Neural Network On Multilayer Perception And Its Self Efficacy On Employeee Engagement In Higher Educational Institutions

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Abstract

This study examines the Neural networks determine the complex relationship between the variables through the mathematical modelling. It performs a sensitive analysis and computes the importance of the predictors in percentage through "Independent variable importance analysis". A Mathematical diagram will be pictorially represented where a complex relationship will be determined through the multi-layer perceptron. The normalized importance score predicts the importance of the variable.

Keywords: Neural Networks, Perception, Self-Efficacy, Employee Engagement, Educational Institutions

1. Introduction

The examinations propose that employee commitment, as a feature of a generalemployee experience, is associated with both the work and the association and is afunctioning, business related state. Among the terms that have been utilized to depictemployee commitment are, from one perspective, positive, satisfying, business relatedperspective portrayed by life, devotion, and assimilation; or on the other as vigorousinclusion with satisfying exercises that upgrade the individual& feeling of expert adequacy. Itis positive, proactive conduct in the work environment and towards the association achievedby a blend of propelled sincerely appended employees; incorporated, edified individuals theexecutive's exercises and sympathetic administrators towards the accomplishment ofobviously imparted business goal.

2. Literature Review

Shuck, (2011) has taken the case study model of Robert K.Yin's case study method, the author conducted a semi-structured interview in a large MNC. Based on William Kahn (Who coined the term employee engagement) and Maslow, the researcher conceptualized the framework. After conducting the statistical analysis of the data, the author found three important constructs for employee engagement. Work culture and climate, learning and development opportunities and cohesiveness with the colleagues. These three are found to be very important for making the employee engaged.

Popli, & Rizvi, (2016)found out that leadership roles are influencing employee engagement. The author used a descriptive type of research which is a cross-sectional research type. Based on a multifactor leadership questionnaire 340 datasets collected from the employees

of Delhi (NCR) working in the service-oriented sector. The author found that age and education are having a moderating effect between leadership styles and employee engagement. Findings of the study reveal that both transformational and transactional leadership is having an association with employee engagement. Additionally, the author found that passive-avoidant leadership style is having a negative relationship with employee engagement.

Tomlinson, (2010) Based on the case study method, the author proposed the research case study in the South Korean based automotive company -Kia motors. Leadership development, Employee recognition, internal communications, Organizational development, and employee development are found to be the interventions proposed by the author for better employee engagement.

Mcbain, (2006).Employee engagement is a helpful ongoing idea in HRM: it is a composite build that depicts entomb alia representatives' responsibility, work fulfilment, and inclusion. Progressively, employee engagement has additionally come to be perceived as having a critical effect in execution at all levels inside the organization. In any case, there still exists some unclearness about the importance of the term: how precisely may employee engagement be characterized? This article presents a parentage of the new construct.

Klassen, (2010)the authors examined the relationship between years of experience of teachers, characteristics with the three constructs of self-efficacy (Instructional planning, classroom management and student management). The author collected 1430 samples and utilized factor analysis and structural equation modelling to find out the relationship with the self-efficacy. From the study, the authors found that women teachers have the stress on the workload, and it is having an impact on reduced self-efficacy and reduced classroom engagement.

3. **Research objectives**

- To Identify the Neural Network Analysis on Multilayer Perceptionsand Its Self-Efficacy On Employee Engagement
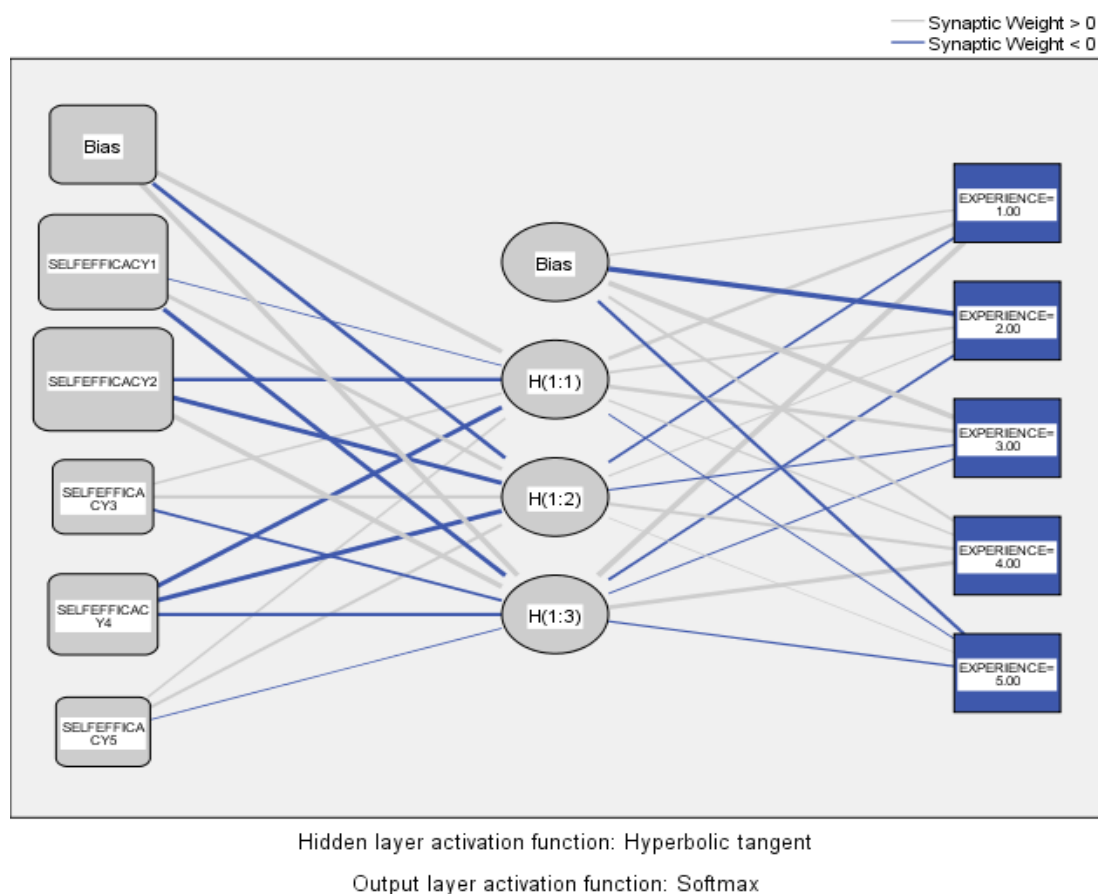
4. Research Methodology

The objectives are framed based on the faculty member's opinion about the employee engagement practices in the Higher education sector of Chennai city. Since the opinions are collected through primary data, the researcher selected "Descriptive" type of research. The descriptive research is to describe systematically and accurately about the facts of the given population. Dulock, (1993).Based on the statistical results, the research may draw a conclusion for the phenomenon which occurs and describe the cause-and-effect relationship.

SAMPLE SIZE

From the eligible population of15078 faculty members from 30 Institutions, the sample size computed is 833. Using the sample size formula for known population, the sample size is computed with a confidence interval of ±5%. Out of 833 samples estimated, 805 samples found to be valid and included for the study. The sample is collected from the full-time faculty members of Government aided colleges, Self-financing Arts & Science, Self-Financing Engineering Colleges and Deemed to be universities in the district of Chennai. The collected data was statistically analyzed using IBM SPSS 20.0. Bivariate, Multivariate tools were used to support the proposed hypothesis in the study. IBM SPSS AMOS is used to analyze the structural relationships among the employee engagement constructs and its impact on effectiveness and self-efficacy.

5. Analysis and Interpretation.

NEURAL NETWORKS

Hidden layer activation function: Hyperbolic tangent

Output layer activation function: Softmax

Multilayer Perceptron – Relationship between Self Efficacy and Experience

- Independent Variable Importance

SELF EFFICACY	IMPORTANCE	NORMALIZED IMPORTANCE
I will give top priority in my life for the institution growth.	0.269	83.6%

I consider my position in the institution as prestigious one.	0.321	100.0%
I will always take positive steps to improve the system procedure in the institution.	0.132	41.2%
I always admire the colleague who works sincerely for the institution growth.	0.176	54.8%
I feel it is a great honor bestowed me by the management.	0.102	31.7%

The normalized importance is 100% for the variable "I consider my position in the institution as prestigious one" while finding the complex relationship between self-efficacy and experience. The variable "I will give top priority in my life for the institution growth " is having 83.6 % of normalized importance score.

Lowest importance of is observed for the variable "I feel it is a great honor bestowed me by the management" which 31.7 %. The variable "I always admire the colleague who works sincerely for the institution growth" is having a score of 54.8%. The variable "I will always take positive steps to improve the system procedure in the institution" is having an importance score of 41.2%.

Hidden layer activation function: Hyperbolic tangent
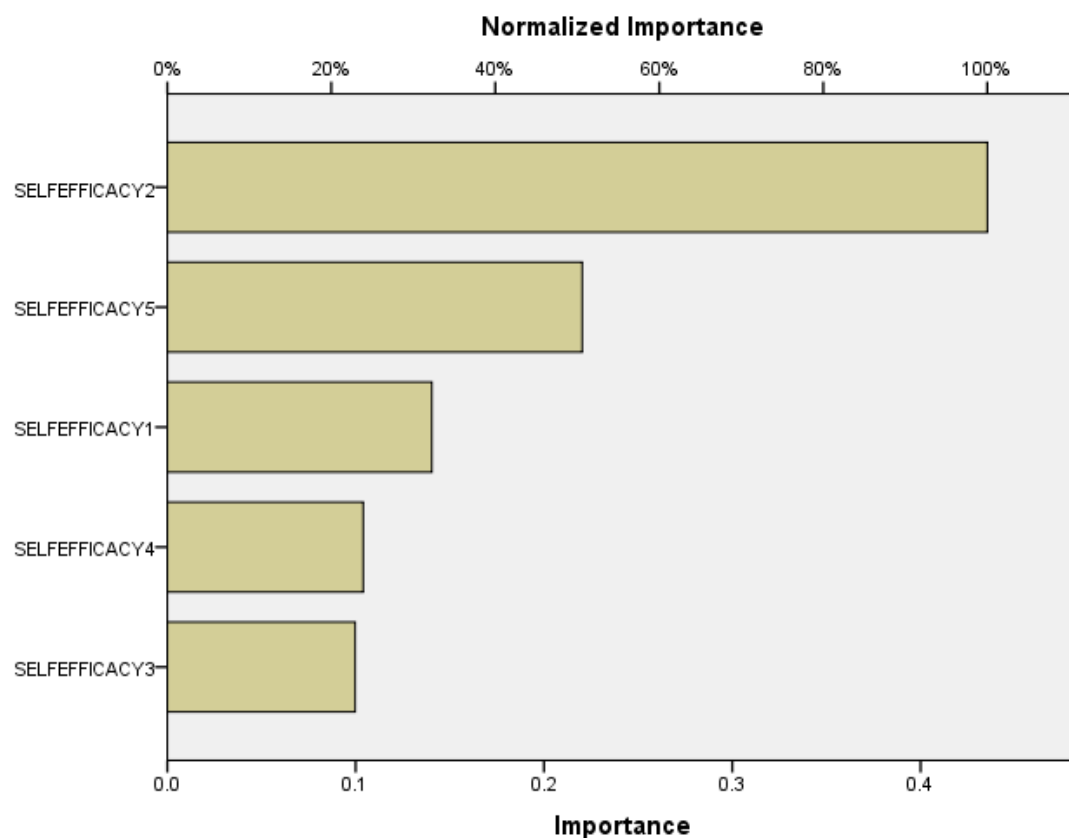
Output layer activation function: Softmax

Multilayer Perceptron – Relationship between Self Efficacy and Gender
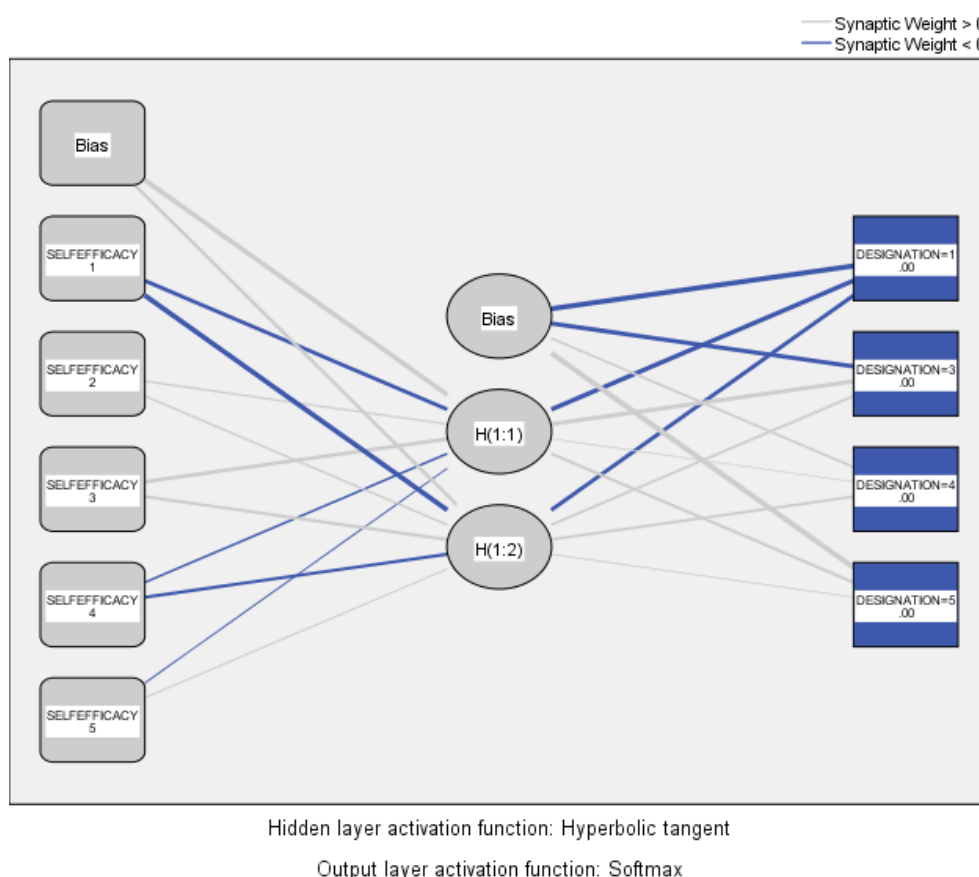
Independent Variable Importance

SELF EFFICACY	IMPORTANCE	NORMALIZED IMPORTANCE
I will give top priority in my life for the institution growth.	0.141	32.3%
I consider my position in the institution as prestigious one.	0.435	100.0%
I will always take positive steps to improve the system procedure in the institution.	0.100	22.9%
I always admire the colleague who works sincerely for the institution growth.	0.104	23.9%
I feel it is a great honor bestowed and me by the management.	0.220	50.6%

The normalized importance is 100% for the variable "I consider my position in the institution as prestigious one" while finding the complex relationship between self-efficacy and gender. The variable "I feel it is a great honor bestowed me by the management" is having 50.6 % of normalized importance score.

Lowest importance is observed for the variable "I will always take positive steps to improve the system procedure in the institution" which is 22.9 %. The score of 23.9 is observed for "I always admire the colleague who works sincerely for the institution growth". The normalized importance of 32.3 is observed for the variable "I will give top priority in my life for the institution growth".
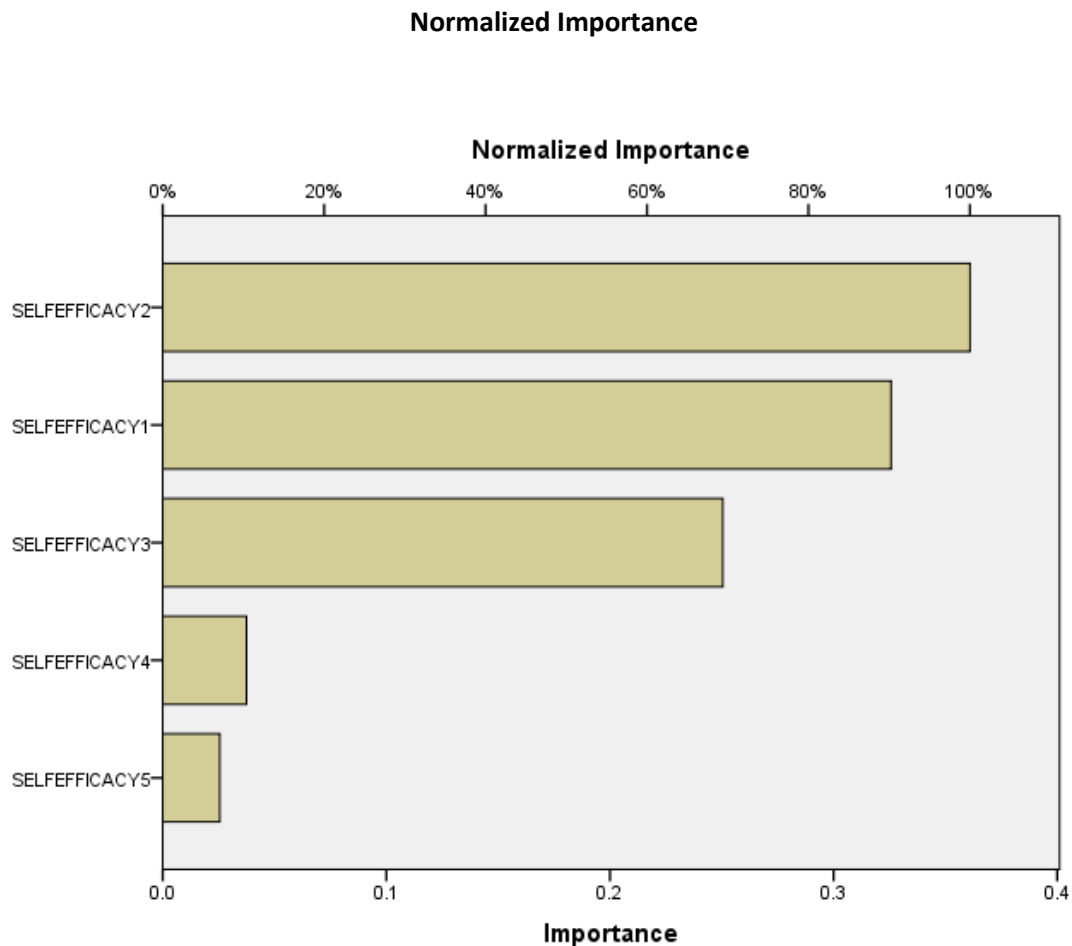

Normalized Importance

Hidden layer activation function: Hyperbolic tangent

Output layer activation function: Softmax

Multilayer Perceptron – Relationship between Self Efficacy and Designation
Independent Variable Importance

SELF EFFICACY	IMPORTANCE	NORMALIZED IMPORTANCE
I will give top priority in my life for the institution growth.	0.326	90.2%
I consider my position in the institution as prestigious one.	0.361	100.0%
I will always take positive steps to improve the system procedure in the institution.	0.250	69.4%
I always admire the colleague who works sincerely for the institution growth.	0.037	10.4%
I feel it is a great honor bestowed and me by the management.	0.026	7.1%

The normalized importance is 100% for the variable "I consider my position in the institution as prestigious one" while finding the complex relationship between self-efficacy and designation. The variable "I will give top priority in my life for the institution growth" is having 90.2% of normalized importance score.

Lowest importance is observed for the variable "I feel it is a great honor bestowed me by the management" which is 7.1%. The variable "I will always take positive steps to improve the system procedure in the institution" is having a score of 69.4%. The score of 10.4% is observed for "I always admire the colleague who works sincerely for the institution growth".

Normalized Importance

6.

FINDINGS BASED ON NEURAL NETWORKS-MULTILAYER   PERCEPTRON

RELATIONSHIP BETWEEN SELF EFFICACY AND EXPERIENCE

➔   The normalized importance is 100% for the variable "I consider my position in the institution as prestigious one" while finding the complex relationship between self-efficacy and experience.

➔   The variable "I will give top priority in my life for the institution's growth "is having 83.6 % of normalized importance score.

➔   Lowest importance is observed for the variable "I feel it is a great honor bestowed on me by the management "which 31.7 %.

RELATIONSHIP BETWEEN SELF EFFICACY AND GENDER

➜ The normalized importance is 100% for the variable "I consider my position in the institution as a prestigious one" while finding the complex relationship between self-efficacy and gender.

➜ The variable "I feel it is a great honor bestowed on me by the management "is having 50.6 % of normalized importance score.

➜ Lowest importance is observed for the variable "I will always take positive steps to improve the system procedure in the institution "which is 22.9 %.

RELATIONSHIP BETWEEN SELF EFFICACY AND DESIGNATION

➜ The normalized importance is 100% for the variable "I consider my position in the institution as a prestigious one" while finding the complex relationship between self-efficacy and designation.

➜ The variable "I will give top priority in my life for the institution's growth" is having 90.2% of normalized importance score.

➜ Lowest importance is observed for the variable "I feel it is a great honor bestowed on me by the management" which is 7.1%.

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