its impact on Employee's career development. Due to its significance, Cartwright & Salloway's (1997) model has been extended to formulate the research model. Moreover, the proposed research is built on fuzzy logic-based emotional intelligence. The fuzzy Logic Toolbox in Mat lab can be used for numerous systems. The membership standards are allocated easily. The application developed is proficient and implemented in a portion second. The fuzzification and the defuzzification procedure are achieved using command line functions and the GUI. The user can get the production in any essential form. In this regard, the impact of "Self-Awareness, Self-management, Social-awareness, and relationship management" has been monitored. The sample size drawn for this study was 390, with a 94% response rate. The data was collected through a questionnaire adapted from earlier studies. This study was limited to the banking sector of Karachi. Future studies may be carried out in other cities and sectors of Pakistan and other countries.*

Introduction

Emotional Intelligence (E.I.) is a relatively novel idea in behavioural sciences, but it is essential for career growth and success. It has gained an important response in studying human resource management, administrative behaviour, and management. What makes a person successful in their careers and at the workplace has been a central topic for decades for management researchers (Carmeli, 2003). Over the last decade or so, it has been witnessed that the research on Emotional Intelligence in management accomplishment has increased. Based on this research, it is observed that people with high competencies in E.I. are more likeable and successful in the workplace than less emotionally intelligent people (Miao et al., 2017). As growing

pieces of evidence show that E.I. competency possesses the prospective to advance both personal and organizational level performances, researchers are continuously trying to understand the starting stage to what extent employees with extraordinary E.I. would be more valuable possessions for the organization than employees with the low E.I. levels (Sabie et al., 2020). Goleman (1995) tries to comprehend the association of emotions with career activities; researchers proclaim that emotional intelligence is pivotal for measuring career success and job performance. It was highlighted in recent research that EI is an essential predictor of several important domains, for instance, academic performance, leadership and negotiation skills, trust, job performance, stress and work-life balance (Joyce et al., 2021).

It is argued that emotions have the power to develop narratives for careers. More specifically, a career is built from the problems or concerns that individuals face in their life, whereas emotions are being used to construct narratives about careers. Brown (2003) typically argued that emotions, along with experiences, are beneficial in terms of accomplishing tasks that are related to a career. More precisely, the combination of behavioural aspects and capabilities should be considered when viewing career outcomes and results. For evaluating the emotional literacy of employees, an instrument based on four areas of emotional intelligence is proposed. These tests help to identify employees with a lack of Emotional Intelligence. Moreover, a Model based on fuzzy logic has been developed for emotional intelligence, which may help to evaluate the connection of employees' emotional literacy with career growth.

As indicated by Dulewicz and Higgs (2000), literature seems to be scarce in the context of an organization. Hence, there is a thorough and rigorous need to conduct the study in the said area. An emotional intelligence processing framework based on fuzzy logic will be used to identify employees with a low level of emotional literacy. Through this framework, organizations can filter these employees into related workshops to increase their Emotional intelligence. Consequently, this will result in employee development and career growth.

Cartwright and Pappas (2008) developed four general categories of emotional competencies to explain skills and behaviours that are required emotional Intelligence. Mustafa et al. (2014) argued that the emergence of collective efforts is due to the personal intelligence intersection. The skill of relationship management plays a significant role in teamwork and collaboration.

The wide use of fuzzy logic in numerous fields throughout the twenty-first century was expected after its development in the twentieth century (Ajol et al., 2020). The fuzzy logic theory has been functional in the banking sector for the previous few years. It has been tested how fuzzy rules can evaluate employee career development outcomes for the betterment of banking sectors. A scheme of fuzzy linguistic variables was advanced to model the assembly of fuzzy verbal expressions and logical statements (Ji et al., 2021). The suggested method offers more translucent and reasonable results for all employees' career growth. The consequences presented improved performance of fuzzy systems over conventional systems. This study tries to narrow this research gap by testing the relationship of emotional Intelligence with career development in the organizational context.

Literature Review

The main idea of emotional Intelligence was invented in the 1920s. It was first theorized by Thorndike (1920). He alienated emotional Intelligence into three different aspects; intellectual Intelligence, mechanical Intelligence and Social Intelligence. Then in the early 1980s, several pieces of research were conducted by different scholars to theorize the concept of Emotional Intelligence methodically, e.g. Gardner (1983) proposed the idea of Mayer et al. (2001)

that the capability of understanding and explaining emotions is referred to as emotional Intelligence.

Though in other words, emotional intelligence increases the ability to think. Emotional Intelligence could be used to understand ourselves and others effectively, maintain good associations and cope with the dynamic environment to become more successful in changing environments (Bar-on, 2000). Salovey and Mayer (1990) explained emotive intellect as a subsection of communal intellect, which helps monitor the feelings and emotions of ourselves and others, and also assists in distinguishing between them and utilizing this information as a guide for one's actions. Further, they refined and explained E.I. as one's capability of perceiving, retrieving, and producing emotions for supporting thoughts, understanding emotions, emotional knowledge, and variable emotions, which promotes both emotional and logical development (Mayer & Salovey, 1997).

Employees with a lower level of control over their emotions or an inability to understand the emotions of others may face problems in handling difficult situations. This consequently affects their performance. This lack of emotional control could be understood through E.I. Negative emotional states among employees are caused due to stress and emotional conflict at the workplace, which arises due to improper work management. Hulin (1991) discussed that aggressive attitude among co-workers affects both employees and the organization in terms of lower productivity and higher stress levels.

A contextualized accomplishment theory of business development was proposed by Young, Valach, and Collin (2002); in that theory, emotion plays a significant role in career development. As per that theory, emotions are present within the context of the entire, and the complete comprises several interconnected and interwoven parts, all of which are understandable within the context of present proceedings and changing aspects of the person. (Young, Valach, and Collin 1996) Furthermore, emotions are linked to an individual's goals, purposes and plans. The authors further shed light on three main reasons which highlight the significance of emotions that are needed to build understanding regarding career building:

1. Emotions encourage and strengthen action. Provided that certain career actions are considered annoying, demanding, difficult, or unexciting, one must be energized by emotions to instigate and maintain those actions.
2. Actions are regulated and controlled by emotions. It means that humans are dependent on their internal processes to create conclusions about their actions.
3. The role of E. I play an important part in creative learning and thinking (Mayor & Salovey, 2001). It is important to identify employees' skills related to E.I. and then orient their professional development by providing courses that will help them further their career development and growth.

Emotional Intelligence (E.I.)

Emotional Intelligence refers to a better understanding of ourselves and others, maintaining good relationships, and coping with environmental changes and demands (Jorfi et al., 2010). E.I is the ability to understand emotional facts professionally; it has been defined as the skill of understanding one's feelings better than others (Hong et al., 2021).

Theoretical Grounding

The conceptual framework proposed in the study is based on the self-assessment tool borrowed from Cartwright and Solloway (2007), which is a further adoption of Goleman's (1995) original emotional intelligence model. The four domains identified by Cartwright and Solloway (2005) were utilized to measure the complete Emotional Intelligence of employees. EI is the predictor,

whereas career development is the dependent variable. It is supposed that by implementing this framework, employees' career growth and development would improve in the organizations.

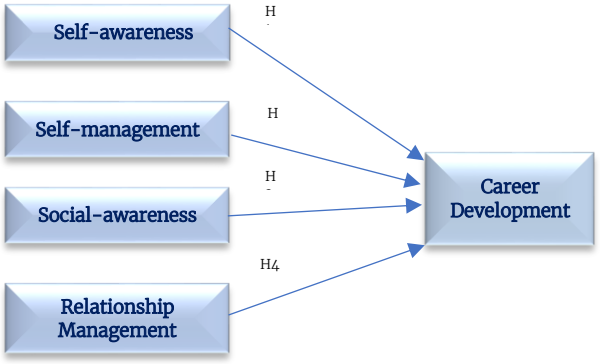


Figure 1: Emotional Intelligence Career Development:

Emotive Intellect involvement and analysis

The relation of E.I. with career development establishes occupation inquisitiveness with an inadequate practical request to banking sectors, except we can intrude with those who have small E.I. Scores improved those totals. More studies must be carried out in this field to prove that E. I can be enhanced by proper training and interventions. There are many assessment tools offered for figuring out the E.I. skills of the employee, and for this study, the ***quick Emotional Intelligence Self-Assessment tool*** is used. A fuzzy-based E.I. system is made to recognize those employees who need training and interventions in this regard. This study will successfully filter these employees after some suitable training planned to enhance their E.I. scores and, ultimately, their success in their careers.

To measure E.I., the following survey is used. Statements are ranked as follows:

"**0**(Never) **1**(Rarely) **2**(Sometimes) **3**(Often) **4**(A lot) **5**(Always)."

"Self-Awareness (Total: 50)

1. My feelings are clear to me at any given moment.
2. Emotions play an important part in my life.
3. My moods impact the people around me.
4. I find it easy to put words to my feelings.
5. My moods are easily affected by external events.
6. I can easily sense when I am going to be angry.
7. I readily tell others my true feelings.
8. I find it easy to describe my feelings.
9. Even when I am upset, I know what is happening TO ME.
10. I can stand apart from my thoughts and feelings and examine them.

Self-Management (Total: 50)

1. I accept responsibility for my reactions.
2. I find it easy to make goals and stick with them.
3. I am an emotionally balanced person.
4. I am a very patient person.
5. I can accept critical comments from others without becoming angry.
6. I maintain my composure, even during stressful times.
7. If an issue does not affect me directly, I do not let it bother me.
8. I can restrain myself when I feel anger toward someone.
9. I control overindulge in things that could damage my well-being.
10. I direct my energy into creative work on hobbies.

Social-Awareness (Total: 50)

1. I consider the impact of my decision on other people.
2. I can tell easily if the people around me are becoming annoyed.
3. I sense it when a person's mood changes.
4. I can be supportive when giving bad news to others.
5. I am generally able to understand the way other people feel.
6. My friends can tell me intimate things about themselves.

7. It genuinely bothers me to see other people suffering.
8. I usually know when to speak and when to be silent.
9. I care what happens to other people.
10. I understand when people's plans change.

Relationship-Management. (total:50)

1. I can show affection.
2. My relationships are safe places for me.
3. I find it easy to share my deep feelings with others.
4. I am good at motivating others.
5. I am a fairly cheerful person.
6. It is easy for me to make friends.
7. People tell me I am social-able and fun.
8. I like helping people.
9. Others can depend on me.
10. I can talk someone down if they are very upset."

Fuzzy-Based Framework

The suggested study is organized around the four abilities presented previously. When they join the banking sector, new employees are expected to enhance their emotional intelligence capabilities by building their expertise in E.I. The accurate results become a burden, for example, a statement that "Alex is 0.45673 assertive" and "Allen is 0.56432 socially aware". So this study uses the fuzzy reasoning approach for measuring Emotional Intelligence. Fuzzy sets give sufficient precision to comprehend the declarations correctly, and the complications of the system are also reduced. A Mat lab-Simulink model has been built, and the simulation results are shown by figures and tables, which validate the Simulink used model to measure the attributes of E.I.

L first presented the fuzzy theory. A Zadeh (1965). It is a computational model which is based on human intellect. It works on Linguistic variables based on sentences or words. One of the famous systems is FIS. Fuzzy inference systems are rule-based approaches that rely on Mamdani systems. The FIS is fundamental to Fuzzy controllers. A pictorial representation of FIS is depicted in figure 2.

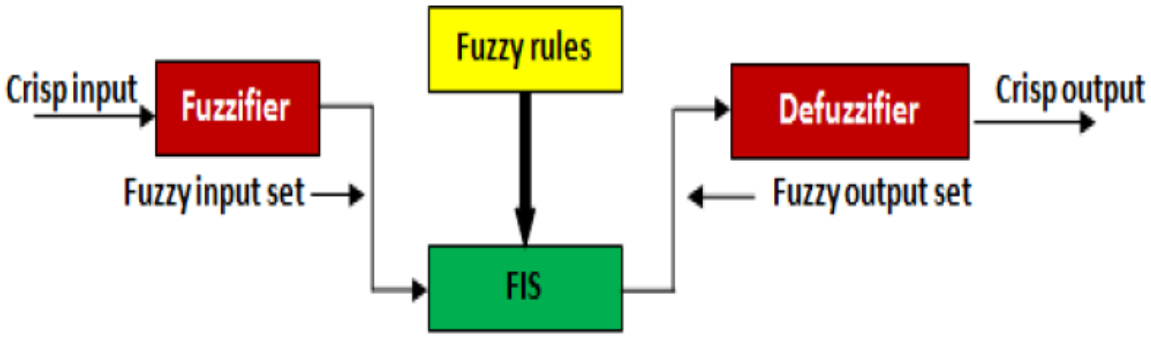


Figure 2: Emotional Intelligence Career Development

Linguistic Variable to Model E.I Skills

Inputs

A Mamdani FIS is used for the proposed study. Every input is fuzzified with three Linguistic Variables (Low, Average, and High), and every variable has a UOD of [0...50]. The four input variables are assigned triangular or Trapezoidal Membership functions shown in Figures 3-4. Figures 5-9 are the Membership Functions of the Linguistic variables with the appropriate ranges used in the proposed study.

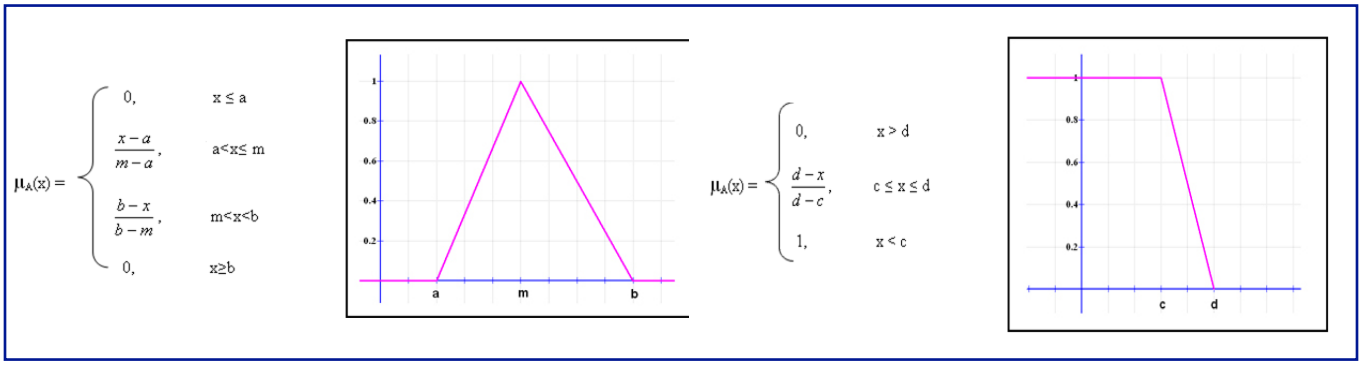
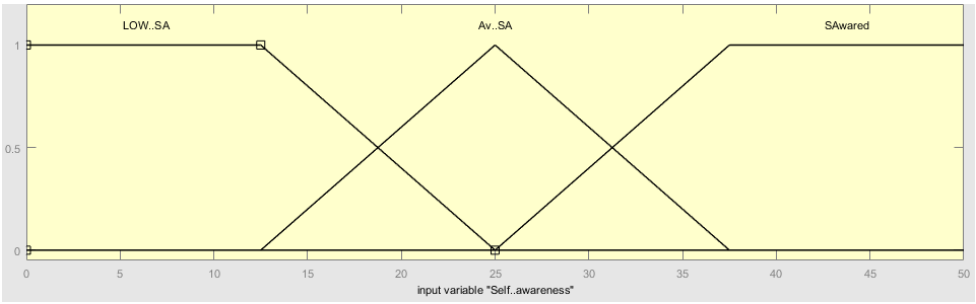
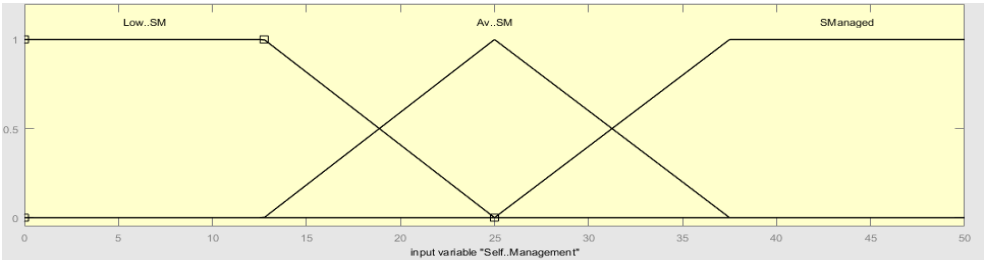
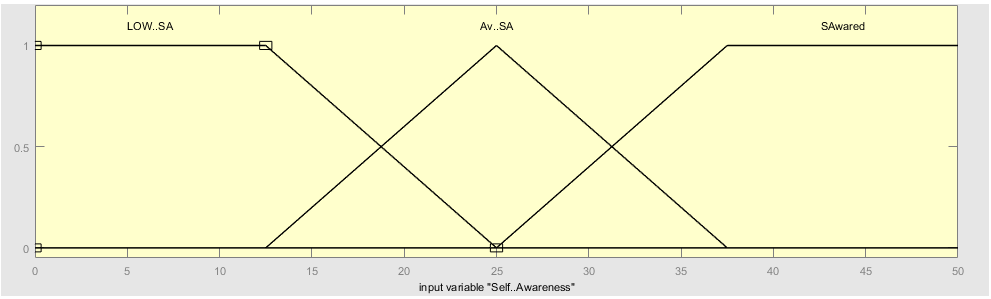


Figure 3-4: Trapezoidal and triangular Membership functions.







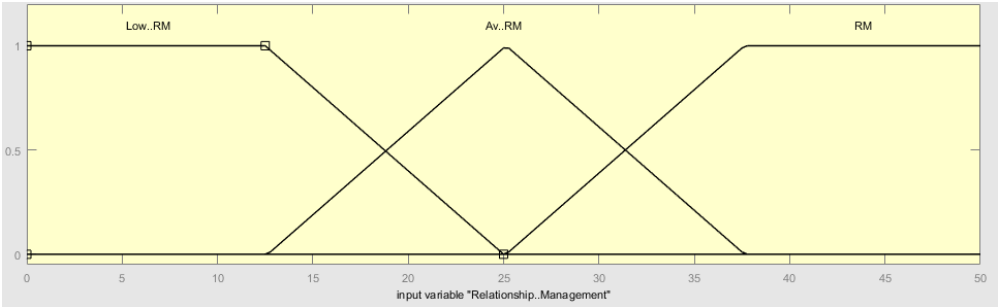


Figure 5-9: Membership functions of Input Variables.

Table 1. Ranges of Input Variable

Low	Average	High
<25	12.75-37.5	>25

Once the E.I and the expertise of existing employees or newcomers have been evaluated. They are being suggested to enrol in skilled development Emotional Intelligence course with five sections. The output is also modified as a Linguistic entity, as shown in figure 10 with all the ranges in Table 2.

- **Section I:** To gain insight about your own self and recognize your existing E.I stage
- **Section II:** Accommodating your sentiments and their influence on others.
- **Section III:** The self-improving by using your Emotional Intelligence.
- **Section IV:** Understanding the behaviour of others.
- **Section V:** Improving the relationship with others.

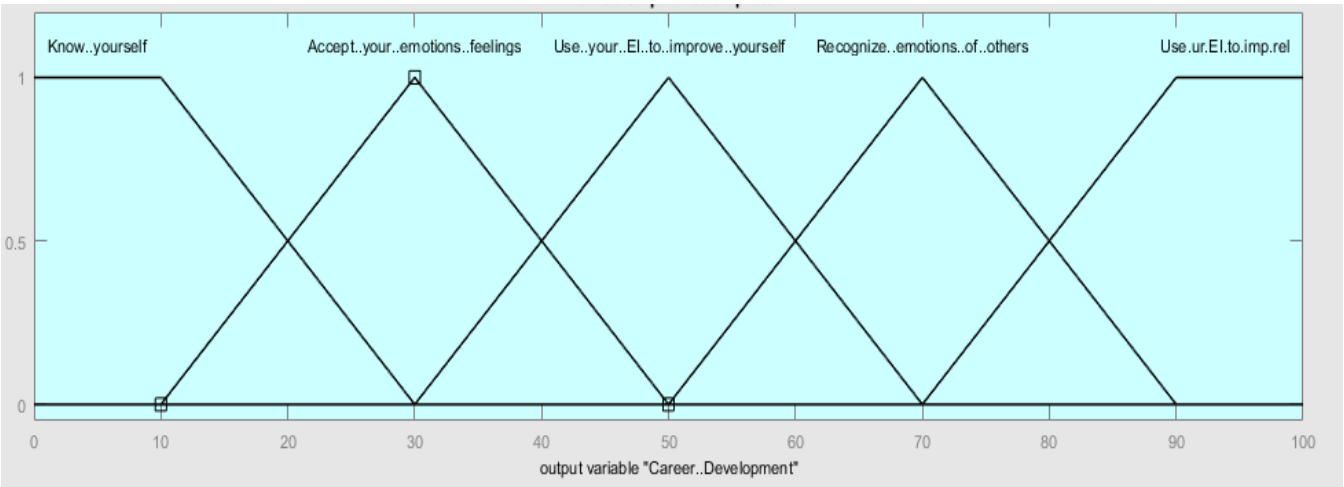


Figure 10: Career-Development Membership Function.

Table 2. Ranges of output, i.e. Career Development.

Know Yourself	Accept your emotions and feelings	Use Your E.I. to self-Improve	Recognize the Emotions of others.	Use Your E.I. to improve relations.
<30	10-50	30-70	50-90	>70

Inference Mechanism

The suggested study is a simplified depiction of an applicable feature of the conduct of the real E.I system. It is an appropriate tool for developing a better understanding of employees' emotions and for developing a support system in the banking sector among all employees and is a must for a good professional environment. To develop a FIS, fuzzy inference rules are used in the inference process. These rules are "if-then" statements. These rules are flexible and can be created depending upon the significance of the particular input with the negotiations of experts. A sight of if-then rules is shown in Table 3. The fuzzy logic toolbox benefits representing the fuzzy rules in a three-dimensional structure with the assistance of a surface viewer, as shown in figure 11. The fuzzy knowledge-based system is built on certain rules, such as inputs taken from four linguistic constructs and executes the output, which is based on five modules of E.I.

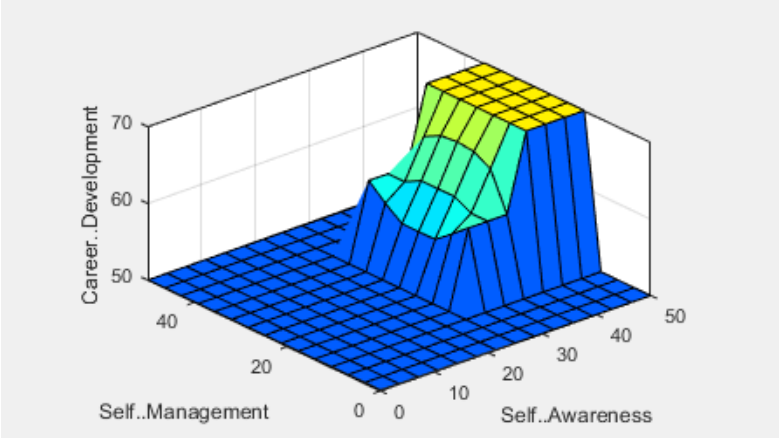


Figure 11: Surface Viewer of FIS

Table 3. Fuzzy Rule Base

Self-awareness	Self-Management	Social-Awareness	Relationship Management	Career-Development
Low				Know Yourself
Average	Anything	Anything	Anything	Know Yourself
High				Accept Your Emotions
	Low			Know Yourself
Average	Average	Low	Low	Accept Your Emotions
	High			Accept Your Emotions
	Low			Know Yourself
Average	Average	Average	High	Accept Your Emotions
	High			Use Your E.I. to improve
			Low	Use Your E.I. to improve
Average	Average	Average	Average	Use Your E.I. to improve
			High	Recognize the emotions of others
			Low	Recognize the emotions of others
High	Average	Average	Average	Recognize the emotions of others
			High	Improve Relationships
			Low	Recognize the emotions of others
High	High	High	Average	Improve Relationships
			High	Improve Relationships

Building and simulating the E.I. Fuzzy Structure

Utilizing the Math works fuzzy logic toolbox in Mat lab, and the proposed system uses the GUI. The proposed study employed min-max functions along with the defuzzification technique. Figures 12 and 13 represent the simulation outcome for two different employees. An employee who has low skills in self-awareness

is illustrated in Figure 12. An employee is weak in self-Awareness skills which are soft critical skills; therefore, the system suggests that the employee should be enrolled in the know yourself section of the course. If the employee is self-Aware, then his/her self-management skills will be enhanced, and in a later phase, the other two considered parameters will be beneficial for him.

In figure 13, the outcomes show that the employee has some self-awareness and social management skills. However, he/she is weak in the other two studied parameters, and the system suggests the section of accepting the other's emotions and feelings. This type of employee already has some skills, but some areas demand more learning to enhance their Emotional Intelligence.

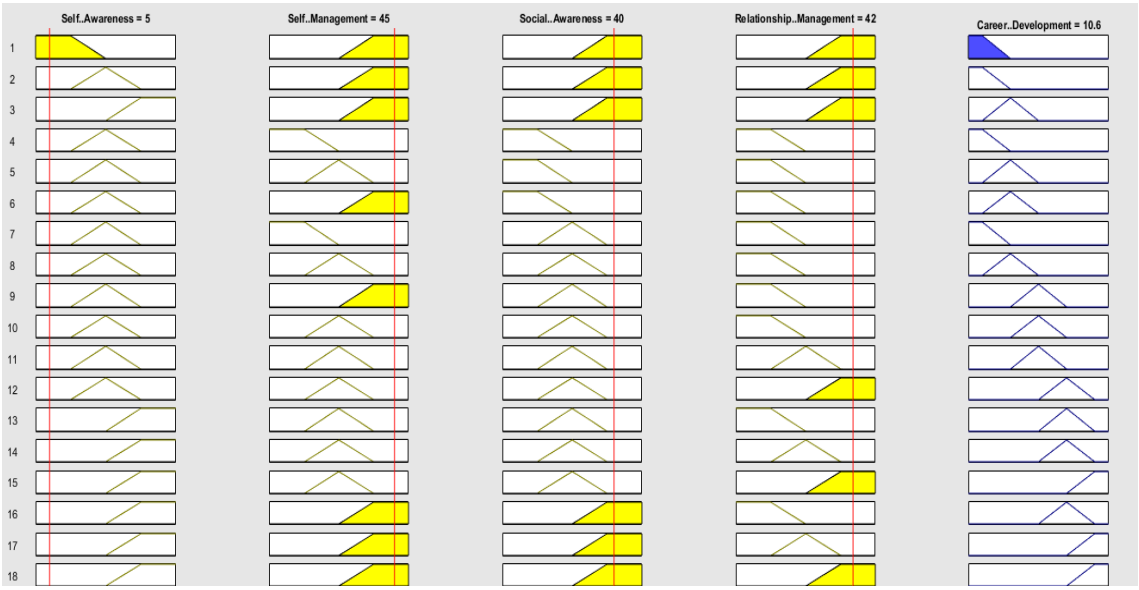


Figure 12: Simulating an Employee with Low Self-Awareness Skills

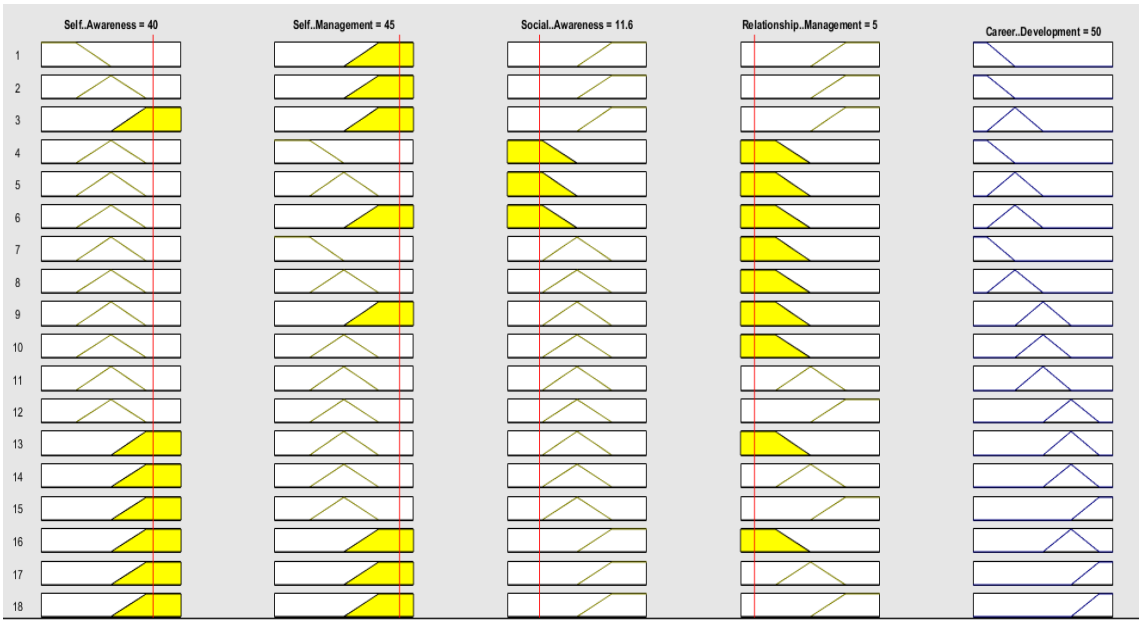


Figure 13: Simulating a Self-Aware Employee

Conclusion

This research aims to obtain a fuzzy logic reasoning-based Matlab-Simulink model for measuring the emotional intelligence ability of the banking sector employees. The fuzzy reasoning approach provides a further advantage of giving different weightage to each aspect according to the needs and requirements of the banking sector. This research gives an effective method to evaluate the Employee's Emotional Intelligence. By this evaluation, the improvement area of an employee can be known, which results in better employee behaviour. Moreover, it helps them develop creative thinking and learning, which is ultimately beneficial for the banking sector. The study captures the uncertainties and complexities, identifies the improvement areas, and defocuses the quantitative expressions of measurements.

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