



The Potential Impact of Emotion Management Skills on Task Completion Efficiency Improvement in the Context of Bayesian Network Analysis

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SUMMARY: *Emotion is a "gauge" which passes through every part of our work. Having the effective skills of emotion management can bring positive influence to the efficiency that work tasks finish in. In consideration of the importance of emotion management and the relation it has with the efficiency of task finishing, this article puts forward the utilization of Bayesian network analysis for constructing a network model of emotion management. After that, the marketing working persons of T-Bank which is located in G province have been chosen by us as the research object, for the purpose of inspecting the concrete influence that emotional management abilities exert on the promotion of task-execution efficiency. The study shows that the emotion management ability scores of marketing category employees are in the range of 3 to 4 points, and the overall performance shows a positive growth trend. In the middle of emotional regulation ability and emotional expression ability, the degree of response of emotion management ability to task completion efficiency is the biggest. When we make comparison with the prior probability, the value of its posterior probability can have a change that reaches as high as 24.21%. Therefore, if enterprises want to improve the task completion efficiency of employees, they can improve the employees' emotion management ability by establishing a good working environment, carrying out emotion channeling, and strengthening cultural construction and other measures.*

KEYWORDS: *Bayesian network analysis; posterior probability; emotion management ability; task completion efficiency*

1 Introduction

Strengthening the effect of task carrying out has all along been a thing that requires our focus in the work place. This point is especially important in current extremely competitive society, where efficiency has already become one important competition advantage [1, 2]. If we can complete tasks efficiently, we will win more trust and respect among colleagues and customers, which will help us grow faster in the workplace. Common ways to enhance the efficiency of task completion include strengthening teamwork, improving business skills, and good time management, etc. None of these initiatives ignores the role of an individual's emotion management ability in them [3-5]. Positive emotion management skills can enhance mental health, improve work motivation, and thus enhance task efficiency, which is not only conducive to personal development, but also positively affects the performance of the whole team and organization [6-8].

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Emotion adjustment ability, which includes a person's capability to feel, understand, manage, and deal with self emotions, therefore can possibly raise the efficiency of task carrying out. Bayesian network analysis provides a quantitative method to study the connection that exists between these two aspects [9-11]. Bayesian network is a graphical representation of the joint probability distribution of a series of variables, which relies on statistics and probability theory, and is able to effectively perform uncertain knowledge expression and inference, which can mine the key information in the data and explore the potential connections, and whose constituent elements are the nodes of the variables as well as the directed edges connecting the nodes [12-14]. When we carry out examination on the possible influence that emotional regulation ability has on the promotion of task completing efficiency, Bayesian network analysis can provide quantitative tools for accurate identification of the hidden road between emotional regulation ability and the promotion of task efficiency, therefore it can reveal the multi-variable mutual function mechanism [15, 16].

Positive and effective emotion management can enhance the efficiency and quality of dealing with affairs, and this is especially true in enterprises, where employees' emotion management ability is not only related to the efficiency enhancement of work tasks, but also affects the individual's loyalty to the enterprise, job satisfaction, and the development of the enterprise. The analysis [17] given in Reference is for academic workers, it explores the connections that exist between emotional management abilities, job satisfaction, and the productivity of work tasks. The outcomes of a questionnaire-carried out investigation have shown that there exists a remarkable positive connection between emotional handling abilities and both work satisfaction and work task effectiveness. At the same time, reference started the work of exploring the relation between emotional management ability and work task efficiency in banks of Jordan, hence with the focus placed on the mediating role of conflict management methods. The outcomes [18] of this study have displayed that both the emotional management ability and the conflict management methods all had a remarkable positive connection with the working performance. Literature [19] discussed the relationship between emotion management competence and work task performance in a study of divorce lawyers and salespeople, and the results emphasized that emotion management competence contributes positively to work task efficiency. Literature [20] investigated the effect of emotion management competencies on employees' organizational loyalty and job performance and verified the importance of employees' emotion management competencies for job performance and advocated controlling management competencies to improve their job performance. Literature [21] aimed to explore the effect of emotion management competence and organizational commitment on work efficiency, and through a survey conducted in a hospital, it was noted that both emotion management competence and organizational commitment have a positive, and significant effect on work efficiency.

Furthermore, one study that comes from the literature has conducted a questionnaire-based investigation which targets construction project managers and their working personnel [22]. Through the analysis which we carried out, the results have shown that managers who have strong capabilities of emotion management are able to arouse behaviors of innovation among the workers they lead. After that, this therefore caused an promotion in the staffs' working performance. Reference [23] has carried out exploration on the connection between emotional management ability and working efficiency. Via a investigation covering many different trades, we discovered that a higher degree of emotion management ability helps to promote task completion, group cooperation, and whole work effect. Reference [24] have carried out investigation on the influence that the capability of emotion management gives to auditors in the promotion of the efficiency of work tasks. This thing was completed through carrying out a investigation on undergraduate students of accounting and students of MBA, with the purpose

of establishing a foundation for the research that will come in this area. Literature [25] has carried out deep research on the factors which affect work production efficiency. Via the analysis of one sample of small and medium-sized enterprises (SMEs), it was been proved that self-knowledge, self-restraint, emotion management abilities, and post satisfaction had a positive influence on working efficiency and production outcome. Literature [26] has emphasized the effect that the skills of emotion management bring to work accomplishment. This research has carried out an investigation into teachers' views about this issue, and thus has obtained the conclusion that every dimension of emotion management, which includes self emotion assessment, emotion utilization and emotion regulation, hence possesses a remarkable positive correlation with the activities of teaching and learning. Literature [27] put forward that the emotional stability of staff members can promote work achievement. This point therefore got confirmed through doing the study on the linkage that exists between emotional stability and employee work performance. In addition, this work has discovered the connection between staff's self-management and faithfulness to company.

Positively guiding and positively regulating employees' emotions and strengthening employees' emotional management ability are conducive to helping employees correctly resolve their own emotional problems and improve the efficiency of work task completion. In this paper, on the basis of designing the emotion management survey scale, the marketing employees of T Bank of G province were selected as the research object to obtain the research data. Next, the method of Bayesian network analysis is brought into the evaluation on how emotion management skills influence the raising of task completion efficiency. We carry out the quantitative analysis of the data on the basis of a network model of emotion management. The results of this research can more effectively push enterprise workers to carry out emotion management, and help them in further promoting the speed of work-task completion.

2 BN-based emotion management network model construction

Emotion management is a part of all management work in the enterprise, and plays a very important role in the survival and development of the enterprise. In enterprise management, by doing a good job in the management of employee emotions, can relieve the individual and collective emotional pressure, improve the efficiency of the staff to complete the task, so as to ensure the stable development of the enterprise. Therefore, corporate managers must raise the importance of the management of employee emotions.

2.1 Emotional management skills and task completion efficiency

2.1.1 Emotional management skills

Emotion management refers to the process of making individuals consciously perceive emotions, rationally recognize and differentiate emotions, and learn how to control and regulate emotions in a more scientific way through more professional methods and corresponding skills, so as to help individuals become more harmonious with the general social environment. At the same time, the effort which people make to achieve psychological balance can make an individual maintain a positive mood condition. This measure can effectively reduce the mental uncomfortable feeling that is caused by bad mood. Furthermore, it unceasingly cultivates the ability of emotion self-adjustment and the technique to make suitable response to the feelings of persons who are in the around environment.

Emotion management is to use the right way to explore one's own emotions in the right way,

and then to understand one's own emotions, adjust one's own emotions, and relax one's own emotions. In short, the core of emotion management is human-centered, so that people can relax and develop their emotions, and help people to increase their conscious awareness of their emotions. Efforts are made to keep the individual in a positive state, maintain an optimistic state of mind, and constantly engage in the process of self-regulation, self-motivation and self-improvement. Emotional management emphasizes the development of the ability to manage emotions, and individuals improve their control over emotions. It emphasizes the ability to create the right place at the right time, to show appropriate emotions in the face of different objects, rather than letting bad emotions develop. It is a kind of ability to help individuals or groups to recognize, understand and manage emotions, which not only reveals the essential characteristics of emotion management ability, but also conforms to the mainstream social definition of ability.

2.1.2 Importance of Emotion Management

The adjustment of emotion is a more inclusive and long-term process which takes the individual as the center. It uses rule-based tools to help persons raise their ability to manage their moods, hence allowing them to fit different life difficulties and demands. This brings a cannot-be-calculated good effect to the rising of work output and the pushing forward of company development. The concrete appearing situations are just like below:

(1) The promotion of the efficiency for the execution of work tasks is significantly assisted by some specific factors. When staff members are able to effectively adjust their own moods and keep a calm thinking condition, they therefore possess better ability to concentrate with great effort on their working tasks. This strengthened attention directly gives a promotion to the raised efficiency in the finishing of work assignments. Workers who have emotional stability own a bigger ability that can bear the stress which is related to work. Through keeping their mood in equilibrium, they are able to lessen errors to the greatest degree and evade delays that frequently come from changes of feeling. This capability of keeping stable when there exists pressure is a key element which makes work procedure more smooth and reaches better outcomes in the finishing of tasks.

(2) It is conducive to enhancing teamwork. Employees with good emotional management are more likely to communicate and collaborate with coworkers, and the emotional interaction between team members is more harmonious, which helps to build trust and cooperative relationships.

(3) It is beneficial for the promotion of the quality of decision-making. The employees who have stable emotion conditions, they are more logical in the time when they make decisions. They are not easy to be moved by the ascends and descends of mood. Therefore, this promotes the quality and efficiency of policy making, and thus plays a positive function in the long-term development of the enterprise.

(4) It is conducive to the team to create a good image. Employees with stable emotions and positive attitudes can leave a good impression on customers and enhance the brand image of the enterprise.

2.1.3 Emotion management and task completion efficiency

Workers who have good skill in emotion handling show a more natural bearing and are more easy to get along with when they have interaction with their workmates, guests, and higher leaders. When there are problems in the work place, these staff members choose to cooperate as a group to deal with issues, instead of handling them by themselves alone. Furthermore, workers who have strong emotion control abilities are prone to obtain higher work achievement, hence leading to a quicker whole finishing speed of work assignments.

The possibility that a staff member will leave an enterprise is opposite-related to their capability of handling moods, hence directly connected with work satisfaction, institution loyalty, and task-completion effectiveness. At the same time, the effective positive emotion management is connected intricately with the achievements of career. Furthermore, the positive management of emotion can thus significantly promote the achievement of career success. The staff members who have good capability in the control of their own emotions therefore have higher possibility to obtain the acknowledgement from the organization. They have in their possession a higher degree of emotion self-adjustment ability. Furthermore, these working people have the tendency to possess a higher degree of satisfaction toward the enterprise organization. Therefore, workers who have better emotion control abilities are thus more coordinated with the organization. As a consequence, they are able to finish their work tasks more efficaciously when compared with the average working staff.

2.2 Network Modeling for Emotion Management

2.2.1 Bayesian network analysis methodology

(1) Bayesian Network Theory

Bayesian network, which is abbreviated as BN, may be defined to be one kind of probability graphics model. This model's objective is to describe the not-certain connections which are among all node variables. In addition, it undertakes the function of carrying out analysis and solving the problems of uncertainty that are inherent inside complex systems. The study of structure inside the Bayesian network includes the procedure of finding a directed acyclic graph which matches the training samples. A Bayesian network model can be represented by $BN = (G, P)$, where $G = (V, E)$, is a directed acyclic graph, which consists of nodes and directed edges, and V denotes the set of all nodes $V = \{V_1, V_2, \dots, V_n\}$, E denotes the set of directed edges. Nodes are connected by directed edges, pointing from parent to child. P denotes a conditional probability table representing the probabilistic relationships between nodes connected by directed edges in a BN. Suppose node $V_i = (v_i)$, the set of all its parent nodes is denoted as $pa(v_i)$, furthermore, the combined probability distribution is expressed in the following way:

$$P(V_i) = \prod_{i \in V} P(v_i | pa(v_i)) \quad (1)$$

For any random variable in the above equation, the joint probability distribution is as follows:

$$P(X_1 = x_1, \dots, X_n = x_n) = \prod_{i=1}^n P(X_i = x_i | X_{i+1} = x_{i+1}, \dots, X_n = x_n) \quad (2)$$

According to the joint probability distribution of the random variable, which is further expressed as:

$$P(X_1 = x_1, \dots, X_n = x_n) = \prod_{i=1}^n P(X_i = x_i | X_j = x_j) \quad (3)$$

Eqs. (1) and (2) are different for the expression of conditional probabilities due to the fact that in a Bayesian network, a node is conditionally independent of the set consisting of all nodes

that are not its children and grandchildren if the information about the state of the node's parent is known. We must emphasize that, the conditional independence which is in a Bayesian network includes not only the conditional independence that lies between a parent node and all of its descendants (these include children and grandchildren), it also includes the conditional independence between the state of one given parent node and its descendants inside the network model.

(2) Structural parameters of Bayesian networks

The main constitutive parameters of Bayesian networks include network nodes, directed arcs and conditional probability tables. The theoretical framework of Bayesian network mainly has several parts such as network modeling, learning and inference, the key task of modeling is the learning of network parameters and structure, and inference includes both prediction and diagnosis.

Nodes in a Bayesian directed acyclic graph represent random variables, assuming that a Bayesian network consists of nodes $\{X_1, X_2, \dots, X_n\}$, where X_n is the first n node. P is a two-dimensional conditional probability table for Bayesian networks, which defines the probabilistic relationships between the nodes of the network and is a characterization of the connectivity relationships between different nodes, and the probability of the root node is called its prior probability.

Under the situation that a directed arc exists X_j pointing to X_i , then X_j is called the parent node of X_i , and the strength of the connection is denoted by $P(X_i | X_j)$. Denote by $P_a(X_i)$ the set of parent nodes of X_i in S . In a Bayesian network, a node depends only on its set of parents and is conditionally independent of its set of non-parents. The joint probability distribution of X is:

$$P(X_1, X_2, \dots, X_n) = \prod_{i=1}^n P(X_i | P_a(X_i)) \quad (4)$$

If the number of all possible states b of the node X_i , i.e., can be expressed as $X_i = \{X_{i1}, X_{i2}, \dots, X_{ib}\}$, the number of all possible states of the set of parent nodes $P_a(X_i)$ is c , i.e.:

$$P_a(X_i) = \{P_a(X_{i1}), P_a(X_{i2}), \dots, P_a(X_{ic})\} \quad (5)$$

Let P_{ijk} denote the conditional probability that X_i is in state k when the parent node $P_a(X_i)$ of the i nd node X_i is in state j , then we have:

$$P_{ijk} = P(X_{ik} | P_a(X_{ij})) \quad (6)$$

Due to the characteristics of the two-way inference capability of Bayesian networks, it is possible to pass:

$$P(X_i | T) = \frac{P(T | X_i)P(X_i)}{\sum_{i=1}^n [P(T | X_i)P(X_i)]} \quad (7)$$

The a posteriori probability of each damage scenario of the active dynamical system can be calculated, where $P(X_i | T)$ denotes the probability of the root node X_i occurring in the case of the event T , and $P(X_i)$ is the a priori probability of the root node X_i ; $P(T | X_i)$ is the probability that the leaf node T occurs if the root node X_i occurs.

Inside Bayesian networks, sensitivity analysis is the one that evaluates the influence upon output variables through carrying out tiny alterations to the numerical variables. The variables which possess high sensitivity values can exert a more large influence upon the outcomes of inference. The sensitivity variable may be put into formulation in this way:

$$I = \frac{P(TN) - P(TN / SN)}{P(TN)} \tag{8}$$

where $P(TN)$ is the probability value of the target node under the given evidence conditions, $P(SN)$ is the probability value of the selected node in the Bayesian network, and I is the sensitivity parameter, which indicates the importance index of the selected node for the target node. Employee work task completion efficiency is set as the target node, observe the size of each node's sensitivity value to the target node, the larger the value of I , the higher the degree of influence of the selected node on the target node.

2.2.2 Emotional network modeling

For the sake of more effectively inspecting the influence that emotional management abilities exert on the efficiency of work-task finishing, this article uses GeNIe software to build a Bayesian network model of the elements which influence work-task finishing efficiency. The concrete frame structure of this model is displayed in Figure 1. This research puts the emphasis on analyzing staffs' working achievement in the aspect of work-task finished efficiency from the angle of emotion management abilities. That is to say, through the adjustment of emotional management abilities, it is the goal that the enhancement of the degree of improvement of employees' work task completion efficiency be realized.

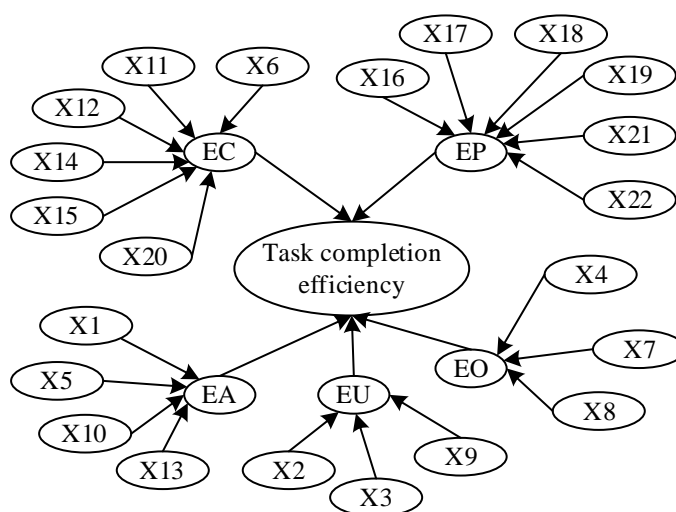


Figure 1: Construction of emotional network models

As a company, it can take scientific and reasonable management measures to help

employees to relieve and eliminate negative emotions before they have emotions and make negative consequences. When the management measures achieve the desired effect, the employees will have a positive effect, so that they can be better engaged in their work. But when the management measures in form, will produce negative effects, emotional problems can not be effectively solved for a long time, will cause the accumulation of negative emotions, over time will make the staff of the occupation or even the enterprise to produce boredom or resistance, and then cause the departure behavior.

2.3 Survey Data Acquisition for Emotion Management

2.3.1 Emotion Management Survey Scale

In this study, a self-reported questionnaire was used to examine employees' emotion management skills, which was chosen because it presents its unique necessity in the process of emotion research. It enables the collection of information reflecting the intensity and duration of emotions, the study of scenarios and types of emotional experiences, and the understanding of the degree of emotional regulation and its individual differences.

Based on the information obtained from the open-ended questionnaire, References to the literature, opinions of psychological experts and combined with their own concepts, the questionnaire scale of employees' emotion management ability was compiled, and then psychological experts and employees of the enterprise were asked to finalize the questions and find out the questions that were not clear, difficult to understand or had other questions, and then modify them. Finally, the Employee Emotional Management Ability Questionnaire was formed as shown in Table 1, which mainly includes five dimensions, namely, emotional control ability, emotional performance ability, emotional awareness ability, emotional comprehension ability and emotional application ability, with a total of 22 questions in the questionnaire.

Table 1: Emotion Management Survey Scale

Code	Item	1	2	3	4	5
X1	I can easily experience the happiness in my heart.					
X2	I know the reason for my mood change.					
X3	Even when I'm upset, I know my emotional state.					
X4	When problems arise, I will consider every possibility and then select the best approach.					
X5	I can tell whether others are scared or not.					
X6	I'm an optimistic person.					
X7	I will look for some activities that make me happy.					
X8	I can view problems dialectically.					
X9	I am good at distinguishing whether my emotional state during work is conducive to working.					
X10	All my friends say that I am understanding.					
X11	I will relieve my bad emotions through activities I enjoy.					
X12	When I feel anxious and uneasy, I will play some soothing songs to calm my mood.					
X13	Even if my good friend doesn't say anything, I can tell from his expression and words.					
X14	When it comes to some things, I always tell myself that suffering losses is a blessing.					
X15	When encountering awkward situations, I often tell a joke to prevent the atmosphere from getting cold.					
X16	I have at least a few close friends.					
X17	I can adjust the way I express my emotions according to different situations.					
X18	Making friends is very easy for me.					
X19	The friends think it's very pleasant to be with me.					
X20	When I encounter something that doesn't go my way, I will look for some reasons to comfort myself.					
X21	Both my friend and I attach great importance to the friendship we had before.					

X22	I'm good at expressing my feelings accurately to others.					
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All questions were randomized and scored on a 5-point scale, asking subjects to rate their consistent emotional experience on a scale of 1 to 5, from “very non-conformant” to “very conformant,” with lower scores indicating more non-conformant and higher scores indicating more conformant.

2.3.2 Analysis of the sample of research subjects

This present research paper chooses the marketing working personnel of Bank Y to be its investigation research object. This paper mainly carries out the discussion on the relation between emotion handling abilities and the effect of work task finishing. These staff members take responsibility for the external interaction work of this bank. They actively put out new business modes, help the connection between the bank and its customers, provide customers all-round financial services containing deposit, loan and money remittance, and open up new markets for customers. As the window of the bank's external services, bank marketing employees are the link between customers and the bank.

This research holds the view that, when put in comparison with other work jobs, marketing work positions require that working staff have the ability to understand both their own and other people's emotions. They also are required to possess the ability of listening with care and conveying information with accuracy, the gift to encourage and guide, and the capacity to maintain positive interpersonal relations among various groups. The nature of the work of bank marketing employees determines that the scope of their duties cannot be limited to a single type of business and contact, which requires a higher level of emotional management skills. Therefore, this paper believes that the selection of bank marketing employees as the research object better reflects the uniqueness of emotion management ability, and also has greater research significance and feasibility.

Because the selection of samples is limited by funds and geography, this study only selects the marketing employees of Bank Y branch in Province G as the research object, and because the development level of the financial industry in Province G is in the middle and upper level among the cities in the country, this study has a certain degree of representativeness. The questionnaire of this paper adopts the sampling method, and during the period from May to September 2025, the employees of Bank Y branch in Province G were surveyed in the form of large-scale questionnaire distribution to collect evidence. Because of the existing situation, 300 investigation forms in total were sent out, and 286 investigation forms were got back, hence a 95.33% effective rate is obtained. Generally speaking, the investigation sampling chosen for this research includes the materials about sex, age, and education level which are required for data analysis.

3 Emotional Management Skills on Task Completion Efficiency Empirical Evidence

The rise of the service economy has created a large number of jobs that require high emotional demands, and emotion management is an important part of employee organizational life that cannot be ignored. However, nowadays managers are a bit eager for quick success, focusing only on maximizing corporate profits and ignoring the emotional management ability of employees, and high pressure often results in a spring response that hinders the development of the company. Changes in the level of employees' emotional management skills, to a certain extent, on the work of the task to complete the efficiency of generating impact, has also become a new challenge that companies need to face, and become a new subject of human resource

management.

3.1 Survey Data Reliability and Statistical Analysis

3.1.1 Reliability analysis of survey scales

The data, which have been collected from the investigation scale and entered into the statistical software, have been undergone analysis through the utilization of SPSS and AMOS software. After that, we did the preparation of a summary for the results of statistical data. Reliability analysis can be called reliability or consistency analysis, which refers to whether the results of the measurement data can withstand repeated tests of the measurements and whether the instrument used for measurement can consistently produce data. For appraising the consistency of the results coming from the data which are collected through the questionnaire, the inner coherence of the data for every variable is normally checked through the utilization of the Cronbach's alpha coefficient. A Cronbach's alpha coefficient which is larger than 0.75 indicates that a high reliability level exists. When we carry out consideration of the correlation between every single question item and the overall correlation, if the correlation coefficient that is between the score of each question item and the overall score is smaller than 0.35, therefore that item ought to be removed. On the opposite side, if the correlation coefficient between the score of every question item and the total score is larger than 0.35, the questions inside the scale can be kept without change.

Table 2 shows the results of the reliability examination for the questionnaire about emotion management ability and task completion efficiency. In this table, CITC and Delete stand for the alpha coefficients of the revised item-total correlation and the alpha coefficients after items are taken out, respectively. The data which are shown in the table make it clear that the whole value of Cronbach's α coefficient for this questionnaire is at 0.907. Speak specifically, for the different dimensions — that is to say, the capability of emotion adjustment, the technique of emotion showing, the ability of emotion perception, the capability for emotion understanding, and the capacity of emotion application — the corresponding Cronbach's α coefficient numerical values are 0.954, 0.941, 0.916, 0.928, and 0.935 separately. The numerical values of the Cronbach's alpha coefficient for every dimension of the scale are all above 0.9. Furthermore, every value of the revised item-total connection had a magnitude that went beyond 0.35. The above obtained results have proved that the questionnaire possesses a comparatively high degree of reliability, that is, consistency. According to this point, thus we can give the inference that the data which are gotten from this questionnaire are fit for the next-step analysis.

Table 2: Analysis of the reliability of the survey scale

Dimension	Item	Code	CITC	Delete	Cronbach's α
Emotional control	X6	EC1	0.722	0.889	0.954
	X11	EC2	0.758	0.904	
	X12	EC3	0.746	0.912	
	X14	EC4	0.791	0.907	
	X15	EC5	0.784	0.934	
	X20	EC6	0.747	0.879	
Emotional performance	X16	EP1	0.776	0.891	0.941
	X17	EP2	0.748	0.943	
	X18	EP3	0.723	0.917	
	X19	EP4	0.759	0.942	
	X21	EP5	0.742	0.935	
	X22	EP6	0.739	0.905	
Emotional awareness	X1	EA1	0.797	0.868	0.916
	X5	EA2	0.754	0.899	
	X10	EA3	0.817	0.893	
	X13	EA4	0.723	0.882	
Emotional understanding	X2	EU1	0.782	0.858	0.928
	X3	EU2	0.799	0.884	
	X9	EU3	0.816	0.925	
Emotional operation	X4	EO1	0.761	0.857	0.935
	X7	EO2	0.814	0.942	
	X8	EO3	0.752	0.865	
Total scale	-		-	-	0.907

3.1.2 Validity analysis of survey scales

After we carry out reliability analysis on the investigation scale, this research utilizes structural validity to carry out validity assessment on the questionnaire which centers on emotional management ability and task completion effect. The evaluation is mainly conducted through two methods: correlation analysis and confirmatory factor analysis, which are utilized for assessing the results.

(1) Correlation analysis

According to the psychometric theory, there should exist a reasonable degree of correlation between the dimensions of the questionnaire. When the correlation has overly high degree, this shows that an overlap exists among the dimensions, hence some of these dimensions could have redundancy. On the opposite side, if the correlation is extremely low, this thus indicates that the questionnaire is measuring psychological attributes that are completely different. For the test to have satisfactory validity, correlations between the items needed to construct sound items and the test are better between 0.35 and 0.75, and between-group correlations between items are better between 0.15 and 0.55. Figure 2 has described the achievement of the correlation coefficients among the factors and between the factors and the total score.

The correlation analysis form shows that the correlation coefficients between each dimension lie in the scope from 0.369 to 0.553. All these coefficient values are located inside the predetermined reference interval. Furthermore, when we talk about the correlation coefficients between every dimension and the whole questionnaire score, they range from 0.568 to 0.592, which also sits inside the reference range. The correlation between each dimension and the total score is larger than the correlation that is between the dimensions themselves. This

therefore indicates that the each dimension possesses a certain degree of independency, and this hence reflects the corresponding attributional properties. These dimensional indexes can at the same time measure the same psychological characteristic, that is, the employee's ability that they deal with their own emotions. According to the above analysis, therefore, we can see that this questionnaire's structural validity has very high satisfaction degree.



Figure 2: Correlation coefficient performance

(2) Validation Factor Analysis

Validatory factor analysis (CFA) is the verification of the degree of fit of the data to the existing theoretical model. It is developed on the basis of exploratory factor analysis, which makes assumptions about possible factor structures based on relevant theories or a priori knowledge, and then verifies the reasonableness of the assumptions. When evaluating the reasonableness of a model using validated factor analysis, several indices must be examined, and the tests usually considered are: the ratio of chi-square values to degrees of freedom (χ^2/df), the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the incremental fit index (IFI), the relative fit index (CFI), the root-mean-square error of approximation (RMSEA), and the canonical Fit Index (NFI), etc.

It is generally considered that a better-fitting model should have $\chi^2/df < 3$ and $RMSEA < 0.09$, which indicates a better model fit. GFI, AGFI, IFI, CFI, and NFI vary from 0 to 1, and their values are generally above 0.75 indicating an acceptable model fit, and above 0.85 indicating a better model fit, with the closer they are to 1 the better. Figure 3 shows the emotion management model and path coefficients, and the validation factor analysis fitting indicators are shown in Table 3.

From the results of the fitting indexes, it can be seen that the structural fit index $\chi^2/df = 2.715 < 3$, $RMSEA < 0.09$, and the values of GFI, AGFI, NFI, CFI, and IFI are all above 0.85, which indicates that all the indexes meet the statistical requirements. At the same time, the results which got from the path diagram showed that, between the observed variables and the latent variables which correspond to them, there exist appropriate loadings and correlations. By means of confirmatory factor analysis, the structural validity of our questionnaire has been once again proven to be satisfying.

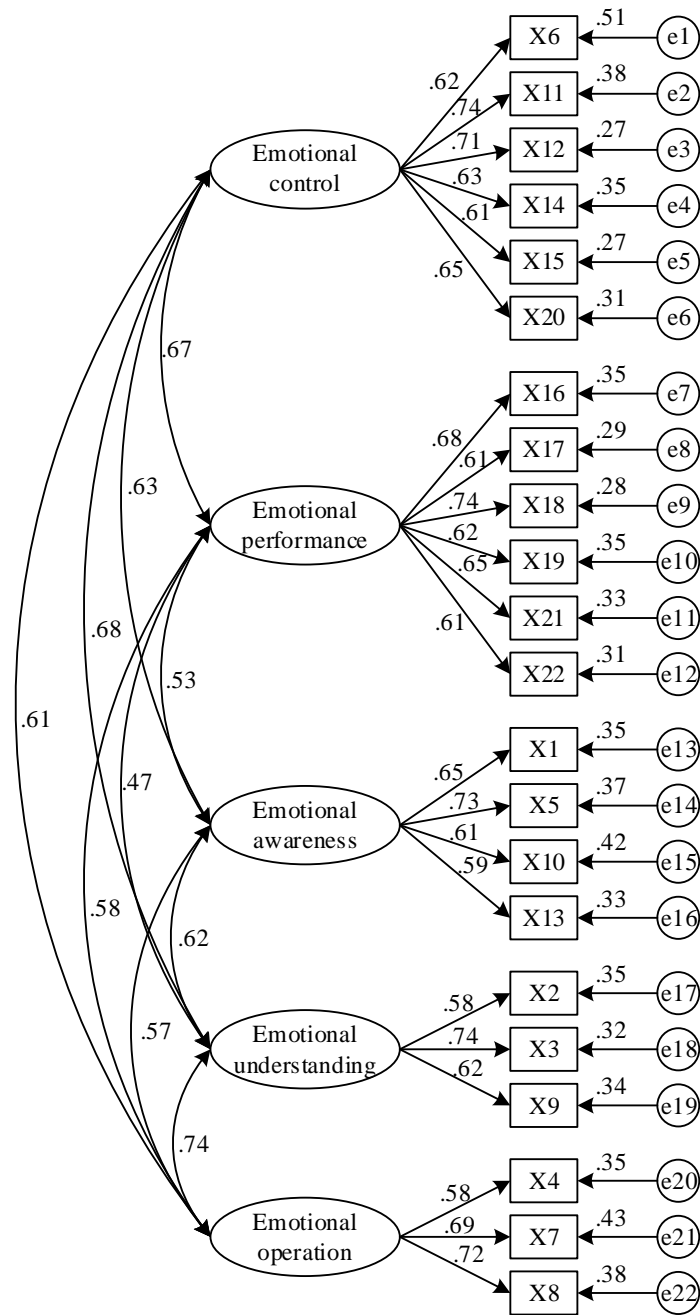


Figure 3: Emotional management model and path coefficient

Table 3: The main indexes of the questionnaire structure

Index	Reference value	Fitting value	Suitability
χ^2/df	<3.00	2.715	Fittest
RMSEA	<0.09	0.036	Fittest
GFI	>0.75	0.914	Fittest
AGFI	>0.75	0.892	Fittest
NFI	>0.75	0.903	Fittest
CFI	>0.75	0.886	Fittest
IFI	>0.75	0.928	Fittest

3.1.3 Multifactor ANOVA for Emotional Management Competencies

We have carried out a multifactor analysis of variance (ANOVA) by utilizing the data from the Emotion Management Competence and Task Completion Efficiency Questionnaire. This research's objective is to inspect the total characteristics of emotion management ability, together with the divergences on gender (Sex), age (Age), education background (Edu), and also the mutual interactions among the marketing employees of Bank Y. Multifactor ANOVA was carried out with gender, age and education as independent variables and employees' emotion management competence and dimensions as dependent variables. Table 4 shows the results of multifactor ANOVA for emotion management competence.

The score range of the questionnaire in this paper is [1,5] and 3 is the midpoint score. This table makes known that the average score of the staff members' whole emotion management ability is 3.55 points, indicating that the overall performance of employees' emotion management ability shows a positive trend. The order of magnitude of the mean value of each dimension is Emotion Awareness Ability (3.71) > Emotion Utilization Ability (3.64) > Emotion Expression Ability (3.59) > Emotion Regulation Ability (3.47) > Emotion Understanding Ability (3.32).

The data which are given in the table show that although no obvious difference exists in the whole ability of employees to handle emotions when gender is taken into account, a quite large interaction is possessed by gender and education level ($F = 3.167$, $P < 0.05$). Emotion regulation competence differed in age, while emotion awareness and emotion utilization competence were related to education level, and emotion comprehension competence showed significant differences in gender and education level. There was an interaction between gender and education level on the dimensions of emotion comprehension ability and emotion use ability ($P < 0.01$).

Table 4: Results of multivariate analysis of variance

Index	Total	EC	EP	EA	EU	EO
Score	3.55	3.47	3.59	3.71	3.32	3.64
Sex	0.615	0.914	1.152	0.073	8.276*	3.751
Age	3.024	3.298*	1.673	2.151	0.173	0.436
Edu	1.613	1.061	1.598	5.614**	3.152*	3.034*
Sex*Age	1.275	2.379	1.216	0.434	2.206	0.842
Sex*Edu	3.167*	0.851	2.083	0.051	4.278**	4.051**
Age*Edu	1.313	0.567	1.134	2.234	3.014	0.323
Sex*Age*Edu	1.527	0.503	1.075	1.428	0.351	1.146

Note: * and ** in the table indicate $P < 0.05$ and $P < 0.01$, respectively.

3.2 Model analysis of factors affecting task completion efficiency

3.2.1 Sensitivity analysis of mandate completion efficiency

In the sensitivity analysis of GeNIe software, the analysis results are indicated by the depth of the color to indicate the sensitivity level, the darker the color indicates that the influence factor is more sensitive to the target under study, and the lighter the color indicates that the influence factor is less sensitive to the object under study. The work task completion efficiency of employees is set as the target node, and the model of work task completion efficiency influencing factors is analyzed for sensitivity, and its specific results are shown in Figure 4. This figure makes it clear that, the sensitivity which belongs to emotional regulation ability and emotional performance ability is the greatest one. These two capabilities have the most

remarkably great influence on the efficiency of staff members' work task finishing. The sensitivity of emotional consciousness ability and emotional comprehension ability places second, while the sensitivity of emotional utilization ability is the lowest, which therefore exerts the smallest influence on the efficiency of staff members' work task finishing. From this, it can be inferred that when the employees' emotion regulation ability, emotion expression ability, emotion awareness ability and emotion understanding ability are improved in the process of work at a higher magnitude, and their own emotion utilization ability is less affected by external events, the employees' work task completion efficiency will be the highest.

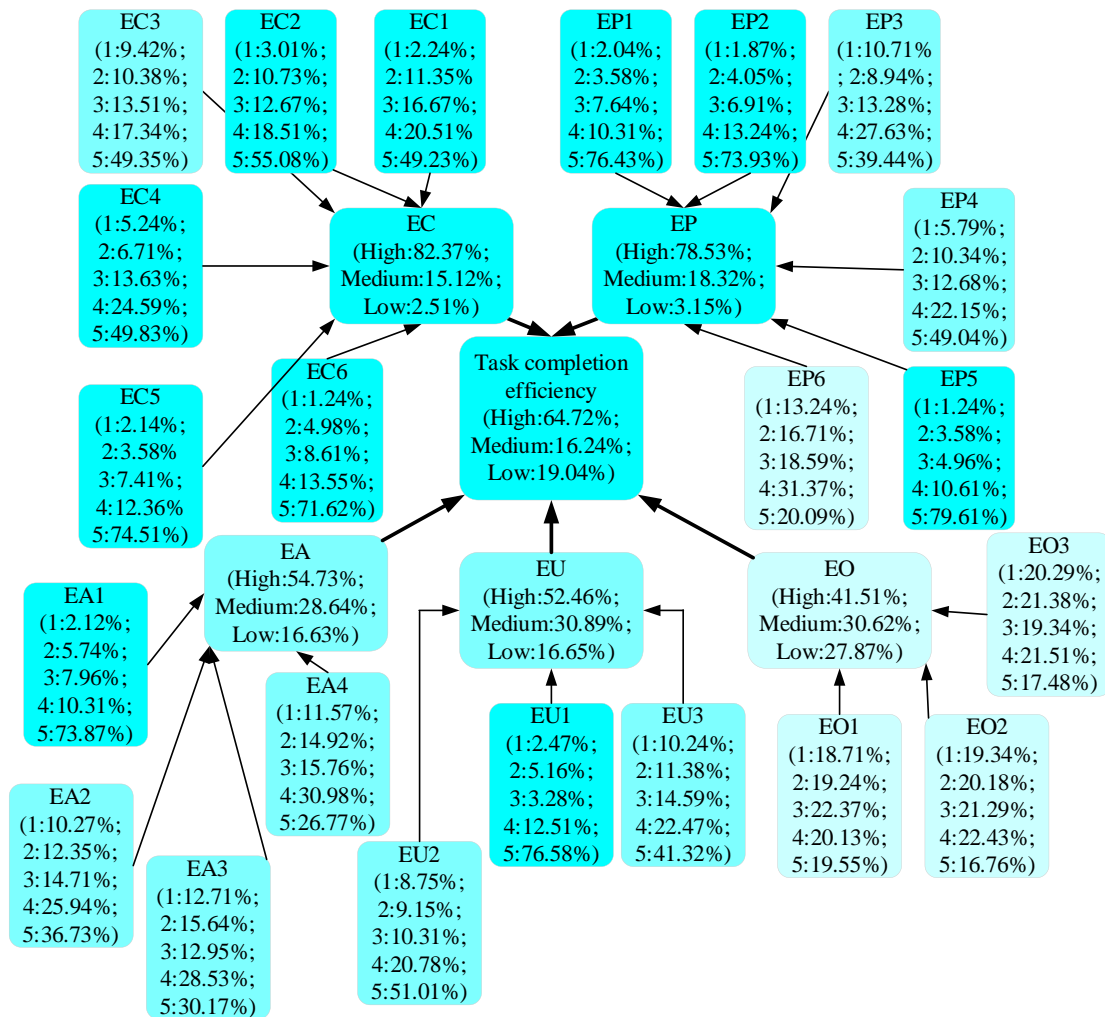


Figure 4: Sensitivity analysis results of influencing factors

3.2.2 Posterior probability and reliability analysis

Using GeNIe Bayesian network analysis software, according to the Bayesian diagnostic reasoning can be calculated in the given evidence $P(A=0)=1$, that is, the employee in the daily marketing process, the employee task completion efficiency due to changes in the ability to manage the emotions, to get the a posteriori probability distribution of each root node. The results of the calculation can be organized to obtain the percentage of change in the a priori probability and a posteriori probability, according to the value of the change can be found out the sensitive nodes in the network that is to influence the reliability of the employee's work task completion efficiency of the sensitive factors, the results are shown in Table 5.

From the table of a posteriori probability and a priori probability change percentage, the

sensitive factors affecting the efficiency of the employee's task completion are ranked according to the degree of sensitivity, and the specific results are as follows:

EC1>EC5=EP2>EP5>EU1>EP1>EA1>EC2>EC6>EC4>EA2>EA3>EC3>EU2>EP4>EA4>EU3>EP3>EP6>EO2>EO3>EO1, it can be seen that the main ones in the top three places are the two indicators under the dimension of emotion regulation ability (EC1 and EC5) and emotion performance ability dimension (EP2 and EP5), which is more consistent with the results of the previous sensitivity analysis. And the bottom three were all indicators under the dimension of emotion utilization ability, i.e., EO2, EO3, and EO1. In the marketing operations that are carried out by employees, the posterior probabilities of nodes EC1, EC5, EP2, and EP5 which lie in employees' emotional management ability have a fluctuation that has a larger range than the prior probabilities, thus the magnitude of change is over 23%. It can be inferred that in the whole marketing network, the sensitivity of the above index nodes is higher and has a greater impact on the efficiency of employees' work task completion. That is, the stronger the performance of the employee's emotional regulation ability and emotional expression ability, and the lower the change in the ability to use emotions, the faster the employee's marketing task completion efficiency.

Table 5: The prior probability is compared to the posterior probability

Dimension	Code	Prior probability	Posterior probability	Change/%
Emotional control	EC1	0.1524	0.1893	24.21%
	EC2	0.1529	0.1868	22.17%
	EC3	0.1578	0.1807	14.51%
	EC4	0.1521	0.1839	20.91%
	EC5	0.1531	0.1892	23.58%
	EC6	0.1624	0.1966	21.06%
Emotional performance	EP1	0.1361	0.1669	22.63%
	EP2	0.1395	0.1724	23.58%
	EP3	0.1461	0.1657	13.42%
	EP4	0.1396	0.1592	14.04%
	EP5	0.1401	0.1726	23.20%
	EP6	0.1378	0.1494	8.42%
Emotional awareness	EA1	0.1306	0.1601	22.59%
	EA2	0.1348	0.1553	15.21%
	EA3	0.1421	0.1631	14.78%
	EA4	0.1409	0.1605	13.91%
Emotional understanding	EU1	0.2142	0.2629	22.74%
	EU2	0.2038	0.2329	14.28%
	EU3	0.2095	0.2378	13.51%
Emotional operation	EO1	0.1871	0.2012	7.54%
	EO2	0.1827	0.1974	8.05%
	EO3	0.1856	0.1998	7.65%

4 Conclusion

The present research treatise concentrates its investigation upon the marketing personnel within Bank Y. Through the integration of the Bayesian network, one model for emotional management was constructed, after that a comprehensive analysis of data was carried out. The research results indicate that the average score of the marketing staff's emotion management ability is 3.55, which means that their ability which is used to manage emotions is in a rising trend. Therefore, enterprises should improve the working environment, strengthen the construction of corporate culture, set up an emotional relief system, carry out emotional

management training and other methods to better enhance the employee's emotional management ability and then stimulate the potential of employees to improve the efficiency of work task completion.

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References

- [1] Zhang, H., Shi, J., Deng, B., Jia, G., Han, G., & Shu, L. (2019). MCTE: Minimizes task completion time and execution cost to optimize scheduling performance for smart grid cloud. *IEEE Access*, 7, 134793-134803.
- [2] Iglesias, J. O., De Cauwer, M., Mehta, D., O'Sullivan, B., & Murphy, L. (2016). Increasing task consolidation efficiency by using more accurate resource estimations. *Future Generation Computer Systems*, 56, 407-420.
- [3] Sun, J., Yu, S., Chu, J., Cun, W., Wang, H., Chen, C., ... & Huang, Y. (2024). A crew task allocation and sequencing method considering workload distribution and minimum task completion time. *Kybernetes*.
- [4] Beard, E., Karaoğlu, S., Hafizoğlu, F. M., & Sen, S. (2025). Addressing procrastination and improving task completion efficiency through agent-based interventions. In *Bi-directionality in Human-AI Collaborative Systems* (pp. 303-331). Academic Press.
- [5] Dong, J. Q., He, Z. H., Gong, Y. Y., Yu, P. W., Tian, C., Dou, W. C., ... & Guan, H. R. (2022). SMART: Speedup Job Completion Time by Scheduling Reduce Tasks. *Journal of Computer Science and Technology*, 37(4), 763-778.
- [6] Zhao, J. L., Li, X. H., & Shields, J. (2019). Managing job burnout: The effects of emotion-regulation ability, emotional labor, and positive and negative affect at work. *International Journal of Stress Management*, 26(3), 315.
- [7] Wall, T., Russell, J., & Moore, N. (2017). Positive emotion in workplace impact: the case of a work-based learning project utilising appreciative inquiry. *Journal of Work-Applied Management*, 9(2), 129-146.
- [8] Phiri, A., Bano, N., & Raouf, A. (2019). Interpersonal skills and emotion management: Impact of social leadership on job satisfaction of workers. *Advances in Developmental and Educational Psychology*, 1(1), 1-6.
- [9] Kluemper, D. H., DeGroot, T., & Choi, S. (2013). Emotion management ability: Predicting task performance, citizenship, and deviance. *Journal of Management*, 39(4), 878-905.
- [10] Arguedas, M., Daradoumis, T., & Xhafa, F. (2016). Analyzing the effects of emotion

- management on time and self-management in computer-based learning. *Computers in Human Behavior*, 63, 517-529.
- [11] Lee, C., & Wong, C. S. (2019). The effect of team emotional intelligence on team process and effectiveness. *Journal of Management & Organization*, 25(6), 844-859.
- [12] Jun, H. B., & Kim, D. (2017). A Bayesian network-based approach for fault analysis. *Expert Systems with Applications*, 81, 332-348.
- [13] Bensi, M., Der Kiureghian, A., & Straub, D. (2013). Efficient Bayesian network modeling of systems. *Reliability Engineering & System Safety*, 112, 200-213.
- [14] Scanagatta, M., Salmerón, A., & Stella, F. (2019). A survey on Bayesian network structure learning from data. *Progress in Artificial Intelligence*, 8(4), 425-439.
- [15] Sabourin, J., Mott, B., & Lester, J. C. (2011, October). Modeling learner affect with theoretically grounded dynamic Bayesian networks. In *International Conference on Affective Computing and Intelligent Interaction* (pp. 286-295). Berlin, Heidelberg: Springer Berlin Heidelberg.
- [16] Majumdar, G., Yazin, F., Banerjee, A., & Roy, D. (2023). Emotion dynamics as hierarchical Bayesian inference in time. *Cerebral Cortex*, 33(7), 3750-3772
- [17] Abebe, D. W., & Singh, D. P. (2023). The relationship between emotional intelligence, job satisfaction, and job performance: empirical evidence from public higher education institutions. *European Journal of Business and Management Research*, 8(3), 45-52.
- [18] Aqqad, N., Obeidat, B., Tarhini, A., & Masa'Deh, R. E. (2019). The relationship among emotional intelligence, conflict management styles, and job performance in Jordanian banks. *International Journal of Human Resources Development and Management*, 19(3), 225-265.
- [19] Pekaar, K. A., van der Linden, D., Bakker, A. B., & Born, M. P. (2017). Emotional intelligence and job performance: The role of enactment and focus on others' emotions. *Human Performance*, 30(2-3), 135-153.
- [20] Khalid, J., Khaleel, M., Ali, A. J., & Islam, M. S. (2018). Multiple dimensions of emotional intelligence and their impacts on organizational commitment and job performance. *International Journal of Ethics and Systems*, 34(2), 221-232.
- [21] Ramli, A. H., & Novariani, F. (2020, September). Emotional Intelligence, Organizational Commitment and Job Performance in the Private Hospital. In *International Conference on Management, Accounting, and Economy (ICMAE 2020)* (pp. 280-284). Atlantis Press.
- [22] Tang, H., Wang, G., Zheng, J., Luo, L., & Wu, G. (2020). How does the emotional intelligence of project managers affect employees' innovative behaviors and job performance? The moderating role of social network structure hole. *Sage Open*, 10(4), 2158244020969382.
- [23] Shah, B., & Sah, K. (2024). The impact of emotional intelligence in the workplace on productivity. *International Journal of Business and Management Invention*, 13(10), 69-

76.

- [24] Brody, R. G., Gupta, G., & Salter, S. B. (2020). The influence of emotional intelligence on auditor performance. *Accounting and Management Information Systems*, 19(3), 543-565.
- [25] Naqvi, S. T. A., & Siddiqui, A. N. (2023). The impact of emotional intelligence on job performance with a mediating role of job satisfaction. *Market Forces*, 18(1).
- [26] Nasir, S. Z., Bamber, D., & Mahmood, N. (2023). A perceptual study of relationship between emotional intelligence and job performance among higher education sector employees in Saudi Arabia. *Journal of Organizational Effectiveness: People and Performance*, 10(1), 60-76.
- [27] Oriarewo, G. O., Ofobruku, S. A., Agbaeze, K., & Tor, Z. A. (2018). The Influence of emotional stability on employees' performance: A review. *South Asian Journal of Social Studies and Economics*, 2(1), 1-8.