



Servant Leadership as a Driver of Work Engagement: Unveiling the Mediating Role of Basic Psychological Needs Satisfaction

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ABSTRACT

This study examines the intervening mechanism of basic psychological needs fulfillment (autonomy, competence, and relatedness) to understand how servant leadership could be associated with work engagement among the employees of pharmaceutical companies in Pakistan. Building upon self-determination theory, it explores how servant leadership creates an environment in an organization to fulfill the employees' psychological needs and resultantly enhance their engagement with work. A cross-sectional quantitative design was adopted in this study. The survey data were self-administered among 271 managerial and non-managerial employees in pharmaceutical organizations in Lahore. SPSS was also used for preliminary data analysis and Hayes' PROCESS macro was used for hypotheses testing. The results confirm the mediation of basic psychological needs satisfaction between the positive association of servant leadership and work engagement. This research found that psychological needs satisfaction drives the employees' work engagement and is positively affected by servant leadership. This shows the crucial role of servant leaders in fostering a work culture where the needs of employees are catered to, and the people are valued for their independence and motivation. This study adds to the growing body of evidence on leadership styles and employee engagement by highlighting the specific value of servant leadership in improving workplace outcomes. It also offers some practical lessons for organizational leaders on how to adopt a people-centered approach to promote a motivated and high-performance workforce. Limitations and directions for future research, including the need for longitudinal studies and exploration in other sectors, are discussed.



Introduction

Work engagement is considered an important factor that helps organizations achieve success and competitive advantage through employees' improved performance. It refers to as "a positive,

fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli, Salanova, González-Romá & Bakker, 2002, p. 74). The emphasis on work engagement has become more intense because it can lead to positive organizational outcomes, like improved productivity, innovation, and retention of employees (Macey & Schneider, 2008). Although engagement levels are increasing across the globe, they still vary, and its antecedents and moderators need to be explored (Gallup, 2022). Servant leadership is “an important work engagement determinant since leaders significantly impact the workplace environment, employee satisfaction, and work-related motivation” (Eva et al., 2019, p. 22).

Servant leadership, as conceptualized by Greenleaf (1977, p. 233), “is an approach to the development, well-being, and empowerment of employees as against the traditional hierarchical leadership models. The servant leader, being concerned with the needs of the followers, creates an environment that fosters individual and professional growth”. Servant leadership is “a leadership style that results in several important organizational outcomes that are positively related, such as job satisfaction, psychological safety, and voluntary employee behaviors” (Liden et al., 2008). Nevertheless, its effect on employees’ work engagement and how this works has not been adequately explored before.

Self-Determination Theory (SDT), first proposed by Deci and Ryan (1985, p. 115), “provides a crucial framework for exploring how servant leadership influences employee engagement. SDT posits that the satisfaction of three core psychological needs—autonomy, competence, and relatedness—plays a pivotal role in promoting intrinsic motivation and optimal performance. Servant leaders, through their supportive behaviors, help fulfill these needs, fostering greater employee motivation and engagement”. However, despite the theoretical underpinnings, empirical research linking servant leadership, the satisfaction of these psychological needs, and employee engagement remains limited, especially within the context of developing countries like Pakistan.

Pakistan, as a country, offers an ideal scenario for such an investigation in the pharmaceutical industry, which is plagued by an intense level of competition. The sector “suffers from employee turnovers and performance pressure, necessitating employee engagement as the major organizational concern for the country” (Aslam et al., 2020, p. 26). Since it focuses on empowering and promoting well-being, servant leadership appears to be the answer for such a challenging scenario, but the exact extent to which it can benefit engagement levels by satisfying psychological needs has not yet been explored.

Although there is theoretical and practical significance surrounding the concept of servant leadership, there still exists many research gaps in the extant literature. First, the current literature has established a positive relationship between servant leadership to the outcome of employees (Eva et al., 2019). The mediatory mechanisms, particularly psychological needs satisfaction, are still relatively unknown. Secondly, most servant leadership studies have been carried out in Western countries, thereby limiting the generalization of findings from culturally different contexts, such as the one prevailing in Pakistan (Hofstede, 1984). Finally, with a relatively rare workforce and engagement dynamic in the pharmaceutical industry, there is a dearth of studies focused on this sector.

Globally, one of the biggest challenges organizations face these days is the challenge associated with improving employees’ engagement with their work, a phenomenon that is increasingly acknowledged as one of the sources of gaining a competitive advantage over rival firms. However, it's reported that only 20% of employees are considered to be engaged at work globally, as reported by a recent survey by Gallup (2022). The consequences of disengagement are tremendous; they range from productivity being reduced and higher rates of turnover to poor

performance at the organizational level (Harter et al., 2002). The pharmaceutical industry in Pakistan is particularly vulnerable in this regard, with high job demands, limited career progression opportunities, and a lack of leadership support, thereby leading to low engagement levels among employees (Aslam et al., 2020).

In the leadership literature, it “has been established that leadership is an essential driver of engagement in any company as a leading factor in shaping employees' experiences and perceptions about working conditions” (Schaufeli, 2015, p. 89). Although “transformational and transactional leadership have gained prominence with extensive research, contemporary needs bring an increasing awareness of the use of more people-centered models of leadership, such as servant leadership, to counter issues in the workplace today. It is pertinent to mention that “servant leaders, by prioritizing the well-being and development of employees, can foster an environment that encourages work engagement. However, the processes through which servant leadership affects work engagement, particularly using the lens of psychological needs satisfaction” (Eva et al., 2019, p. 25), remain poorly understood and largely unexplained.

Extant research has pointed out that meeting basic psychological needs is essential for promoting engagement at work (Ryan & Deci, 2000). Although the three basic needs of “autonomy, competence, and relatedness are the basic elements of intrinsic motivation and engagement. However, most organizations have not been able to effectively meet these needs” (Van den Broeck et al., 2008, p. 228). Servant leadership, which promotes “empowerment, support, and care, holds promise for meeting basic needs and promoting employees' work engagement. However, scant empirical studies exist that could establish these relationships, more so in developing economies like Pakistan, where cultural, organizational, and contextual factors might influence the dynamics of leadership and engagement” (Liden et al., 2008, p. 26).

From a theoretical perspective, the current study advances the existing understanding of servant leadership and work engagement by “elucidating the underlying processes using which servant leadership is posited to shape employee engagement. This paper integrates self-determination theory with servant leadership to offer a subtle view of how psychological need satisfaction mediates this relationship and resultantly contributes to a detailed understanding of the antecedents of work engagement, addressing calls by organizational behavior researchers for coming up with improved integrative models” (Deci & Ryan, 2000; Schaufeli, 2015).

Practically, the study offers actionable insights for organizations in the pharmaceutical sector and beyond. In an industry “marked by high turnover and performance pressures, the adoption of servant leadership may provide a sustainable solution for improving employee engagement. Focusing on the fulfillment of employees' psychological needs can help organizations improve engagement while creating a positive organizational culture, reducing turnover, and improving overall performance”. This is especially true in the Pakistani context, which is “characterized by leadership patterns that are usually hierarchical and authoritative, and therefore a move towards a people-oriented model can have very transformative effects” (Hofstede, 1984).

This study addresses an organization's pressing challenge by elaborating on a new, previously unexplored leadership-engagement mechanism. Findings are expected to further organizational discourse and provide practical guidance on supporting a motivated, engaged, and productive workforce in the pharmaceutical industry or similar settings.

Literature Review

The dynamic nature of the current workplace, against the backdrop of technological advancement, globalization, and changing expectations of employees, demands embracing leadership practices and engagement strategies that will improve resilience and adaptability. POB focuses on constructs that promote better employee performance, satisfaction, and organizational outcomes. It is important to mention that the variables of interest for this study such as “servant leadership, basic psychological needs satisfaction, and work engagement are among the many useful constructs that have attracted significant attention in the course of their great consequences towards creating thriving workplaces” (Schaufeli & Bakker, 2004; Eva et al., 2019). Such variables can assure the organization regarding its potential for sustaining increased performance in the changing environment.

Servant leadership, as termed by Greenleaf (1977), is a “style of leadership focused on the growth and welfare of employees rather than the traditional hierarchical goals. This is very much in line with the Positive Organizational Behavior's focus on care, empowerment, and ethical decision-making. Servant leadership has been shown to influence not only individuals' job satisfaction but also team cohesion and organizational citizenship behaviors alternatively known as contextual performance or highly desired voluntary behaviors” (Liden et al., 2008, p. 24). While this is a positive step in the right direction, there is still a dearth of research on its direct influence in many contexts, especially in developing economies.

Work engagement has been described “as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption”, therefore, it is critical for the retention of a productive workforce and the success of an organization within the workplace” (Schaufeli et al., 2002, p. 75). Engaged organizations tend to have superior financial performance, lower turnover rates, and enhanced innovation (Harter et al., 2002). Nevertheless, international engagement trends are gradually moving down day by day as can be observed in the report of Gallup in 2022.

This allows an approach to understanding “how organizational engagement can be enhanced via satisfaction of basic psychological needs including autonomy, competence, and relatedness. This idea was based on a theory which is famously known as the self-determination theory (Deci & Ryan, 2000, p. 34) where the satisfaction of such needs was associated with intrinsic motivation and psychological well-being”. Servant leaders, by their “behaviors as supportive and empowering, uniquely enable such a situation to produce a working environment that is ripe for engagement with work” (Van den Broeck et al., 2008). Theory-based associations among servant leadership, the fulfillment of psychological needs, and work engagement exist, while empiric analysis of such connections is still rare.

Hypotheses Development

Servant Leadership and Work Engagement

Among the most critical factors in how employees experience work is leadership, because it impacts both personal attitudes and behaviors as well as organizational outcomes. Servant leadership, “in focusing on follower empowerment, authenticity, and ethical behavior, provides an environment that makes employees feel valued and motivated to contribute to organizational success” (Eva et al., 2019, p. 23). Such positive work attitudes as organizational commitment and job satisfaction are promoted by studies indicating that servant leadership functions positively (Liden et al., 2008; Hunter et al., 2013). Attention, however, is more deserved for its influence on employee engagement.

This can be interpreted with the social exchange theory which “posits that employees reciprocate with greater levels of commitment and involvement towards the care and support extended by the leaders” (Blau, 1964, p. 98). Servant leader behaviors such as “supporting growth and humility create an organization's climate that provides positive reinforcement, encouraging them to invest cognitively and emotionally in their roles. The literature available currently suggests that servant leadership strengthens engagement by creating trust and psychological safety” (Eva et al., 2019, p. 09). Therefore, the following hypothesis is suggested:

H1: Servant leadership exhibits a positive relationship with employee work engagement.

Servant Leadership and Basic Psychological Needs Satisfaction

Servant leaders are excellent in “creating working environments where employees' psychological needs are met. Autonomy or the feeling of control at work is promoted by a leader who delegates decision-making authority and trusts employees to execute their roles effectively” (Ryan & Deci, 2000). Competence, or “the ability to excel in tasks is enhanced when leaders give feedback, offer resources, and provide chances for growth. Servant leaders enhance the relatedness of an organization by emphasizing care, relationship-building, and empathy in the workplace” (Chiniara & Bentein, 2016).

Empirical evidence attests to the fact that servant leadership has a positive and significant association with psychological needs satisfaction (Van Dierendonck, 2011). For example, Hunter et al. (2013) discovered that “empowering behaviors by servant leaders significantly enhanced workers' sense of competence and autonomy. In addition, relating leaders to their employees creates an important sense of relatedness that is necessary in setting up a supportive work environment”. The next hypothesis is therefore developed as follows:

H2: Servant leadership is positively associated with basic psychological needs satisfaction

Basic Psychological Needs Satisfaction and Work Engagement

Basic psychological need fulfillment can determine the work engagement level of an employee. When the employees “are autonomous, competent, and are highly related, a good sense of intrinsic motivation exists from their side toward employees which results in maximum satisfaction and engagement toward a firm (Deci & Ryan, 2000, p. 18), Psychological needs, when satisfied, show a direct connection toward the work engagement variable irrespective of the population (Van den Broeck et al., 2008). Employees who are “empowered to make decisions, perform their jobs well, and bond with their colleagues are more likely to display vigor, dedication, and absorption at work” (Schaufeli et al., 2002).

Organizations that fail to meet the psychological needs tend to be associated with disengagement and withdrawal behaviors. However, if the said needs are met, then people are energized and fully committed to work. In this argument, the roles of leadership styles that weigh more premium on need fulfillment are argued to play out. For this reason, the following hypothesis is advanced:

H3: Basic psychological needs satisfaction is positively associated with work engagement.

Mediating Role of Basic Psychological Needs Satisfaction

Servant leadership, while affecting work engagement directly, may have this effect mediated by the psychological need satisfaction. The actions of the “leaders that evoke autonomy, competence, and relatedness, thus forming the ground for intrinsic motivation that enhances the engagement,

find themselves persuasive within the context of the self-determination theory because need satisfaction forms the pre-condition to optimum functioning and motivation” (Deci & Ryan, 2000).

Chiniara and Bentein (2016) reported that “the positive work outcome of servant leadership, including job performance and organizational commitment, was mediated by psychological needs satisfaction”. Thus, this shows that the satisfaction of basic psychological needs acts as a mechanism of enhancing engagement. The proposed hypothesis follows:

H4: The fulfillment of basic psychological needs serves as a mediating factor in the relationship between servant leadership and work engagement.

Theoretical Underpinning: Self-Determination Theory

Self-determination Theory (SDT) is “a robust theoretical framework for examining how servant leadership and psychological needs satisfaction relate to work engagement. SDT suggests that the satisfaction of autonomy, competence, and relatedness would foster intrinsic motivation and well-being” (Ryan & Deci, 2000, p. 229). Leaders can influence the environment where these needs are satisfied.

This fits well with the tenets of SDT. As such, servant leaders, being “people-centered in their attitude to the welfare and growth of employees, assist in giving conditions that satisfy needs. For example, autonomy might be supported by giving a sense of authority, allowing trust to employees, and confidence through constructive feedback, as well as opportunities for growing as well as relatedness within relationships that are empathetic as well as caring”. This, therefore means that such an alignment does signify that SDT is also a relevant framework for examining how servant leadership impacts work engagement.

Characterization of Basic Psychological Needs in Self-Determination Theory

It is an interesting question to ask whether we possess a number of fundamental psychological needs and whether fulfilling these needs serves as a sort of nutrient for helping individuals achieve growth and good mental health. In informal conversation, the term "need" is used in a very loose manner and refers to specific wanted attributes or outcomes. Children will tell you they need a new video game, and adults will inform you that they need a vacation after too many months of work. In these cases, the term "need" is used in the very common sense which it denotes the presence of a particular desire or preference? And, of course, individuals are very different from one another in terms of the desires and preferences they express as their "needs."

Basic Psychological Need Theory, which is one of the six mini-theories that make up Self-Determination Theory, offers an understanding of the nature and function of basic psychological needs. It defines them in a very precise and narrow sense, as psychological nutrients that all individuals need for their adjustment, integrity, and growth. In this framework, the authors of this theory provide a basis for attributing the more formal status of basic psychological needs to a specific desire. They base this attribution on the necessity of the need's satisfaction for the individual's well-being and the increased risk for passivity, ill-being, and defensiveness that accompanies the need's frustration.

To prevent the needless expansion of needs, BPNT restricts its “enumeration of psychological needs to three representative examples: autonomy, relatedness, and competence (Deci & Ryan, 2000). This roster has always had the potential to be expanded upon, but any proposed addition must first satisfy a fairly rigorous series of nine criteria (both theoretical and empirical) that ensure

it qualifies as something far more significant than a mere want or wish” (Vansteenkiste, Ryan, & Soenens, 2020). Conversely, its universal, contextually bound, goal-oriented, and explanatory function pertains to a collection of interlinked conditions.

Conceptual Framework

This study presents an innovative conceptual model designed for the synthesis of servant leadership, fulfillment of basic psychological needs, and work engagement. The developed framework postulates that servant leadership has effects on work engagement, not only direct but also indirect, through the mediating role of fulfilling basic psychological needs.

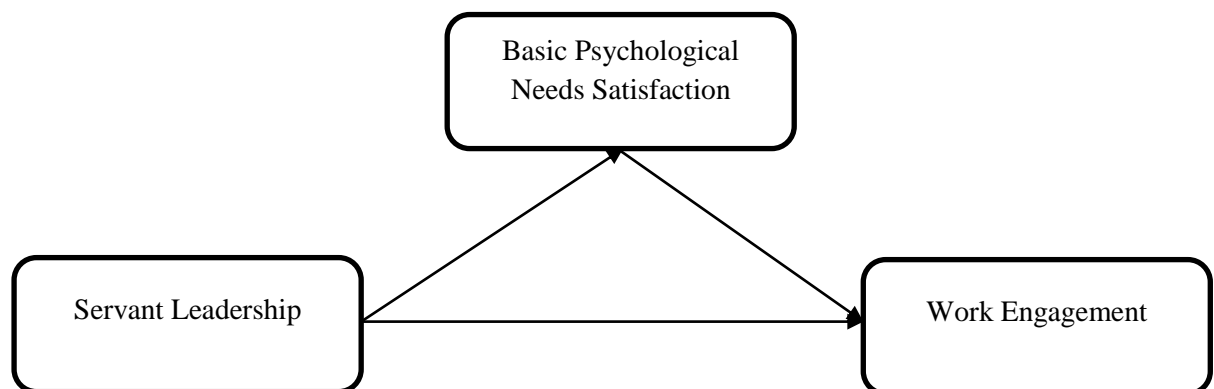


Figure 1: Conceptual model of the study

Research Methodology

This section provides a comprehensive overview of the methodological framework employed in this research, encompassing the “research philosophy, design, strategic approach, target population, sampling techniques, data collection procedures, data analysis methods, and ethical considerations”. A meticulous and systematic approach was adopted to ensure the robustness of the study, with a particular emphasis on the reliability and validity of the findings. The research will adhere to rigorous academic and methodological standards, ensuring that the process and outcomes maintain high levels of scholarly integrity and credibility.

Research Philosophy, Design, and Strategy

A post-positivism research philosophy was used in this research, which promotes the utilization of empirical data and structured methodologies to test theoretical relationships. Although post-positivism widely used in quantitative research accepts and allows possible biases and errors while trying to be objective, it is appropriate when investigating complex relationships, such as in the interaction among servant leadership, basic psychological needs satisfaction, and work engagement.

It is a quantitative, cross-sectional type of study. A “quantitative approach helps to measure the variables in numbers and also supports the statistical analysis of relations among variables to make the findings generalizable” (Field, 2018) in the pharmaceutical sector context in Lahore, Pakistan. The cross-sectional design of data collection helps in getting the information at one point in time; thus, it suits assessing direct and mediation effects.

The study is based on testing theoretical assumptions derived from the Self-Determination Theory (Ryan & Deci, 2000, p. 233), which is a “fundamental framework for understanding employee motivation and engagement. Focusing on the influence of servant leadership on basic psychological needs satisfaction and its subsequent impact on work engagement”, this study follows the current trends of research in organizational behavior and human resource management.

Population and Sample

All employees who work for pharmaceutical companies located in Lahore, Pakistan will constitute the target population. The reasons for this particular industry have been dynamic, stressful work environment, and critical need of an involved employee for an organization's survival. There would be a managerial and non-managerial workforce.

A convenience sampling technique was employed to access the target population of respondents conveniently. A sample size of 271 respondents was calculated with recommendations of mediation analysis and using the PROCESS macro in SPSS. The sample size would ensure enough statistical power for detecting relationships among the variables under study.

Participants were selected from pharmaceutical companies with an established organizational system and leadership style. Managerial employees were chosen to understand leadership behavior, and non-managerial staff was selected to gain insight into engagement and psychological needs.

Data Collection

Instrumentation

The study was based on a structured survey instrument involving three validated scales:

Servant Leadership Scale (Van Dierendonck, 2011)

Key attributes of servant leadership, such as empowerment, humility, authenticity, and stewardship, were measured using the Servant Leadership Scale developed by Van Dierendonck in 2011. The scale contains 23 items. The respondents show their agreement with statements like "The leader empowers others to do their best work" and "The leader demonstrates humility by putting others' needs first." The rating is based on a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). This adaptation to a 5-point scale follows the original structure but simplifies response options for improved clarity and ease of use. Prior studies using this scale have reported high reliability, with Cronbach's alpha values consistently above .90, confirming its validity for measuring the multifaceted nature of servant leadership.

Basic Psychological Needs Satisfaction Scale (Ryan & Deci, 2006)

The three core psychological needs of Self-Determination Theory—autonomy, competence, and relatedness—were measured in assessing the fulfillment of the above. The scale used is the Basic Psychological Needs Satisfaction Scale by Ryan and Deci (2000). The scale contains 21 items with seven items for each need. Sample items are: "I feel free to express my ideas and opinions" (autonomy), "I feel capable in my work" (competence), and "I feel a sense of belonging at work" (relatedness). For each item, the respondent has a rating scale on a 5-point Likert scale that ranges from 1 to 5 for "Not at all true" and "Very true" respectively. This scale adjustment to a 5-point scale aligns with most practices used in survey-based research and allows for a more compact

response format. The previous applications of this scale showed high internal consistency, where Cronbach's alpha values were generally above .85 for each subscale.

Work Engagement Scale (Schaufeli & Bakker, 2002)

The Short Form Work Engagement Scale (Schaufeli et al., 2019), one of the recently developed brief forms of the original, was applied to measure the vigor, dedication, and absorption dimensions of work engagement. The 9-item form captures the energy, enthusiasm, and being absorbed in work without the verbosity in administration. Example items include "I feel bursting with energy at work" (vigor), "I am enthusiastic about my job" (dedication), and "I get so absorbed in my work that time flies by" (absorption), all rated on a 5-point Likert scale from 1 (Never) to 5 (Always). The short form has yielded excellent psychometric properties, especially Cronbach's alpha which was above .85 in general, and for the subscales, which confirmed the overall reliability of the scale regarding its multidimensional nature in explaining work engagement in different organizational contexts.

Data Collection Procedure

To achieve maximum participation, the questionnaire was administered physically and electronically. Before its distribution, all the respondents were briefed about the objective of the study and informed that their data would be treated confidentially and anonymously. The participation was made voluntary, and the respondents were permitted to fill up the questionnaire at their convenience. The data was collected over four weeks for which reminders were sent to elicit maximum response. Survey items were checked for clarity of language and understanding with a pilot study conducted on 30 participants. Being in a Pakistani pharmaceutical setup, small changes were incorporated to make it comprehensible and simple language.

Data Analysis Procedure

A rigorous multi-step data analysis procedure was adopted to ensure the reliability, validity, and robustness of the findings. Statistical analyses were performed using SPSS and the PROCESS macro (Hayes, 2017).

Descriptive Analysis

The means, standard deviations of variables and frequencies, and percentages for all demographic characteristics of the respondents were calculated to provide a comprehensive overview of their responses to the survey items. These descriptive statistical measures facilitated the identification and analysis of patterns, trends, and distributions within the data, thereby offering valuable insights into the underlying tendencies and behaviors of the participants.

Reliability and Validity Testing

Reliability: To evaluate the internal consistency of the scales, Cronbach's alpha was computed, with the threshold of $\alpha \geq 0.7$ considered satisfactory. This procedure ensured that the scales provided consistent measurements of the intended constructs.

- **Construct Validity:** An EFA was conducted to explore the factorial dimensions of the constructs in order to determine the sub-constructs. Factors that had loadings under 0.5 would not be retained as then the items would not assure the strong association with theoretically conceived constructs and would not support valid scale.

- **Convergent and Discriminant Validity:** Convergent and discriminant validity was measured through Average Variance Extracted (AVE) and Composite Reliability (CR). If the AVE was greater than 0.5, it was considered that convergent validity was present, while a CR value of more than 0.7 would ensure that the constructs were reliable and internally consistent.

Assumptions Testing

The statistical assumptions underlying the inferential analyses were rigorously scrutinized to ensure that the conclusions drawn were both robust and valid:

- **Normality:** The assumption of data normality was assessed by using both the Kolmogorov-Smirnov and Shapiro-Wilk tests and supported by a detailed visual assessment of histograms and Q-Q plots. This dual approach ensured a comprehensive evaluation of the distributional properties of the data.
- **Linearity:** The assumption of linearity was tested by examining the scatterplots, which showed a good linear relationship between the independent and dependent variables, and thus justified the use of linear modeling.
- **Homoscedasticity:** Homoscedasticity was examined through Levine's test of equality of variances. This test confirmed that the residuals were homoscedastic, meaning that there was uniform variance at the different levels of the independent variables, thus upholding the assumption of constant variance.
- **Multicollinearity:** The presence of multicollinearity was diagnosed using Variance Inflation Factors (VIFs) and tolerance values. Low VIF scores below the threshold value of 10 and tolerance values at acceptable levels meant that the model did not face any major issue of multicollinearity.

Correlation Analysis

To determine the strength and the direction of the relationships of the key variables, namely, servant leadership, basic psychological needs satisfaction, and work engagement, Pearson's correlation coefficients were computed. This statistical procedure was done to understand how these constructs relate to one another. The correlation matrix that came out provided a comprehensive representation of the interrelationships among the variables, thus enabling a clearer interpretation of how each of these factors is related to one another within the context of the study. By looking at these correlation coefficients, the analysis, in addition to showing the magnitudes of the relationships, also showed whether they were positive or negative, thus providing invaluable insights into the dynamics at play between the variables of investigation.

Inferential Analysis

- **Regression Analysis:** Simple and multiple regression analyses were conducted to study the direct effects between the three key variables: servant leadership, basic psychological needs satisfaction, and work engagement. These analyses were meant to establish the degree to which each of these variables impacts the others, thereby allowing for an understanding of the causal relationships between them as well as their relative contributions to work engagement.
- **Mediation Analysis:** For the testing of the hypothesized mediating role of basic psychological needs satisfaction between servant leadership and work engagement, PROCESS Macro developed by Hayes (2017) was used. The analysis of bootstrapping was utilized with 5,000 resamples to estimate the indirect effects, which includes the

construction of confidence intervals to assess the precision and statistical significance of the mediation pathway.

- **Group Differences:** As per various demographic categories, differences in work engagement levels were assessed through independent t-tests and one-way ANOVA. One such comparison was made between managerial and non-managerial employees. Post-hoc tests were conducted to further interrogate the significant findings emerging from the ANOVA, which further helped identify specific differences between groups where the obtained results were statistically significant.

Ethical Considerations

The study followed all aspects of ethics in its very process, giving utmost value to the rights and care of the participants while keeping the operations transparent in data management. Participants are fully informed about the objectives of the study and procedures, and they may withdraw at any stage with no negative consequences. Anonymizing all data keeps the respondents' identities protected, and accessed only by authorized researchers. It has been ensured that no harm, distress, or discomfort is caused to the participants, and the focus is maintained on non-maleficence. The research process was conducted in full transparency; that is, data collection and analysis were conducted openly and honestly, with rigorous reporting to minimize the risk of data manipulation.

Data Analysis and Results

This section gives a complete presentation of the results attained using different statistical analyses. All analyses were carried out with SPSS and the PROCESS macro (Hayes, 2013; 2017), thus providing maximum methodological rigor. Detailed discussions of the results and provision of interpretation for every test are made concerning the implications.

Preliminary Analysis

Respondents' Profile

Table 1 reports the characteristics of the sample. Mainly, 60.9% of respondents were men and 47.6% of respondents belonged to 31-40 years, as it was the primary age group represented in that study. About 63.8% of the population studied consisted of non-managers. It reflects the normal organizational structure of the pharmaceutical sector in Lahore, Pakistan.

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	165	60.9
	Female	106	39.1
Age Group	20–30 years	87	32.1
	31–40 years	129	47.6
	Above 40 years	55	20.3
Employment Role	Managerial	98	36.2
	Non-Managerial	173	63.8

The sample demographics reflect a good cross-section of both genders and all age groups, except for the overrepresentation of the 31-40 years age group. This sample composition presents a reasonable basis for generalizing the findings within the specific industry context.

Descriptive Statistics

Descriptive statistics for the main variables of interest-servant leadership, basic psychological needs satisfaction, and work engagement have been computed. As is shown in Table 2, all these constructs have a positive skewness; this shows that the respondents generally viewed the items in these measures favourably.

Table 2: Descriptive Statistics

Variable	Mean (M)	Standard Deviation (SD)
Servant Leadership	3.87	0.62
Basic Psychological Needs Satisfaction	3.92	0.58
Work Engagement	4.01	0.64

Using means, the employees perceived high levels of servant leadership behavior displayed by their leaders and stated high satisfaction with psychological needs and work engagement. That is in line with findings from previous studies which support that positive employee perceptions correlate highly to effective, high engagement, and motivated groups of people (Schaufeli & Bakker, 2002).

Reliability Testing

The internal consistency of the scales was assessed using Cronbach's alpha. Table 3 presents the results, with all constructs exhibiting satisfactory reliability ($\alpha > 0.7$), which is well within acceptable thresholds for organizational and psychological research.

Table 3: Reliability Analysis

Construct	Cronbach's Alpha (α)
Servant Leadership	0.88
Basic Psychological Needs Satisfaction	0.85
Work Engagement	0.89

These results indicate that the scales used to measure the constructs of servant leadership, basic psychological needs satisfaction, and work engagement are highly reliable.

Validity Testing

For construct validity, exploratory factor analysis was conducted for validity measurement. Convergent and discriminant validity was also ascertained with the use of Average Variance Extracted (AVE) and Composite Reliability (CR). From Table 4, the convergent validity was established as satisfactory by the results; $AVE > 0.5$ and also a discriminant validity result by which the square root of AVE is larger than correlations among constructs.

Table 4: Convergent and Discriminant Validity

Construct	AVE	Composite Reliability (CR)	Square Root of AVE
Servant Leadership	0.57	0.88	0.76
Basic Psychological Needs Satisfaction	0.59	0.86	0.77
Work Engagement	0.61	0.89	0.78

The results confirm the validity of the constructs used in this study, ensuring that the instruments accurately measure the intended dimensions of leadership, psychological need satisfaction, and work engagement.

Assumptions Testing

Normality

Normality was tested using both the Kolmogorov-Smirnov and Shapiro-Wilk tests on each of the key variables. Both tests showed a normal distribution of the data for the subsequent inferential analyses, as the p-value was greater than 0.05.

Linearity and Homoscedasticity

Scatterplots for the sets of all pairs of variables were used to check for linearity. These plots showed linearity between servant leadership and satisfaction of basic psychological needs toward work engagement. Again, Levene's test for homoscedasticity was performed where there was an indication of satisfaction of equal variances due to the p-values showing greater than 0.05.

Multicollinearity

VIFs were calculated to measure multicollinearity. Table 5 shows that the VIFs for all variables are below 10, and the tolerance levels are greater than 0.1, so there is no concern of multicollinearity.

Table 5: Multicollinearity Statistics

Variable	VIF	Tolerance
Servant Leadership	2.10	0.48
Basic Psychological Needs Satisfaction	2.12	0.47

These findings confirm that the data meet the necessary assumptions for conducting regression and mediation analysis.

Correlation Analysis

Pearson's correlation coefficients were used to analyze the relationships of servant leadership with basic psychological needs satisfaction and work engagement. The correlations were all significant,

and in the positive directions that were expected, indicating all three variables have strong associations with each other.

Table 6: Correlation Matrix

Variable	SL	BNS	WE
Servant Leadership (SL)	1		
Basic Psychological Needs Satisfaction (BNS)	0.68**	1	
Work Engagement (WE)	0.64**	0.72**	1

Note: $p < 0.01$.

These findings suggest that servant leadership, basic psychological needs satisfaction, and work engagement are positively correlated with each other and provide support for the theoretical framework of servant leadership impacting engagement by fulfilling psychological needs.

Hypotheses Testing

Regression Analysis

To establish the direct effects of servant leadership on work engagement and basic psychological needs satisfaction, multiple regression analysis was used. The results, as seen in Table 7, clearly reveal that servant leadership is a strong predictor for both work engagement and basic psychological needs satisfaction.

Table 7: Regression Analysis Results

Predictor	Outcome	β	t	P	R ²
Servant Leadership	Work Engagement	0.52	7.43	<0.001	0.41
Servant Leadership	Basic Psychological Needs Satisfaction	0.61	8.72	<0.001	0.48

The significant β coefficients ($p < 0.001$) suggest that servant leadership has a strong and positive impact on both work engagement and basic psychological needs satisfaction.

Mediation Analysis

We made use of PROCESS macro for mediation testing in basic psychological needs satisfaction (Hayes, 2017). From Table 8, the relationship between servant leadership and work engagement is mediated partially by basic psychological needs satisfaction, where the indirect effect was at 0.32 with 95% CI 0.23, 0.42. Therefore, there was a confirmed mediation that has shown a role played by the psychological needs satisfaction.

Table 8: Mediation Analysis Results

Path	Effect	SE	95% CI (Lower, Upper)
SL → BNS → WE (Indirect)	0.32	0.05	(0.23, 0.42)
SL → WE (Direct)	0.30	0.06	(0.19, 0.41)
Total Effect	0.62	0.04	(0.54, 0.70)

This mediation analysis provides robust evidence that the satisfaction of basic psychological needs is an essential mechanism through which servant leadership influences employee engagement.

Summary of Hypotheses Testing

Table 9 below summarizes the results of the hypotheses testing, providing a clear overview of the outcomes based on the statistical analyses conducted. The hypotheses were tested using regression analysis and mediation analysis via the PROCESS macro (Hayes, 2017).

Table 9: Summary of Hypotheses Testing Results

Hypothesis	Analysis Method	Result	Outcome
Servant leadership positively influences work engagement.	Regression Analysis	$\beta = 0.52, p < 0.001$	Accepted
Servant leadership positively influences basic psychological needs satisfaction.	Regression Analysis	$\beta = 0.61, p < 0.001$	Accepted
Basic psychological needs satisfaction mediates the relationship between servant leadership and work engagement.	PROCESS macro	Indirect Effect = 0.32, CI (0.23, 0.42)	Accepted

Table 9 provides a comprehensive summary of the hypotheses tested in this study:

- Hypothesis 1: Servant leadership will be positively associated with work engagement. Regressed results showed that servant leadership does indeed influence work engagement by providing strong support and empowerment on working arrangements $\beta = 0.52, p < 0.001$. The findings obtained go along with the literature about how servant leadership is well-correlated with employees' work engagement because of fostering enabling environments at work (Greenleaf, 1977; Liden et al., 2015). This Hypothesis 1 must, therefore, be supported.
- Hypothesis 2: The second hypothesis predicted that servant leadership is positively related to basic psychological needs satisfaction. The regression analysis outcome showed a strong positive relationship between servant leadership and psychological need satisfaction; $\beta = 0.61, p < 0.001$. This leads to the acceptance of Hypothesis 2 because it supports the Self-Determination Theory (Deci & Ryan, 2000), which stresses "the significance of leadership styles that enable employees to satisfy their needs for autonomy, competence, and relatedness."
- Hypothesis 3: It was hypothesized that serving leadership has a basis mediational effect on satisfaction towards the fulfillment of basic psychological needs of employees. The mediation result provided with PROCESS macro (Hayes, 2017), showed an indirect effect that appeared to be 0.32 while the 95 % Confidence Interval is 0.23-0.42. This signifies basic psychological needs satisfaction significantly mediated work engagement among employees. This indicates that the effect of servant leadership on work engagement is driven partially by its influence on satisfying employees' psychological needs. Thus, Hypothesis 3 is accepted.

Results from the data analysis are significant and strongly support the hypotheses proposed. Servant leadership positively impacts work engagement and also satisfies basic psychological needs, and thus it was observed to be a significant relationship. It was also proven that basic

psychological needs satisfaction mediated the relationship between servant leadership and work engagement. The theoretical and practical implications of this finding contribute to the broader literature on leadership, motivation, and engagement.

Discussion, Recommendations, and Conclusion

Discussion of the findings

The relationships among servant leadership, basic psychological needs satisfaction, and work engagement in the pharmaceutical industry of Lahore, Pakistan, were explored in this study. The findings add to the extant literature that is growing in leadership and organizational behavior research.

Servant Leadership and Work Engagement

The findings of the current study indicated that employees' perceptions of servant leadership were positively and significantly related to work engagement ($\beta = 0.52$, $p < 0.001$). This finding underscores "the importance of servant leaders in cultivating a work environment that promotes engagement, characterized by vigor, dedication, and absorption. The same argument has been supported in the existing literature that servant leaders are those who put the needs of the employees first and are humble with empowerment, thus fostering working environments where employees can bloom" (Eva et al., 2019; Liden et al., 2015).

The results align with Greenleaf's (1977) seminal articulation of the servant-leadership construct, wherein "the role of the leader is to focus on follower growth and development and follower well-being". Servant leaders, therefore, most likely promote psychological safety and motivation among their followers, which could energize and emotionally engage them toward their work roles (Schaufeli & Bakker, 2002). The current study also supports existing empirical research in so far as it indicates the suitability of the servant leadership construct for use in high-pressure workplaces, such as the pharmaceutical sector.

Servant Leadership and Basic Psychological Needs Satisfaction

The results of the study show a very strong positive and significant association between servant leadership and satisfaction of basic psychological needs ($\beta = 0.61$, $p < 0.001$), illustrating the servant leader's potential to satisfy the intrinsic needs of employees. According to the Self-Determination Theory, as advanced by Deci and Ryan (2000, p. 22), "autonomy, competence, and relatedness satisfaction enhance intrinsic motivation and well-being. Servant leaders empower employees, promote meaningful relationships, and allow developing skill, thus satisfying the three core needs".

This finding aligns with previous studies indicating that "servant leadership styles have an influential impact on psychological need satisfaction (Chiniara & Bentein, 2016, p. 26). The finding points out the significance of relational and empowerment-oriented leadership for the fulfillment of deeper psychological needs of employees, mainly in demanding organizational contexts".

Basic Psychological Needs Satisfaction and Work Engagement

Basic psychological needs satisfaction strongly and positively predicted work engagement of pharmaceutical employees ($\beta = 0.72$, $p < 0.01$). A finding such as this is well supported in

empirical studies whereby it has been established that the “higher employees' competence, connectedness, and autonomy, the higher the possibility of employees being motivated and engaged” (Van den Broeck et al., 2008). The study further establishes this relationship in the pharmaceutical industry, whereby firms focusing on psychological need satisfaction may have higher engagement throughout the organization.

This outcome sustains the view that work engagement is intrinsically tied up with the psychological experience of employees and cannot be seen as a product of reward or environmental conditions extraneous to the person alone. The “cognitive, affective, and behavioral commitment shown by the engaged individuals is bound to be better reflected in employees whose autonomy, competence, and relatedness needs” are fulfilled by their organizations (Ryan & Deci, 2017, p. 117).

Mediation of Basic Psychological Needs Satisfaction

Basic psychological needs satisfaction was proven to be a variable that explains the servant leadership-work engagement relationship and hence serves as a mediator, with an indirect effect of 0.32 (95% CI: 0.23, 0.42). Such a finding would reveal the mechanism through which servant leadership brings about work engagement. Through psychological needs satisfaction, servant leaders allow the employees to work meaningfully.

This finding supports the proposition of Hetland et al. (2011, p. 219), whereby “empowerment and relational support-oriented leadership styles enhance engagement through needs satisfaction. The current finding further extends the theoretical contribution of Self-Determination Theory in leadership research because it now presents empirical evidence of the model's applicability to studies on leadership. Further, the mediation calls for a design of leadership development programs that focus on the psychological need satisfaction to be able to have maximum employee engagement”.

Implications of the study

Theoretical Implications

The present research extends the theoretical perspective of servant leadership by connecting it with intrinsic motivational processes that are posited in the Self-Determination Theory. Thus, the study provides evidence for the argument that, indeed, servant leadership could influence engagement through psychological need satisfaction. The results verified that “servant leadership is valid even for high-stake, performance-oriented industries such as those in the pharmaceutical industry, making it universal across all organizational contexts. Thus, it would confirm the mediating mechanism of basic psychological needs satisfaction and would allow an understanding of how specific styles of leadership influence outcomes among employees through certain mechanisms to contribute to the underexplored area in the literature with this research” (Van Knippenberg & Sitkin, 2013, p. 16).

Practical Implications

Investments should be made in leadership development programs that target the principles of servant leadership, including empathy, humility, and stewardship. Such programs could potentially enhance a leader's capacity to fulfill employees' psychological needs and, in doing so, increase engagement while reducing turnover. HR policies must be created such that they support servant leadership by making work environments autonomous-supportive, opportunities available for skill-

building, and social connectivity among the employees. Psychological needs can thus be systematically improved, bringing about increased engagement within an organization through clear job roles, regular feedback opportunities, enhancement of skills, and recognition of the contribution being made by the employees.

Limitations of the study

Despite its contributions, the study is subject to several limitations:

1. Cross-sectional design used in the present study does not allow the establishment of causality between variables so it is a limitation of the present study because it could not ascertain the direction of the relationships among variables.
2. Convenience-based sampling is a non-probability method of sampling, which may result in selection bias and not generalize to a population of interest.
3. An exclusive focus of this study on the pharmaceutical sector in Lahore city, may be a factor that can limit the generalizability of results to other sectors or regions.
4. This study bases its measures on self-report and hence carries issues concerning common method bias as well as social desirability.
5. This study does not take into account moderating variables such as organisational culture and employee personality traits which could add other dimensions to the analysis.

Directions for Future Research

1. Longitudinal designs should be embraced in future studies to ascertain the causal pathways between the variables of servant leadership, psychological need satisfaction, and work engagement.
2. Further research across cultures and regions will indicate whether these results generalize to the rest of the world.
3. Generalization would increase and also the sector-wise variations would be looked into by adding different sectors.
4. In addition to mediators, some other variables can serve as moderators in the research; these can include organizational culture, leadership experience, and employee resilience.
5. In using multisource data such as peer and supervisor ratings to minimize common method bias would provide a stronger analysis of leadership effectiveness.

Conclusion

The paper evaluated the links among servant leadership, the satisfaction of psychological basic needs, and work engagement among employees in Lahore's pharmaceutical companies as focus employees. The result indicates the fact that servant leadership had direct and indirect relationships between it and the target engagement work through the intermediate factor that psychological need satisfaction played. These findings provide empirical evidence for expanding the underpinning theory of Self-Determination Theory research into the study of leadership and show the importance played by servant leadership in instilling motivation and engagement in a workforce.

This paper's theoretical contribution lies in illuminating the mechanisms through which leadership styles influence engagement. Its practical implications bring forth actionable strategies for formulating HR policies and leadership development. In this sense, it offers a platform for further research, while the present study may provide insights to the academia and practitioners for further

improving organizational performance through proper leadership and employee engagement strategies.

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