

# An Empirical Study on Employee Engagement in Metal Forming Industry and Its Impact on Work Outcomes

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**Abstract—Purpose:** The study aimed to assess the employees' engagement on their work outcomes among the employees working in the Metal forming industry.

**Design and Methodology:** This research employed a descriptive research method. The sampling population for this study covered all the cadre employees of the Metal Forming Industry of Belagavi district. For this research, 285 employees were selected through simple random sampling for the study. Data was collected through well-structured questionnaire/Schedule and Employees' Engagement data was collected using point Likert scale, such as 5-Always, and 1- Never and Work Outcomes data was collected 5-point Likert scale i.e., 5-Strongly Agree and 1-Strongly Disagree.

**Analysis Tools:** Linear regression was employed to assess the effect on predictor on the dependent variables

**Findings:** The Work Engagement, emotional engagement, Employee Social and Engagement with Supervisor are positively, statistically and significantly effect on the Work Outcomes of the employees.

**Research limitations:** The study is limited to Metal forming industry of the Belagavi district only. It comprises of 285 employees only. Time and resources were the major constraints.

**Paper type:** Research paper

**Index Terms**—Employee, Engagement, Work outcomes

## I. INTRODUCTION

Employee engagement refers to the emotional commitment and active involvement of employees towards their work, organization, and its goals, while organizational performance represents the overall effectiveness, productivity, and success of the organization. It can also be defined as the emotional and mental connection employees have with their work and organization, going beyond mere job. Employee engagement has been an area of interest among many researchers, and it has received greater recognition among firms. The relation between

employee engagement and work outcomes is a significant area to carry out research. Saks (2006) mentioned in his research that employee engagement is positively related to organizational commitment, the same leads to work outcomes. In the same way, Andrew O.C. & Sofian S. (2012) also found that co-employee support is a major individual factor that influences both measures of engagement and the work outcomes. The relationship between employee engagement and work outcomes can vary across industries, organizations, and contexts. Factors such as organizational culture, leadership style, job characteristics, and industry dynamics can influence the strength and direction of this relationship.

Kahn (1990) defined as “the harnessing of organization members’ selves to their work roles; self-employment and self-expression of people physically, cognitively, and emotionally in their work lives. Since Kahn proposed this concept, researchers have proposed. May et al. (2004) opined that employee engagement included not only cognition, but also the flexible application of emotions and behaviors. Wellins and Concelman (2005) also stated that engagement is a mixture of commitment, loyalty, productivity, and ownership. Xiao and Duan (2014) stated that employee engagement was a conceptualization including five dimensions: initiative, loyalty, effectiveness, identity, and commitment.

Metal fabrication, a cornerstone of modern manufacturing, intricately shapes our world. This comprehensive guide delves deep into the realm of metal fabrication, exploring its definition, historical evolution, and the intricate processes that transform raw metal into diverse, complex structures. Metal fabrication is the art and science of building metal structures by cutting, bending, and assembling. This intricate craft involves transforming raw metal

materials into pre-designed shapes and products, showcasing a blend of technical skills and creativity. From ancient blacksmiths forging tools to modern industries shaping skyscrapers, the journey of metal fabrication is a testament to human ingenuity and technological advancement. Metal fabrication begins in the ancient times when early humans discovered metals. Initially, simple techniques like hammering were used to shape metals into rudimentary tools and weapons. The introduction of steam power and mechanization transformed the way metal was processed. It was during this era that key metal fabrication processes, such as forging and sheet metal work, evolved significantly. As the 20th century unfolded, metal fabrication saw a surge in technological innovations. Today, metal fabrication stands at the forefront of technological innovation. Computer-aided design (CAD) and computer numerical control (CNC) machining have allowed for precise and intricate designs that were once impossible. Metal fabrication is a complex and nuanced process, essential in transforming raw metal into functional and aesthetic products. (techniwaterjet.com)

## II. STATEMENT OF THE PROBLEM

Understanding employee engagement and work outcomes is important in industrial manufacturing. Employee engagement reflects employees' emotional commitment towards their work and organization. Higher engagement can contribute to productivity, job satisfaction, quality, and workplace safety. However, the company currently lacks a structured system to measure employee engagement. This makes it difficult to understand the existing level of engagement among employees. It also becomes challenging to determine how disengagement affects work outcomes. Low engagement may result in reduced productivity and lower product quality. It can also contribute to safety concerns, absenteeism, and low employee morale. Factors such as leadership, compensation, work environment, and career growth may influence engagement. The absence of information about these factors limits the company's ability to improve engagement. Employee disengagement may also increase turnover and recruitment and training costs. High employee turnover can affect operational continuity and

production schedules. Therefore, employee engagement needs to be aligned with organizational performance goals. This study aims to assess engagement levels, identify key engagement drivers, and examine their influence on work performance. The findings can help the company improve employee commitment, productivity, quality, safety, and overall work outcomes.

## III. LITERATURE

Kriss Budi Utomo, Siti Safaria (2025) in their research paper on "Analysis of the Influence of the Performance Measurement System (HR Scorecard) and Rewards on Employee Performance With Employee Engagement as an Intervening Variable at PT BANK ABC Jakarta Area (National Private Bank KBMI 2)" and found that the better the performance measurement system the higher the employee engagement, the better the performance measurement system the higher the employee performance, the better the reward the higher the employee engagement, the better the higher the employee engagement the higher the employee performance, the higher the mediating role of employee engagement the better the effect of the performance measurement system on performance, the higher the mediating role of employee engagement the better the effect of rewards on performance. Adamu Abubakar and et.al (2025) in their research titled "Impact of Employee Engagement on Organizational Performance" had found that there is a strong positive relationship between employee engagement and organizational performance. Finally, the authors concluded that employee engagement is not just a luxury but a critical component of organizational success. Janah Sojanah, and et.al (2025) in their research paper on "The Influence of Employee Engagement on Employee Performance is Mediated by Organizational Commitment" found that Employee Engagement and employee organizational commitment on Employee Performance. Organizational Commitment is able to mediate the influence of employee organizational commitment on employee performance. Mulia Putri and et.al (2024) had opined that work-life balance, employee engagement, and job satisfaction partially and simultaneously have a positive and significant effect

on employee performance. D. Poorani, R. Pradap (2024) found that practical strategies for enhancing engagement, such as fostering supportive leadership, offering career development opportunities, and promoting flexible work arrangements. Dawit Udessa Gede and Admassu Tesso Huluka (2024) viewed that vigor, dedication, and absorption all have a significant and favourable impact on organizational performance in higher education. Mulia Putri, and et al (2024) found that employee engagement positively and significantly influences employee performance, both directly and indirectly, through job satisfaction. A. Corbeanu & D. Iliescu (2023) opined that work engagement factors such as Vigor, Dedication, and Absorption have significant relations with organizational performance. Farah Mansor and et.al (2023) found that there is a significant relationship between employee engagement and organizational performance. Moving forward, several areas for improvement should be organizational performance. Ngaochai Sungmala, Amara Verawat (2021) found that employee engagement is a significant and strong factor that determines the individual performance of employees of multinational corporations.

#### IV. OBJECTIVES

- To examine the level of employee engagement among employees
- To understand and evaluate the concept of work outcomes

- To analyse the impact of employee engagement on employees' work outcomes

#### V. HYPOTHESIS

H0: There is no positive and significant effect of Employee Engagement on Work Outcomes

H1: There is a positive and significant effect of Employee Engagement on Work Outcomes

#### VI. METHODOLOGY

This research employed a descriptive research method. In a descriptive research design, a researcher is solely interested in describing the situation or case under his/her research study. The sampling population for this study covered all the cadre employees of the Metal Forming Industry of Belagavi district. For this research, 285 employees were selected through simple random sampling for the study. Data was collected through well-structured questionnaire/Schedule and Employees' Engagement constructs were adapted from DEEPIKA M (2021) & the same was collected using 5-point Likert scale, such as 5-Always, 4-Very Often, 3- Sometimes, 2- Rarely, and 1- Never and Work Outcomes questions were adapted from Ramos Villagrasa and et al (2019) & and same was collected 5-point Likert scale i.e., 5- Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree, 1- Strongly Disagree.

The Cronbach's Alpha values are also tested and the following table No 1 defines the same.

Table No 1 Cronbach's Alpha Value

| Variable Name              | No. of Questions | Alpha Value |
|----------------------------|------------------|-------------|
| Work Engagement            | 5                | 0.748       |
| Emotional Engagement       | 4                | 0.689       |
| Social Engagement          | 5                | 0.687       |
| Engagement with Supervisor | 4                | 0.882       |
| Work Outcomes              | 7                | 0.720       |

Source Primary data

#### VII. ANALYSIS AND INTERPRETATION

##### 7.1 Demographic information:

This part the research opines the percentile analysis, interpretation of demographic data.

Table No 2 demographic information on the employees

| Variables                 | Response          | Frequency | Percent |
|---------------------------|-------------------|-----------|---------|
| Age                       | Below 25          | 21        | 7       |
|                           | 26-35             | 156       | 55      |
|                           | 36-45             | 87        | 31      |
|                           | 46 & above        | 21        | 7       |
|                           | Total             | 285       | 100     |
| Gender                    | Male              | 243       | 85      |
|                           | Female            | 42        | 15      |
|                           | Total             | 285       | 100     |
| Marital Status            | Married           | 231       | 81      |
|                           | Unmarried         | 54        | 19      |
|                           | Total             | 285       | 100     |
| Designation               | Worker            | 165       | 58      |
|                           | Supervisor        | 69        | 24      |
|                           | Executive         | 45        | 16      |
|                           | Manager           | 6         | 2       |
|                           | Total             | 285       | 100     |
| Educational Qualification | Up to PUC         | 156       | 55      |
|                           | Degree            | 117       | 41      |
|                           | PG                | 3         | 1       |
|                           | Other             | 9         | 3       |
|                           | Total             | 285       | 100     |
| Years of Experience       | Less than 5 years | 150       | 53      |
|                           | 6-10 years        | 84        | 29      |
|                           | 11-15 years       | 27        | 10      |
|                           | 16 & above years  | 24        | 8       |
|                           | Total             | 285       | 100     |

The above table no 2. Reveals that majority of the employees i.e. 55 percent are fall under the age category 26-35 years. 85 percent are male, 81 percent are married, 58 percent are belonging to workers category, 55 percent are having PUC as their minimum qualification, and 53 percent are having less the 5 years of working experience.

#### 7.2 Testing of Hypothesis:

##### Hypothesis-1

H0: There is no positive and significant effect of Employee Engagement on Work Outcomes

H1: There is a positive and significant effect of Employee Engagement on Work Outcomes

Table No 3 Linear regression between Work engagement and work outcomes

| ANOVA <sup>a</sup>                         |            |                |     |             |         |                   |
|--------------------------------------------|------------|----------------|-----|-------------|---------|-------------------|
| Model                                      |            | Sum of Squares | df  | Mean Square | F       | Sig.              |
| 1                                          | Regression | 2848.605       | 1   | 2848.605    | 276.225 | .000 <sup>b</sup> |
|                                            | Residual   | 2918.469       | 283 | 10.313      |         |                   |
|                                            | Total      | 5767.074       | 284 |             |         |                   |
| a. Dependent Variable: Work Outcomes       |            |                |     |             |         |                   |
| b. Predictors: (Constant), Work Engagement |            |                |     |             |         |                   |

The above table No3 reveals the regression analysis of the work engagement and work outcomes. In the summery table reported R-value is 0.703, which indicates a strong positive relationship between Work

Engagement and Work Outcomes. The F-value of 276.225 indicates that the overall regression model is statistically significant. The significance value i.e.  $0.000 < 0.001 < 0.05$ , shows as the regression model

is statistically significant. Therefore, the null hypothesis is rejected, indicating that Work Engagement has a positive and statistically significant effect on Work Outcomes.

Hypothesis-2

H0: There is no positive and significant effect of Employee Engagement on Work Outcomes

H1: There is a positive and significant effect of Employee Engagement on Work Outcomes

Table No 4 Linear regression between emotional engagement and work outcomes

| ANOVA <sup>a</sup>                              |            |                |     |             |         |                   |
|-------------------------------------------------|------------|----------------|-----|-------------|---------|-------------------|
| Model                                           |            | Sum of Squares | df  | Mean Square | F       | Sig.              |
| 1                                               | Regression | 2271.883       | 1   | 2271.883    | 183.951 | .000 <sup>b</sup> |
|                                                 | Residual   | 3495.191       | 283 | 12.350      |         |                   |
|                                                 | Total      | 5767.074       | 284 |             |         |                   |
| a. Dependent Variable: Work Outcomes            |            |                |     |             |         |                   |
| b. Predictors: (Constant), Emotional Engagement |            |                |     |             |         |                   |

The above table no 4 reveals a regression analysis, and it indicates a strong positive relationship between Emotional Engagement and Work Outcomes ( $R = 0.628$ ). The model is statistically significant ( $F = 183.951$ ) and  $p < 0.001$  therefore the null hypothesis has been rejected at 99 percent of confidence level. It indicates that emotional engagement significantly influences work outcomes. Therefore, higher

emotional engagement is associated with better work outcomes.

Hypothesis-3

H0: There is no positive and significant effect of Employee Engagement on Work Outcomes

H1: There is a positive and significant effect of Employee Engagement on Work Outcomes

Table No 5 Linear regression between social engagement and work outcomes

| ANOVA <sup>a</sup>                           |            |                |     |             |         |                   |
|----------------------------------------------|------------|----------------|-----|-------------|---------|-------------------|
| Model                                        |            | Sum of Squares | df  | Mean Square | F       | Sig.              |
| 1                                            | Regression | 3468.169       | 1   | 3468.169    | 426.939 | .000 <sup>b</sup> |
|                                              | Residual   | 2298.905       | 283 | 8.123       |         |                   |
|                                              | Total      | 5767.074       | 284 |             |         |                   |
| a. Dependent Variable: Work Outcomes         |            |                |     |             |         |                   |
| b. Predictors: (Constant), Social Engagement |            |                |     |             |         |                   |

The above regression analysis table No 5 shows a strong positive relationship between Social Engagement and Work Outcomes ( $R = 0.775$ ). The regression model is statistically significant ( $F = 426.939$ ,  $p < 0.001$ ), indicating that Social Engagement has a significant positive effect on Work Outcomes. Since the significance value is less than 0.05, the null hypothesis H0: There is no positive and significant effect of Employee Engagement on Work

Outcomes is rejected and the alternative hypothesis (H1) is accepted. Thus, there is a positive and significant effect of Employee Social Engagement on Work Outcomes

Hypothesis-4

H0: There is no positive and significant effect of Engagement with Supervisor on Work Outcomes

H1: There is a positive and significant effect of Engagement with Supervisor on Work Outcomes

Table No 5 Linear regression between Engagement with Supervisor and work outcomes

| ANOVA <sup>a</sup>                                    |            |                |     |             |        |                   |
|-------------------------------------------------------|------------|----------------|-----|-------------|--------|-------------------|
| Model                                                 |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
| 1                                                     | Regression | 454.652        | 1   | 454.652     | 24.220 | .000 <sup>b</sup> |
|                                                       | Residual   | 5312.422       | 283 | 18.772      |        |                   |
|                                                       | Total      | 5767.074       | 284 |             |        |                   |
| a. Dependent Variable: Work Outcomes                  |            |                |     |             |        |                   |
| b. Predictors: (Constant), Engagement with Supervisor |            |                |     |             |        |                   |

The regression analysis shows a weak positive relationship between Engagement with Supervisor and Work Outcomes ( $R = 0.281$ ). The regression model is statistically significant ( $F = 24.220$ ,  $p < 0.001$ ), indicating that Engagement with Supervisor has a significant positive effect on Work Outcomes. Since the significance value is less than 0.05, the null hypothesis i.e.  $H_0$ : There is no positive and significant effect of Engagement with Supervisor on Work Outcomes is rejected and the alternative hypothesis ( $H_1$ ) is accepted. Thus, there is a positive and significant effect of Engagement with Supervisor on Work Outcomes.

### VIII. FINDINGS

- The majority of the employees i.e. 55 percent are fall under the age category 26-35 years. 85 percent are male, 81 percent are married, 58 percent are belonging to workers category, 55 percent are having PUC as their minimum qualification, and 53 percent are having less than 5 years of working experience.
- The Work Engagement has a positive and statistically significant effect (F-value of 276.225 and P-Value  $0.000 < 0.001 < 0.05$ ) on Work Outcomes.
- The emotional engagement significantly influences ( $F = 183.951$  and  $p < 0.001$ ) on work outcomes. Therefore, higher emotional engagement is associated with better work outcomes.
- There is a positive and significant effect of Employee Social Engagement ( $F = 426.939$ ,  $p < 0.001$ ) on Work Outcomes.
- There is a positive and significant effect of Engagement with Supervisor ( $F = 24.220$ ,  $p < 0.001$ ) on Work Outcomes.

### IX. CONCLUSION

The demographic findings show that the workforce is largely young and in the early stages of their careers. More than half of the employees (55%) are between 26 and 35 years of age, while 85% are male and 81% are married. A majority (58%) belong to the workers category, 55% have completed PUC, and 53% have less than five years of work experience. This indicates the presence of a relatively young and less

experienced workforce, highlighting the need for proper guidance, support, and opportunities for employee involvement.

The results clearly show that Work Engagement has a positive and significant effect on Work Outcomes ( $F = 276.225$ ,  $p < 0.001$ ). This means that employees who are more involved and enthusiastic about their work are more likely to achieve better work outcomes. It also suggests that creating an environment where employees feel motivated and connected to their work can improve their contribution to the organization.

Similarly, Emotional Engagement has a significant positive effect on Work Outcomes ( $F = 183.951$ ,  $p < 0.001$ ). Employees who feel emotionally connected to their work are more likely to show greater interest, commitment, and involvement, which ultimately contributes to better outcomes.

The findings also reveal a positive and significant effect of Social Engagement on Work Outcomes ( $F = 426.939$ ,  $p < 0.001$ ). This indicates that good relationships with colleagues, teamwork, communication, and a sense of belonging at the workplace can encourage employees to perform better. Among the reported results, Social Engagement has the highest F-value, showing a particularly strong statistical relationship with Work Outcomes.

Further, Engagement with Supervisor has a positive and significant effect on Work Outcomes ( $F = 24.220$ ,  $p < 0.001$ ). This suggests that employees who receive support, guidance, feedback, and encouragement from their supervisors are more likely to perform effectively. Although its F-value is comparatively lower than the other engagement dimensions, the relationship is still statistically significant.

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