

# The Effect of Team Interdependence on the Relationship Between Locus of Control and Work Performance in the Manufacturing Industry Around Pune

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**Abstract** - The research paper aims at exploring how an individual's perceptions of team interdependence influence the relationship between employee's locus of control (LOC) and their job performance in manufacturing firms. Team interdependence signifies the intensity to which an individual member of the team depends on others in the team to achieve objectives and perform deliverables. It's a reflection of the interconnectedness in roles, responsibilities, and workflows within a team, signifying the impact of individual team members contributions on overall team performance. Locus of control indicates the strength to which individuals believe having control over events in their lives, and their outcomes and achievements. It plays a significant role in building individual work performance. The findings of this study reveal that the individual's perceptions of team interdependence play a moderating the role between an employee's locus of control and their performance. Employees who perceive high levels of team interdependence shows a weaker positive correlation whilst, employees who perceive lower team interdependence demonstrate a stronger positive correlation between the employee locus of control and their performance, indicating when employee perform better when have an internal locus of control as compared to those with an external locus of control in a lower team interdependence scenario. This variation may be justified by perceived helplessness and effort expectancy. Employees with lower belief of team interdependence are more likely to believe having greater individual influence over results enhancing their effort and thus performance. On the contrary, employees with greater perceived team interdependence feel reduced individual influence or control over outcomes, thus resulting in lowering of their performance. This study emphasizes the role of perception of team interdependence in shaping the relationship between locus of control and job performance. It emphasizes the need for further research into factors such as collective locus of control, to identify strategies for improving individual and organizational performance.

**Keywords:** Team Interdependence, Locus of Control (LOC), Work Performance, Workplace, Internal Locus of Control (Internals), External Locus of Control (Externals)

## I. INTRODUCTION

In the year 1962, Maharashtra Industrial Development Corporation (MIDC) have significantly influenced Pune's industrial growth. By building and developing the various industrial zones along with the essential infrastructure like electricity, water, and road, MIDC catalysed developing a conducive environment for the growth of manufacturing sectors in and around Pune. These initiatives attracted domestic as well as international investments, resulting in the establishment of innumerable manufacturing units and factories. As time passed by, Pune grew to become a hub for various manufacturers, including many European and American companies establishing their global operations.

Prominent industrial areas such as Bhosari, Chakan, Chinchwad, the Old Mumbai-Pune Highway, Pirangut, Ranjangaon, Hinjawadi, Talegaon-Kanhe, Talawade, Jejuri, and Urse have emerged as key manufacturing zones. Pune is particularly renowned for its automotive and automotive-ancillary industries, hosting production facilities for major players like Tata Motors, Jaguar Land Rover, Mahindra & Mahindra, Skoda-Volkswagen, Mercedes-Benz, Fiat-Nissan, Force Motors, JCB, and Bajaj Auto in areas like Chinchwad, Talegaon, and Chakan. (Indian Express, 2017). Kirloskar Pumps Limited is India's leading manufacturer and exporter of pumps and is located in Pune. Pune is also home to Asia's largest infrastructure project contracting company. (Indian Pumps and Valves, 2018). Bharat Forge, a key entity of the Kalyani Group, is headquartered in Pune and boasts the world's biggest forging facility at a single location (Bharat Forge – National Presence, 2022). The company features completely automatic forging press lines along with the latest and one of the best tooling and machining capabilities. (CNBC-TV18, 2009). Bajaj Auto, globally the fourth-highest producer of two and three-wheelers by volume and a leading exporter of two-wheelers, is headquartered in Pune. (Autocar India, 2013). The Serum Institute of India, globally one of the biggest vaccine manufacturers by volume, is headquartered

in Pune and ranks as the fifth largest globally (Economic Times, 2015). The manufacturing sector is continually evolving, driven by increasing competition that requires organizations to adapt to changing market conditions (Raghav & Sunita, 2024; Indian Pumps and Valves, 2017). To thrive in this dynamic environment, companies must focus on acquiring, developing, and valuing their workforce. By investing in employee growth and well-being, organizations can build a competitive advantage and ensure long-term success.

Team interdependence signifies the extent to which team members depend on one another to accomplish shared objectives and perform tasks (Sun, 2024). It reflects the interconnected roles, responsibilities, and workflows within a team, emphasizing the impact of individual contributions on overall team outcomes. Team performance is shaped by various factors, including task interdependence and team identity. A high degree of task interdependence builds a strong collective identity, which motivates individuals to cooperate, collaborate, and display high resilience. During times of challenge a strong team identity enhances and encourages problem-solving and persistence (Fakhari, 2014). However, excessive interdependence may result in overly rigid teams thereby, hindering collaboration due to ambiguity, over-reliance and resource sharing (Widianto et al., 2024).

Conceptually Locus of Control (LOC), is bifurcated into internal and external, and has garnered considerable attention over the past few decades. LOC indicates to the magnitude to which an individual believes he/she has an influence or control the outcomes of events that affect one's life and destiny. (Thomas, et al., 2006). Individuals with an internal LOC has a belief system of having autonomy and power to influence their environment. They have an outlook of their actions, efforts, and behaviors as directly impacting the outcomes, thus taking responsibility for their successes and failures based on their own decisions, abilities, and actions. In contrast, those with an external LOC have a belief system that they have limited or no control over their surroundings. They attribute their experiences to outside factors such as fate, luck, other individuals, groups or environmental circumstances, feeling that events are beyond their control and their fate is shaped by forces outside themselves (Spector et al., 2002; Martin et al., 2005).

The relationship between Team Interdependence, Locus of Control, and individual work performance can be understood through the lens of learned helplessness theory and control theory (Mansour, 2024). Learned helplessness theory suggests that individuals who frequently encounter failures or setbacks may develop a belief in their inability to control outcomes. This belief can lead to demotivation and, in some cases, even borderline depression. As a result, these individuals may decrease their focus and effort, ultimately slowing down or halting their attempts to achieve goals or engage in certain behaviors (Brockner & Guare, 1983). Therefore, externals are more prone to experience motivational deficits and exhibit symptoms of helplessness

when faced with particularly challenging or difficult situations (Peterson & Seligman, 1984). As a result, they are likely to display low levels of performance and a lack of focus on achieving outcomes.

LOC influences employee job satisfaction. Employees with an internal LOC tend to report greater job satisfaction levels in comparison to those with an external LOC. Most studies have highlighted a positive correlation between LOC and employee job satisfaction (Gangai et al., 2016). Job satisfaction is closely linked to work performance. When employees feel content with their jobs, it typically results in better individual performance. (Mahajan & Kaur, 2012).

## II. LITERATURE SURVEY

Task interdependence is an important concept in organizational behavior and team dynamics, it resembles the extent the team members are dependent on one another other for the completion of their work. In evolved workplaces, where teamwork is critical, effective management of task interdependence will have significant impact on both the individual and the team performance. It exists in various forms like pooled interdependence, which requires coordination but allows individual autonomy, secondly, sequential interdependence involving tasks to be completed in a specific sequence or order, and thirdly reciprocal interdependence which involves a continual interaction and input exchange. The highest level of interdependence, which is comprehensive interdependence, requires a constant coordination to a higher order and high amount of conflict resolution, which fosters creativity but demands significant effort (Shi et. al., 2023). Task interdependence interacts with goal and outcome interdependence to determine team performance and team dynamics. Aligning team members goals is essential to minimize conflicts and improve cohesion when team members rely on each other. Goal interdependence aligns the individual efforts directed toward shared goals and objectives. Task interdependence catalyzes a mutually supportive environment, while goal interdependence builds the spirit of cooperation or competition. Cooperative goal interdependence builds mutual collaboration and support, while competitive goal interdependence limits trust, collaboration and team spirit. In addition, inter-group interdependence determines as to how a team's success impacts other teams or in organization context other departments, influencing team goals and its alignment with the organizational strategy. Both the intra-team and the inter-team interdependence plays an important role in building team dynamics and thus job satisfaction, and overall performance. By promoting cooperative goal interdependence, organizations can improve both the individual and the collective satisfaction, thus resulting in more effective teams and better organizational deliveries (Van Der Vegt et al., 2001; Sindhuja Sankarashwari & Sujith Kumar, 2015).

The Theory of Cooperation and Competition, evolved in the mid-20th century, explores interpersonal and intergroup dynamics and influence of it by cooperation and competition

between teams and team-members. It lays emphasis on the relationships between cooperative or competitive goals on behaviors, attitudes, and the success of individuals and explores their interactions. Cooperative goals, which involve working toward a shared objective fosters trust, mutual respect, collaboration and shared ownership for problem-solving, leading to solidarity, results achievement and overall positive outcomes. On the contrary, the competitive goals of outperforming each-other, moreover results in negative outcomes like lack of trust, hostility, and unhealthy conflicts. Cooperation tends to lead building a conducive and mutually winning scenario, while competition leads to building of a zero-sum situations or destructive scenarios. It also lays emphasis on both the situational and the individual factors which influence whether individuals shall adopt a cooperative or competitive approach towards a given situation. Perceived competition or collaboration arising from situation, plays an important role, while personal traits, values, and experiences determines one's orientation toward favoring towards cooperation or competition. The key in both the scenarios is effective communication. Open communication on positive note promotes collaboration and trust, while gaps in communication or negative communication can aggregate building competition and conflict. The theory has a widespread application across various areas like education and business, where cooperative environments tend to positively build teamwork, trust, and performance, while competitive environments lead to conflict and burnout (Morton Deutsch, 1949).

Groupthink can significantly impact individual performance (The Independent. London, 2008). It can have both positive as well as negative influencing group dynamics. It leads to the suppression of different opinions from the group, and creates conformity pressures, and stunts critical thinking. This reduces individual contributions and creativity. In groupthink, individuals may feel pressured to conform, stifling their ability to share ideas or challenge assumptions, thus hindering personal motivation and engagement. This results in lower individual performance and reduced innovation. However, in certain situations, groupthink may offer short-term benefits by promoting quick decision-making during high-pressure scenarios, though this is often at the cost of long-term success. The pressure to conform and lack of critical evaluation prevent personal development, undermine creativity, and hinder problem-solving, ultimately affecting both the individual growth and the group effectiveness. Additionally, mind guards within groupthink protect consensus and limit access to full information which further compromises individual performance (Hart; 1991).

The concept of locus of control was conceptualized and first coined within the theoretical framework of social learning. Rotter, (1996) initially conceptualized this as a personality attribute and used it (Paul't Hart, 1991). Locus of Control, as defined by him, refers to belief in oneself about the reasons for the outcomes in one's life, including experiences, feelings, rewards, recognition, achievements, or failures.

These outcomes can be attributed to various factors such as personal actions, efforts, and behaviors, or to external influences like associations, family and friends, luck, fate, upbringing, environment, inheritance, market conditions, and bureaucracy—factors that are often beyond an individual's control (Solmus, 2004: 196). LOC points out one's confidence in one's capabilities to control or influence events (Strauser et al., 2002). Locus of control is defined as the degree or extent an individual believes that they control their own destiny or life events (Thomas, et al., 2006), an attribute of one's persona that governs in general individual expectancies that positively control outcomes, results and reinforces in their life (Spector & O'Connell et al., 1994). One's belief in one's abilities to control life events is conceptualized as Locus of control (Strauser et al., 2002). LOC is further conceptualized as the extent to which an individual believes they have control or influence over the events in their life. It reflects the degree to which a person feels responsible for bringing about favorable or unfavorable outcomes (Sardogan et al., 2006). LOC is connected to an individual belief system regarding the factors influencing their life events, such as achievements, rewards, success, or failures. These attributions may be linked to external factors like luck, fate, or chance, as well as to the individual's perspective on life and situations, which forms an integral part of their overall attitude (Sesen & Basim, 2012).

The construct of LOC is a dimension that has a dichotomy between, internal LOC and external LOC. For internal LOC the individuals have a belief system that they control and define and are thus masters of their destiny which results in them exhibiting behaviors that are backed by confidence, assertion, alertness, forthcoming and active in putting conscious effort to attempt influence and control their external environment. They tend to connect strongly between their actions and the results and see consequences as a direct result of their acts (Thomas et al., 2006). Individuals with an internal LOC respond more actively to change in their environment, believing these changes help shape their future actions and behaviors. In contrast to externals, internals are more engaged and enthusiastic about environmental shifts, as they attribute their successes, failures, strengths, and weaknesses to their abilities and efforts (Solmus, 2004).

In contrast, ones with an external LOC have an external belief they have little or no influence over their achievements, failures, or destiny. They tend to adopt passive or non-assertive roles with respect to the external elements. (Thomas et al., 2006). This belief leads externals to attribute outcomes to external factors such as fate, luck, or chance. They view success, failure, or results as determined by forces beyond their control. Additionally, externals may perceive their environment as influenced by powerful, uncontrollable forces. Individuals who believe that their actions or life events are primarily shaped by external factors, rather than their efforts, are classified as having an external Locus of Control. (Rotter, 1990).

Work LOC represents the attribution of LOC to work where an employee extends attributes of rewards, recognitions and goal achievement at work to their knowledge, competencies, skills, work practices, efforts, actions, and behaviors. For internals the work locus of control shall have a belief that “employees who achieve their work perform levels and fulfill their work or tasks well will generally be rewarded” Additionally “If people make adequate efforts, they will grow to be capable of their job responsibilities (Spector & O'Connell, 1994). Work-related Locus of Control is centered on achieving outcomes in the workplace, including incentives, recognition, promotions, performance bonuses, salary increases, career advancement, and various job-related perks and benefits (Spector & O'Connell, 1994). Individuals with an internal work LOC have a belief that their behaviors directly influence their outcomes and rewards at work. As a result, they are more likely to perform well, leading to productive results such as career growth, achievements, salary increases, or promotions. In contrast, those having external work LOC attribute their job successes to outside factors like luck, chance, or destiny. (Muhonen & Torkelson, 2004).

An individual's LOC plays an important role in influencing their performance outcomes in the workplace. It has been seen through various research there exists a direct relationship between work LOC and critical job outcomes, like job satisfaction and individual performance. Studies on work LOC have highlighted the critical and strong relation between individual perception of job control and workplace stressors which includes role conflict and role ambiguity. These findings highlight the importance of impact of LOC in determining employee experiences and effectiveness at workplace (Thomas et al. 2006). Differentiating initiative performance and compliant performance has been a subject of research in area of work LOC. The initiative performance involves exceeding the basic job requirements and displaying initiative-based behavior, it involves going beyond defined or implied work responsibilities. In contrast, compliant performance consists of strictly adhering to the specified job activities or requirements without an effort to exceed expectations. There is a positive correlation between work LOC and compliant performance, while an inverse relationship between work LOC and initiative performance. Studies indicate that employees having internal work LOC tend to engage to a greater degree in initiative performance, whereas those with an external work LOC are more inclined toward compliant performance. This highlights the significant influence of work LOC on overall productivity. (Blau, 1994).

### III. RESEARCH METHODOLOGY

The research employs an exploratory approach to examine how individual perceptions of team interdependence influence the relationship between employees' locus of control and workplace performance. Accordingly, a research design that is descriptive in nature will be used for this research. The objective of the research shall be as follows,

1. To understand the concept of team interdependence in the workplace and theoretical framework and its application.
2. To understand the concept of LOC in theory and its usage.
3. To understand if employee LOC has any importance and impact in the workplace.
4. Study the nature and distribution of employees based on their perception of team interdependence in the workplace.
5. To explore any relationship exists between the LOC and the employee work performance.
6. To understand if team interdependence has any influence on the relationship between LOC and individual work performance. (as shown in fig. 1)

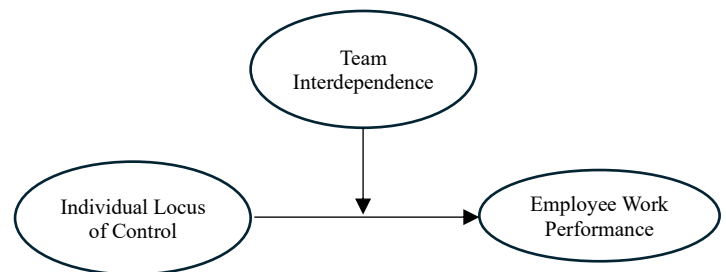


Fig. 1 Influence of Team Interdependence on Locus of Control and Employee Work performance

The scope of the research is confined to the manufacturing sector in and around Pune. The study utilizes both the secondary and the primary data. Primary data was directly collected by the researcher, and secondary data includes insights and conclusions derived from previous studies. A total of 146 participants were selected from manufacturing sites in the region using convenience sampling methodology.

For primary data collection, questionnaires were employed to assess team interdependence, and a standardized instrument was modified and used to measure locus of control. These tools were administered directly by the researcher, with assistance from Human Resource and Operations representatives from the organizations. Employee performance ratings were provided by the Operations team in consultation with Human Resource representatives. To ensure consistency, ground rules for performance ratings and reviews were established before collecting the data.

The secondary data was gathered from a variety of physical and digital resources, including both the published and the unpublished materials. These resources consist of books, journals, articles, periodicals, magazines, online news columns, and other digital platforms.

The researcher has a questionnaire consisting of the following questions to measure the individual perception of task interdependence.

1. There is a strong dependence on team members for work completion and goal achievement.
2. I am dependent on other team members to complete my tasks.

3. My team members are dependent on me to complete their tasks.
4. The team shows a very high commitment to working together with each other for the achievement of Job.

A balanced Likert scale was used for the measurement of the feedback on the above questions from 1 to 6 moving from disagreement of a stronger degree to agreement of a stronger degree.

The researcher has adapted the Locus of Control Scale originally developed by Rotter, (1996). The original scale comprised twenty-nine items, but the first item was excluded, and items eight, fourteen, and twenty-four were modified. Additionally, items nineteen and twenty-seven were disregarded for scoring purposes. As a result, the modified scale included twenty-eight items designed to evaluate control beliefs. The scale was inversely scored, with higher scores indicating an internal LOC and lower scores reflecting an external LOC.

Employee performance was assessed based on four key areas: quantity of output, quality of output, teamwork, and attitude toward work. A consolidated rating was assigned using a Likert scale ranging from 1 to 5, where 1 represented low performance and 5 indicated high performance. Employees tenured in the current role for less than 12 months were excluded, as they were in the initial phase of skill development and job assimilation.

The collected data was then converted to digital form and compiled. It was further systematically coded for analysis. MS Excel and SPSS were utilized widely for processing and analyzing the cleaned data. Descriptive statistical tools, such as frequency tables, percentages, distribution graphs, and scatter plots, were used to interpret the results. Regression analysis, including ANOVA, was conducted to determine the potential relationships between LOC and employee work performance. The findings from these analyses laid the foundation for understanding and exploring the connection between an individual's LOC and their workplace performance.

#### IV. DATA ANALYSIS & DATA INTERPRETATION

This part deep-dives in analysis and interpretation of the primary data which was collected from the participant and organization and focusing on the relationship between employees' LOC and their work performance. The data for measuring individual perceptions of team interdependence (hereafter referred to as team interdependence), LOC, and employee performance was gathered by a set of questions administered on the participants which forms the primary data source.

Data was collected using the same questionnaire from two groups: employees, to assess their scores on team interdependence and locus of control, and their supervisors, in collaboration with human resource representatives, who provided performance ratings for the employees. The survey

involved a total of 146 employees, whose performance was subsequently evaluated by their supervisors with input from human resources. The statistical findings, presented in this section, were derived using both the descriptive and the inferential statistical methods. MS Excel and SPSS software were employed for the data analysis.

A summary of the data obtained from respondent employees has been reported as below;

TABLE I LEVELS OF TEAM INTERDEPENDENCE AMONG RESPONDENTS

Team Interdependence	Description	Frequency	Percentage	Mean
21 and Above	High Team Interdependence	68	46.6%	21.9
19-20	Moderately High Team Interdependence	33	22.6%	19.5
19-15	Moderately Low Team Interdependence	45	30.8%	16.8
14 and Below	Low Team Interdependence	0	0%	NA
<b>TOTAL</b>		<b>146</b>	<b>100.0%</b>	<b>19.8</b>

As shown in Table I, the data indicate that 46.6.5% of employees have High Team Interdependence whilst 52.6% in the moderate range of Team Interdependence, there are no employees are in the range of Low Team Interdependence this emphasizes for the working of a team, there is a need for mutual working to be effective in the organization.

TABLE II LEVELS OF INTERNAL AND EXTERNAL AMONG RESPONDENTS

Locus Of Control	Description	Frequency	Percentage	Mean LOC
Above 22	High Internals	26	17.8%	23.9
18-22	Moderate Internals	57	39.0%	19.85
13-17	Moderate Externals	47	32.2%	15.4
12 and Below	High Externals	16	11.0%	10.8
<b>TOTAL</b>		<b>146</b>	<b>100.0%</b>	<b>18.2</b>

The data as shown in Table II indicates that 17.8% of employees are High Internal whilst 11% of the employees are High Externals, whilst the majority of 71.2% of the employees are in the range of moderate internal or moderate external, which is moreover inline with the distribution of normalcy, thus explaining the normalized distribution of performance that most organizations experience.

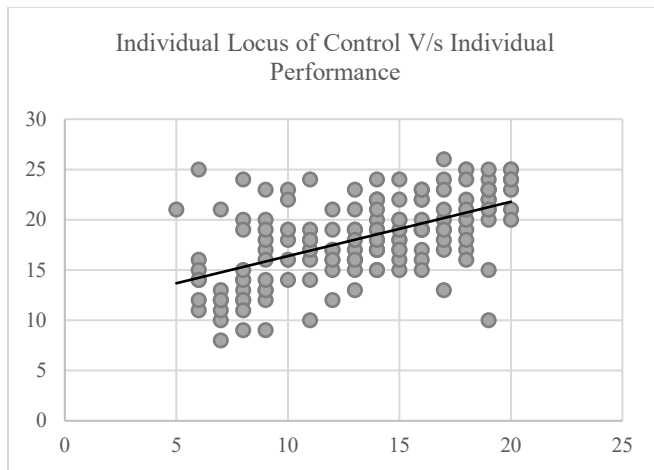
TABLE III LEVELS OF PERFORMANCE OF EMPLOYEE AS PER RATINGS FROM SUPERVISORS

Appraisal Rating	Description	Frequency	Percentage	Mean Performance
16 and above	High Performer	50	34.2%	17.9
12 to 15	Moderate Above Average	45	30.8%	13.7
8 to 11	Moderate Below Average	36	24.7%	9.3
7 and below	Low Performers	15	10.3%	6.4
<b>TOTAL</b>		<b>146</b>	<b>100.0%</b>	<b>13.3</b>

As mentioned in Table III, it indicates that 34.2% of employees are High Performance and 10.3% of the employees are low performer, which is in line with the

mannerisms of performance rating given by supervisors across the industry whilst the majority of 55.5% of the employees are in the range of moderate performance which is moreover inline to the distribution of normalcy and thus explaining the normalized distribution of performance that most organizations experience.

To analyze the relationship between an individual's Locus of Control (LOC) and Task performance, a scatter plot was created to visually represent this association as shown in Graph 1.



Graph 1 Employee Locus of Control V/s Employee Performance plot

Graph 1 suggests a positive relationship, indicating that as the LOC scores increase, performance ratings also tend to improve. This implies that employees with an internal LOC generally demonstrate higher work performance compared to those with an external LOC.

To further investigate this relationship, a detailed regression analysis was conducted to statistically evaluate and quantify the connection, as outlined below.

TABLE IV REGRESSION STATISTICS BETWEEN LOC AND WORK PERFORMANCE

Regression Statistics	
Multiple R	0.54
R Square	0.30
Adjusted R Square	0.30
Standard Error	3.51
Observations	146

TABLE V ANOVA TEST RELATIONSHIP BETWEEN LOC AND WORK PERFORMANCE

	Df	SS	MS	F	Significance F
Regression	1	753.9	753.9	60.94	0.00
Residual	144	1781.5	12.37		
Total	145	2535.5			

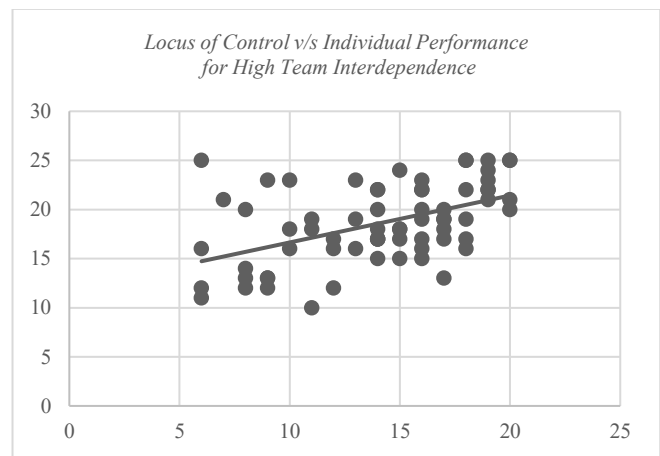
TABLE VI COEFFICIENT AND P-VALUE FOR REGRESSION BETWEEN LOC AND WORK PERFORMANCE

	Coefficients	Standard Error	t Stat	P-value
Intercept	3.29	1.31	2.50	0.01
LOC	0.55	0.07	7.80	0.00

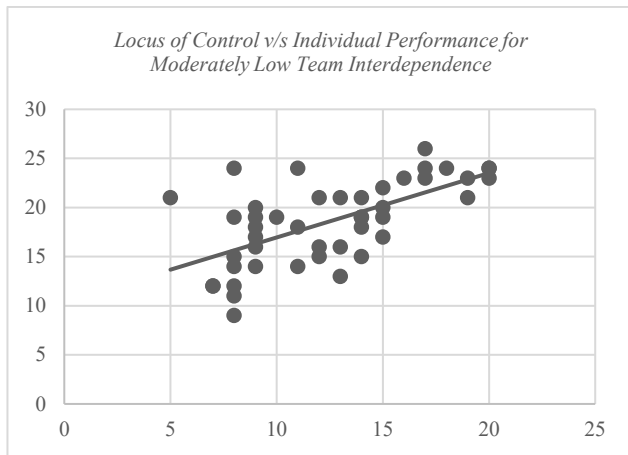
The data in Table IV, proves a positive correlation (Multiple R; 0.54) between LOC and Employee Performance. The R-squared value of 0.30, significantly explains the variation in employee performance against the Individual Locus of Control. As shown in Table V, the F-value is 60.94 which indicated that the model is statistically significant, meaning that the Individual LOC explains a significant portion of the variance in the Individual Work performance. The SS (Sum of Squares) score is large for Residual (SS=1781.5) as compared to Regression (SS=753.9) which indicates there exists other variables that also play an influence in explaining the variation in the relationship. Referring Table VI, the P value (0.00) is very low which explains there exists a significant correlation between the employee LOC and employee work performance. The coefficient value is 0.55 which explains a big part of the model where locus of control is used to predict the employee work performance. This model inferences that, employees with a higher score of LOC in this case a higher degree of Internal LOC have a higher probability of having a higher employee work performance rating in comparison to the employees with a lower score of LOC or having higher degree of external LOC. Therefore, it implies that employees with internal LOC scores or internals having higher LOC score have a higher employee work performance in comparison with externals with lower LOC scored employees who exhibit a lower work performance.

To understand the effect of Individual perception of Team Interdependence on the relationship between LOC and Work performance, a separate scatter plot analysis and regression analysis was run by the researcher on all three groups that are High Team Interdependence, Moderately High Team Interdependence and Moderately Low Team Interdependence.

To analyze the relationship between an individual's Locus of Control (LOC) and Task Performance, a scatter plot was created to visually represent this association.



Graph 2: Locus of Control v/s Individual Performance for High Team Interdependence



Graph 3: Locus of Control v/s Individual Performance for Moderately Low Team Interdependence

The plot suggests closer distribution from the trend line for LOC scores v/s individual performance ratings for Individuals in Low Interdependence scenario shown in graph 3, as compared to Individuals with High Interdependence scenarios shown in graph 2. This indicates that the relation between locus of control and employee performance weakens as Team Interdependence increases (Rotter, 1966).

Post this the scores obtained for these three groups were subjected to regression and the values of regression in comparison were tabulated and compared for further better understanding of the comparator and the effect of individual perception of Team Interdependence on the relationship between the Locus of Control and the Individual work performance was determined.

TABLE VII COMPARISON OF REGRESSION STATISTICS BETWEEN LOC AND WORK PERFORMANCE FOR ALL THREE GROUPS

Regression Statistics					
		Observations	Multiple R	Adjusted R Square	Standard Error
Moderately Low Team Interdependence	LOC	45	0.63	0.39	3.21
Moderately High Team Interdependence	LOC	33	0.56	0.30	3.63
High Team Interdependence	LOC	68	0.49	0.23	3.59

The data in table VII shows a positive correlation between LOC and Employee Performance for all three groups, however, the group with Moderately Low Team Interdependence shows a strong positive correlation (Multiple R; 0.63) whereas the Group with High Team Interdependence shows a weak positive correlation (Multiple R, 0.49). The group in the middle with Moderately High Team Interdependence shows a high positive correlation (Multiple R, 0.56) which lies in between the intervals. For the Moderately Low Team Interdependence, the Adjusted R-value and Standard Error (Adj R-value = 0.39, SE=3.21) as compared to the group with High Team Interdependence (Adj R-value=0.23, SE=3.59) indicates that Moderately Low

Team Interdependence group shows a higher predictability and relationship between the Individual LOC and the Work Performance.

TABLE VIII COMPARISON OF COEFFICIENT AND P-VALUE FOR REGRESSION BETWEEN LOC AND WORK PERFORMANCE FOR ALL THREE GROUPS

		SS	Coefficients	t Stat	P-value
Moderately Low Team Interdependence	LOC	381.06	0.61	5.36	0.00
Moderately High Team Interdependence	LOC	296.45	0.58	3.77	0.00
High Team Interdependence	LOC	269.54	0.50	4.57	0.00

The table VIII shows, coefficient value of group with Moderately Low Team Interdependence (0.61), Moderately High team Interdependence (0.58), and High team Interdependence (0.50) that explains a big part of variation of the model where the locus of control is used to predict the employee work performance for the group with moderately low interdependence is much higher than for the group where the employee perception of high team interdependence exists. The P-value (0.00) in all the cases is low which indicates the significance of the relationship between Individual LOC and Employee performance (Bajaj Group India et al., 2022).

The above is an indication that there is a positive relationship between Individual Employee LOC and work performance however as the individual's perception of Team Interdependence increases the relationship between LOC and work performance weakens. This infers, a higher degree of Internal LOC has a higher probability of having a higher employee work performance in individual roles however as the employee works in teams and team interdependence increases the probability reduces (Gerben et al., 2001). Therefore, an implication can be drawn that employee's with internal LOC scores or internals having higher LOC scores have higher employee work performance in lower team interdependence roles in comparison with higher team interdependence roles.

### Key Findings of the Research

1. Team interdependence is crucial in team dynamics, task-interdependence is defined as how members rely on each other to complete tasks. It ranges from minimal coordination to constant interaction, influencing performance and cohesion. Goal dependence plays an important role in team interdependence. Cooperative goal interdependence can build trust and collaboration, while competitive goals may enhance doubt and conflict. The Theory of Cooperation and Competition emphasizes the significance of cooperative goals in promoting trust and positive outcomes, whereas competition often leads to unhealthy conflict. Groupthink results in conformity and suppressed dissent, suppresses innovation and creativity whilst limiting individual contributions. Although it may help

- quick decisions in high-pressure situation but may cost expensive in long-term success.
2. The concept of locus of control (LOC), introduced by Rotter in 1996 is grounded in social learning theory. It describes a personality trait two contrasting perspectives of the same band or continuum: internal and external. People with an internal LOC believe they have substantial control and influence over their lives, attributing outcomes like success, failure, and personal achievements to their own actions and decisions. On the other hand, people with external LOC perceive external factors like chance, environmental conditions, or others as the primary determinants of their outcomes. This sense of control and influence or lack of it, shapes an individual's outlook. Studies show individuals having predominantly internal LOC often experience higher degrees of achievement, satisfaction, and happiness as compared to individuals with a more external orientation.
  3. An individual's LOC is positively related with various job factors such as job satisfaction, employee commitment, and organizational commitment. These factors, in turn, positively influence overall performance. The relation between LOC and performance is explained by the concept and theory of learned helplessness and the theory of control. Employees with an internal LOC are often more proactive, exceeding job expectations and taking initiative in their roles. In contrast, those with an external LOC typically exhibit a more compliant and task-oriented approach to performance.
  4. In the manufacturing sector, in particular, there is a significant degree of team interdependence, as successful operations often rely on seamless coordination and cooperation among team members. The data reveals that 46.6% of employees demonstrate high levels of perception of team interdependence, while 52.6% fall within the moderate range. Notably, no employees were categorized as having low team interdependence. This highlights the organization's strong emphasis on teamwork and underscores the importance of fostering effective collaboration in the teams.
  5. An analysis of employee locus of control (LOC) within a sample from Pune revealed that 11% of employees exhibit external LOC, 17.8% demonstrate internal LOC, and the majority (72.2%) fall within a moderate range, forming a balanced spectrum between the two extremes. A detailed examination of the relationship between employee LOC and work performance indicated a significant positive correlation. The correlation coefficient (Multiple R) was 0.55, with a regression coefficient of 0.55 and a low p-value (0.00), signifying statistical significance. These findings suggest that employees with a stronger internal LOC achieve better work performance, while a high external LOC is associated with a lower work performance.

6. The data reveals the strength of the correlation between LOC and performance varies depending on the level of team interdependence as shown in fig. 1. The individuals with moderately low team interdependence show a strong positive correlation (Multiple R = 0.63), while individuals with high team interdependence show a weaker correlation (Multiple R = 0.49). The regression coefficients further explain the relationships: the group with moderately low team interdependence has the highest coefficient (0.61), while the high team interdependence group has the lowest (0.50). A low p-value (0.00) indicates statistical significance. The findings suggest the relationship between LOC and work performance weakens as team interdependence increases. Specifically, individuals with a stronger internal LOC tend to perform better in roles with lower team interdependence. As team interdependence rises, the correlation between individual LOC and performance diminishes.

## V. CONCLUSION

The study investigates and establishes the influence of team interdependence on the relationship between individual LOC and individual work performance. Findings indicate in manufacturing setup all employees have a perception of team interdependence. The findings indicate that there is a significant positive relation between LOC and work performance, the employee with a higher degree of internal LOC perform better as compared to employees with a lower degree of internal LOC or a higher degree of external LOC. By using regression analysis, it is observed that team interdependence plays an important role in influencing this relationship between LOC and work performance, the relationship between LOC and work performance weakens as the individual perception of team interdependence increases which indicates that the probability of the internals delivering better work performance will be higher in individual jobs and as their work interdependence increases on the team this probability weakens. This is also supported by previous studies wherein the mix or balanced locus of control is preferred for individuals working in teams so that they have an advantage of both the sides for performing, decision-making, satisfaction, inclusion, belonging, motivation, and assertion while overcoming shortcomings to identify conflict and resource sharing.

## LIMITATIONS OF THE RESEARCH

One of the significant challenges in this research was data collection, as it required employees to complete a questionnaire. Ensuring equal representation was particularly difficult when collecting data from shop floor employees who had limited access to the internet or email. Additionally, given the sensitive nature of the information collected and the research being conducted on organizational premises, there was a potential risk of bias. However, all necessary measures were taken to minimize this risk.

The study was limited to organizations in the Pune area, with a sample size of 146 employees. This relatively small sample size restricts the ability to generalize the findings across the entire manufacturing sector or to regions beyond Pune. Furthermore, as the research focused solely on the manufacturing sector, its applicability to other industries or sectors is limited.

### RECOMMENDATIONS

1. The study indicates that team interdependency and LOC are important constructs in social learning theory. A lot of future awareness of this concept of team interdependency and LOC is required. Understanding the dichotomy of individuals with internal LOC versus the individuals with external LOC is required as they relate differently to reinforcements and have different belief systems, however, only having this understanding is not enough and the role of team interdependency in this relationship is important. The relationship between Locus of Control (LOC) and employee performance, varies with the degree of team interdependence. A detailed understanding of this is required to maximize employee performance.
2. In the manufacturing sector, team interdependence plays a crucial role, with a significant portion of employees perceiving moderate to high levels of interdependence. No employees were identified as having low interdependence, emphasizing the organization's focus on teamwork and the importance of fostering effective collaboration among team members. Identifying employees with a higher internal LOC is essential for developing leadership pipelines, enhancing talent retention, and strengthening organizational performance. However just selecting employees by performance alone in a team interdependent environment would lead to a non-holistic selection so, understanding the needs and belief systems of employees and their team interdependency, is important for tailoring approaches to support their engagement and effectiveness. These efforts can help address root causes and implement strategies to build a more resilient organization.
3. As the organization is continually searching for ways to enhance the performance of their employees and in return the performance of the entire organization, steps may be taken for their employees to develop a strong internal locus of control and moderate the influence of individual perception of team interdependency whilst maintaining the benefits of team is important. Counselling, self-awareness, and training may be given to develop employees along with environment control and motivation this will have a cascading effect on improving individual performance and thus contribute significantly to organizational objective achievement.
4. The effect of team interdependence on the relationship between the employee locus of control and employee performance needs to be studied across other sectors of industries like commercial, IT, ITES, banking and finance, retail, etc, and in broad geographical areas and cultures need to be studied. This shall help in understanding the differential performance of employees and selecting, recruiting, and redeploying employees in appropriate roles to maximize their performance, satisfaction, and commitment to the organization. This detailed understanding shall become one of the foundation pillars for defining and building jobs and developing incumbent specifications.
5. Individual locus of control may not be an effective construct to explain the employee behavior or motivation when it comes for working in teams, especially with high team interdependence. There is a need to a parallel construct that may be effective or equivalent to individual locus of control employee working in team, where the individual attribution that shall be to the individual work teams or outside which may include fate, luck, others (apart from team members) or other teams. A construct which shall be the collective locus of control for individual towards the work team. Research must be done on that front which can be used or referred to when improving individual performance, motivation, satisfaction, or other results.

### REFERENCES

- [1] Bajaj Group India – Bajaj Group of Companies – Profile of Bajaj Group of Companies – Bajaj Group History. (2007). [lloveindia.com](http://lloveindia.com).
- [2] Bharat Forge – National Presence. (2022). [bharatforge.com](http://bharatforge.com).
- [3] Blau, G. (1994). Testing a two-dimensional measure of job search behavior. *Organizational behavior and human decision processes*, 59(2), 288-312.
- [4] Brockner, J., & Guare, J. (1983). Improving the performance of low self-esteem individuals: An attributional approach. *Academy of Management Journal*, 26(4), 642-656.
- [5] CNBC-TV18. (2009). Kirloskar Brothers restructure group.
- [6] Fakhari, M. (2014). Relationship of Organizational culture, Teamwork and Job satisfaction in interprofessional teams. *International Academic Journal of Science and Engineering*, 1(2), 36-44.
- [7] Gangai, K. N., Mahakud, G. C., & Sharma, V. (2016). Association between locus of control and job satisfaction in employees: A critical review. *The International Journal of Indian Psychology*, 3(2), 56-68.
- [8] Indian Pumps and Valves. (2018). Pump Industry in India – Overview, Market, Manufacturers, Opportunities.
- [9] Mahajan, N., & Kaur, J. (2012). Relation between locus of control of college teachers and their job satisfaction. *International Journal of Applied Psychology*, 2(5), 98-103.
- [10] Mansour, R. (2024). A Conceptual Framework for Team Personality Layout, Operational, and Visionary Management in Online Teams. *Global Perspectives in Management*, 2(4), 1-7.
- [11] Martin, R., Thomas, G., Charles, K., Epitropaki, O., & McNamara, R. (2005). The role of leader-member exchanges in mediating the relationship between locus of control and work reactions. *Journal of Occupational and Organizational Psychology*, 78(1), 141-147.
- [12] Morton Deutsch. (1949). *The Theory of Cooperation and Competition*. SAGE Social Science Collections.
- [13] Muhonen, T., & Torkelson, E. (2004). Work locus of control and its relationship to health and job satisfaction from a gender perspective. *Stress and health: journal of the international society for the investigation of stress*, 20(1), 21-28.

- [14] Ng, T. W., Sorensen, K. L., & Eby, L. T. (2006). Locus of control at work: a meta-analysis. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 27(8), 1057-1087.
- [15] Paul't Hart. (1991). Irving L. Janis' victims of groupthink. *Political Psychology*, 247-278.
- [16] Peterson, C., & Seligman, M. E. (1984). Causal explanations as a risk factor for depression: theory and evidence. *Psychological review*, 91(3), 347.
- [17] Raghav, K., & Sunita, R. (2024). Advanced Material Selection and Structural Design for Sustainable Manufacturing of Automotive Components. *Association Journal of Interdisciplinary Technics in Engineering Mechanics*, 2(3), 30-34.
- [18] Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological monographs: General and applied*, 80(1), 1-28. <https://psycnet.apa.org/doi/10.1037/h0092976>
- [19] Sardogan, E. M., Kaygusuz, C., & Karahan, T. F. (2006). A human relations skills training program, university students' locus of control levels. *Mersin University Journal of the Faculty of Education*, 2(2), 184-194.
- [20] Sesen, H., & Basim, N. H. (2012). Impact of satisfaction and commitment on teachers' organizational citizenship. *Educational Psychology*, 32(4), 475-491.
- [21] Sindhuja Sankarashwari, C., & Sujith Kumar, S. (2015). Active Power Filter Performance at Distribution Level with Power Quality Improvement. *International Journal of Advances in Engineering and Emerging Technology*, 6(3), 62-71.
- [22] Spector, P. E., & O'Connell, B. J. (1994). The contribution of personality traits, negative affectivity, locus of control and Type A to the subsequent reports of job stressors and job strains. *Journal of Occupational and Organizational psychology*, 67(1), 1-12.
- [23] Spector, P. E., Cooper, C. L., Sanchez, J. I., O'Driscoll, M., Sparks, K., Bernin, P., ... & Yu, S. (2002). Locus of control and well-being at work: how generalizable are western findings?. *Academy of management journal*, 45(2), 453-466.
- [24] Strauser, D. R., Ketz, K., & Keim, J. (2002). The relationship between self-efficacy, locus of control and work personality. *Journal of Rehabilitation*, 68(1).
- [25] Sun, N. (2024). Investigating the Mediating Role of Team Communication in the Relationship between Leadership Style and Team Performance in AI-based Interaction Systems Development. *Journal of Internet Services and Information Security*, 14(4), 144-162. <https://doi.org/10.58346/JISIS.2024.14.008>
- [26] The Independent. London. (2008). The boom is over in Detroit. But now India has its own motor city.
- [27] The Indian Express. (2017). Journey from auto hub to Industry 4.0 in Pune.
- [28] Van der Vegt, G. S., Emans, B. J., & Van De Vliert, E. (2001). Patterns of interdependence in work teams: A two-level investigation of the relations with job and team satisfaction. *Personnel Psychology*, 54(1), 51-69.
- [29] Widiyanto, S., Abdul Sahib, H. M., & Rahman, M. F. W. (2024). Task Interdependence, Team Identity and Team Performance: A Bottom-Up Multilevel Model. *SAGE Open*, 14(1), 21582440241237874. <https://doi.org/10.1177/21582440241237874>