

WINGS OF ENGAGEMENT: A PILOT STUDY ON THE IMPACT OF TRANSFORMATIONAL LEADERSHIP IN THE AVIATION INDUSTRY

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Abstract

Workers in the aviation sector are crucial to delivering the kind of positive experience customer's demand from airlines. Therefore, it is imperative that every worker constantly works to enhance the quality of their work. This research aims to better understand the connection between transformational leadership and employee engagement in the Indian aviation sector via the lens of organizational citizenship behavior and culture. Specifically, we tested experimentally our Questionnaire that will be used for final study and our first objective- to study the relationship between all variables. Five industry and subject experts ensured the questionnaire's content validity with some suggestions. In order to ensure the validity and reliability of the study instrument, the research was conducted using SPSS analytic software and a limited sample size of 53 employees. The preliminary investigation confirmed the validity of the instrument by achieving acceptable normality and getting dependable coefficients of measurements. The study confirmed the reliability of the tool used to investigate many potential causes of poor performance on the job, while suggesting some modifications for better model fit. Six items from pilot study were either replaced or modified. The pilot study served its purpose and paved way for main research.

Keywords: Transformational Leadership, Questionnaire, Employee Engagement, Culture, Organizational Citizenship Behavior, Aviation, Pilot Study

1. INTRODUCTION

In the aviation industry, which is known for its dynamic and challenging nature, employee engagement plays a vital role in achieving organizational success. Airlines and aviation companies strive to maintain high levels of operational efficiency, safety, and customer satisfaction, relying heavily on the commitment, dedication, and motivation of their employees. Therefore, understanding the factors that contribute to employee engagement within this industry becomes crucial for maintaining a competitive edge and ensuring long-term sustainability.

One such factor that has gained significant attention in organizational research is leadership style. Among the various leadership styles, transformational leadership has emerged as a dominant and influential approach in shaping employee behavior and performance. Transformational leaders inspire and motivate their subordinates by creating a vision, setting high expectations, and providing support and developmental opportunities. They foster a positive work environment, promote autonomy, and encourage innovative thinking.

The purpose of this paper is to explore the impact of transformational leadership on employee engagement within the aviation industry. The study aims to assess how the behaviors and characteristics of transformational leaders influence employee attitudes, motivation, and commitment, ultimately leading to increased engagement. By examining this relationship, the

research aims to provide valuable insights for aviation organizations and leaders seeking to enhance employee engagement and improve overall organizational outcomes.

To achieve these objectives, a pilot study was conducted to gather preliminary data and insights into the relationship between transformational leadership and employee engagement in the aviation industry. The pilot study involved a sample of employees from different aviation companies, encompassing various job roles and hierarchical levels. Through survey questionnaires, data were collected to measure employee perceptions of transformational leadership behaviors and their levels of engagement.

The findings of this pilot study will serve as a foundation for future research and contribute to the existing body of knowledge on leadership and employee engagement in the aviation industry. Understanding the specific ways in which transformational leadership influences employee engagement can empower aviation organizations to develop targeted leadership development programs, improve employee well-being, and cultivate a culture of excellence.

Overall, this paper seeks to shed light on the importance of transformational leadership in the aviation industry and its impact on employee engagement. By delving into this relationship, organizations can effectively harness the potential of their leaders to create a thriving work environment that fosters employee satisfaction, productivity, and organizational success.

2. LITERATURE REVIEW

Aviation Sector

After the United States of America (USA) and China, India's aviation market is the third largest in the world. 69% of all airplane traffic in South Asia occurs within the country itself (Vipra, 2022). The rise of disposable income and the spread of inexpensive air travel have both played major roles in the industry's average annual growth rate of 16% over the past decade. Ude Desh Ka Aam Nagrik (UDAN) Policy, which sought to improve rural connectivity, is just one example of the many government policies and activities that have contributed to the expansion of the industry (Ministry of Civil Aviation, 2016). The Ministry of Civil Aviation has plans to increase the country's airport capacity by more than five times, allowing for a billion annual journeys, as part of the Nextgen Airports for Bharat Nirman (NABH) initiative unveiled in 2018 (PIB Delhi, 2018).

Indian carriers are projected to significantly increase their fleet size to 1,100 aircraft by 2027, highlighting the industry's growth potential and the need for efficient maintenance, repair, and overhaul (MRO) services. The consistent double-digit growth in the aviation sector has led to a rise in demand for MRO facilities in India.

Indian airports are adopting the Special Economic Zone (SEZ) Aerotropolis model to boost their revenues. This model focuses on diversifying revenue streams through retail, advertising, vehicle parking, security equipment, and services, creating a holistic approach to airport development. The Government of India (GOI) has a vision to make India one of the leading air sports nations by 2030. The GOI's mission is to establish a safe, affordable, accessible,

enjoyable, and sustainable air sports ecosystem throughout the country, fostering growth and opportunities in the air sports industry. The upcoming Noida International Greenfield Airport at Jewar, Uttar Pradesh, is expected to have a transformative impact on the industrial infrastructure in the region. It is anticipated to generate employment opportunities, encourage manufacturing, and boost exports, leading to all-around development. These developments and initiatives reflect the continuous efforts to drive growth, connectivity, and sustainability within the Indian aviation industry, paving the way for a prosperous future (IBEF, 2022).

Therefore, it is of even greater importance, in view of such bright possibilities, to concentrate on features of leadership, one that can bring about high levels of engagement on the part of employees and a culture that is favourable, with a particular emphasis on the development of organisational citizenship behaviour, in order to serve as both a directing force and an actualizing force for aviation sector.

Transformational Leadership

There has been a shift in the dominant theory of leadership. Leadership can be transactional or transformative, according to the work of James Macgregor Burns (1978). Since the concept originated from an ideation by Burns (1978), which was later extensively propagated from a conception by Bass (1985), there has been an exponential increase of TL-related studies in the previous few decades. It provides a framework for a variety of behaviours, including individualised actions and the collective vision that characterises well-planned organisational growth (Jain and Duggal, 2018; Howladar et al., 2018). TL is the capacity to inspire, push, and motivate the followers to a greater level of achievement and goals. It explains how the leader inspires followers to share their goal and how he or she uses individualised assistance to win over the respect and loyalty of those followers. Uddin et al. (2017) argue that TL changes the way its adherents think about and approach issues, leading to increased levels of anticipation. To accomplish amazing results and grow as leaders, followers need to be stimulated and inspired by transformational leaders. By reacting to the needs of their followers and providing them with opportunities for growth and development, transformational leaders encourage their subordinates to eventually take on leadership roles themselves. There is growing evidence that transformational leadership may inspire its followers to perform above and above what is anticipated, as well as increase their pleasure with the group and their loyalty to the company (Bass, 1985, Bass, B., M., & Riggio, 2006). Idealistic influence, inspiring motivation, intellectual stimulation, and personalized consideration are all characteristics of transformational leadership (Bass, B., M., & Riggio, R., 2006). With transformational leadership, followers have positive feelings towards the leader, such as trust, adoration, loyalty, and respect, and are inspired to go above and beyond their goals.

The hallmark of a really transformational leader is the capacity to affect profound shifts in the behaviour of one's followers and the company as a whole. Leaders with transformational skills may drive organisational shifts in strategy, culture, and product/service development (Daft, R., 2015). Leaders who are able to inspire their followers to greater heights of motivation and morality via genuine connection are said to be practising transformational leadership. This kind of leader cares deeply about their followers and does all in their power to help them realise

their potential (Northouse, P., 2016). Integrity and emotional acuity are hallmarks of transformational leaders. They inspire followers by articulating a compelling vision for the future. Self-aware people tend to be genuine, sympathetic, modest, and truthful. Members of a team feel motivated when their leader sets high standards and is committed to personal accountability. They know what they want and how to get there, and they're great at mediating disputes. This causes people to be very invested and productive (Kovac, H., Sirol, M., Sumanjski, 2017)

Importance of Transformational Leadership in context of Aviation Industry

Studying transformational leadership in the context of the aviation industry is important due to its impact on safety, adaptability, employee engagement, organizational performance, and talent development. Transformational leaders inspire a commitment to safety, foster adaptability in a rapidly evolving industry, and enhance employee engagement, resulting in improved job satisfaction and organizational success. Their visionary approach drives higher levels of productivity and innovation, contributing to better organizational performance. Additionally, transformational leaders prioritize talent development, attracting and retaining skilled professionals who can meet the industry's demands. Understanding and promoting transformational leadership in aviation can lead to continuous improvement and long-term success for organizations within the industry.

Employee Engagement

When workers are invested in the success of the company, they are better able to carry out the company's plan and provide desired financial outcomes (Vance, R., 2006). "Being positively present during the performance of work by willingly contributing intellectual effort, experiencing positive emotions, and meaningful connection with others," as defined by Alfes, K. et al. (2010). Work engagement is defined by Yalabik, Popaitoon, Chowne, and Rayton (2013) as "an autonomous, persistent, pervasive, positive, and fulfilling work-related, affective-cognitive and motivational-psychological state." The work often commonly referred to as the European Engagement Model (Schaufeli et al. 2006; Bakker & Demerouti 2008; Salanova & Schaufeli 2008) is congruent with this description. The Utrecht job Engagement Scale (UWES) takes this conceptualization of job engagement and operationalizes it along three separate dimensions: zeal, commitment, and immersion. The term "vigour" is used to describe an employee's amount of energy and mental toughness, as well as their desire to put out effort on the job and their tenacity in the face of adversity. An employee's level of dedication shows the degree to which he or she emotionally and psychologically identifies with the work they do and the meaning, excitement, inspiration, pride, and difficulty of that employment. The term "absorption" refers to the state of being completely engrossed in one's job to the point where one loses track of time and is unable to disconnect from it. When employees are invested in their job and the success of the company, they are more likely to be engaged. Engaged employees go above and beyond only being happy in their work or even being committed or motivated. Torrington, Hall, Taylor, and Atkinson (2014) found that highly engaged workers had a strong personal investment in their jobs and/or companies. Employee engagement may be summed up as a good and long-lasting psychological state of workers' attitudes towards

their jobs and their organisations. To get excellent performance and minimal turnover, it motivates workers to go above and beyond what is required.

Importance of Employee Engagement in context of Aviation Industry

Studying employee engagement in the aviation industry is crucial due to its impact on safety, performance, customer experience, talent retention, innovation, organizational culture, regulatory compliance, and employee well-being (Dagar.R & Sisodia.S, 2023). Engaged employees contribute to a safety culture, enhance productivity, deliver exceptional customer experiences, and foster a positive workplace atmosphere. They are more likely to stay with the organization, offer innovative solutions, adhere to regulations, and maintain a healthy work-life balance. Understanding and improving employee engagement in the aviation industry can lead to enhanced operational outcomes and long-term success for organizations in the sector.

Culture

In a group setting, people's thoughts and actions are shaped by the shared values and beliefs of the group's members (Schein, 1984). As a result, companies will have different cultures (Alves & Alves, 2015). Recent research (Boscari, Danese, & Romano, 2016) has backed up the idea that cultural influences play an important role in the business and management sphere. Management scholars have begun to pay greater attention to organisational culture in recent years for the impact it may have on a company's success (Fisher & Wilmoth, 2018). A company's culture is its established set of norms and practises. It is made up of the attitudes, morals, and convictions of the people that work there (Groysberg, Lee, Price, & Cheng, 2018). Robbins and Judge (2019) state that an organization's culture takes time to form and cultivate, as well as become ingrained in the minds of its workers. Cultural values and assumptions, according to Joseph and Kibera (2019), provide the cognitive framework for thinking and responding to inputs in the workplace. Employees' perspectives on time, the nature of human activities, and horizontal and vertical linkages across the organization's levels are all shaped by the beliefs and assumptions held by management. To what extent the firm engages with its internal and external surroundings to find answers to the firm's concerns about performance and survival in times of crisis is determined by the culture shared by most members of the organisation (Morgan & Vorhies, 2018). Rozkwitalska (2017) suggests that organisational culture plays a larger part in the innovation process than previously thought. Multinational corporations (MNCs) have the challenge of establishing a unified corporate culture by incorporating the unique traditions and values of each country in which they do business. Improving cross-cultural knowledge and interactions is essential for a multinational corporation (MNC) that is extending its commercial operations throughout the world. Expat leaders should cultivate a cosmopolitan perspective by being fluent in cross-cultural communication. Rules, authority, and commonly held values are essential indicators of organizational culture, as argued by Janz (1987). Rules provide protection for the rule user, Janz (1987) notes, but the allocation of authority and the communication of organizational ideals can vary widely from one company to the next.

Importance of Culture in context of Aviation Industry

Culture holds immense importance in the aviation industry as it profoundly shapes the values, beliefs, and behaviors within organizations. A strong culture is crucial in several aspects of the industry. Firstly, it establishes a robust safety culture where employees prioritize safety in all operations, fostering open communication, adherence to procedures, and continuous improvement. Secondly, it ensures compliance with strict regulations and standards by creating an environment that values and upholds regulatory adherence. Moreover, culture significantly impacts the customer experience, as a customer-centric culture emphasizes exceptional service, effective communication, and surpassing customer expectations. Additionally, a collaborative and teamwork-oriented culture enhances coordination among various stakeholders, leading to operational efficiency and better problem-solving capabilities. Lastly, a positive culture contributes to employee engagement and retention by prioritizing employee well-being, recognition, and growth opportunities. In essence, culture plays a vital role in shaping the aviation industry, ensuring safety, customer satisfaction, effective teamwork, and employee commitment.

Organisational Citizenship Behaviour

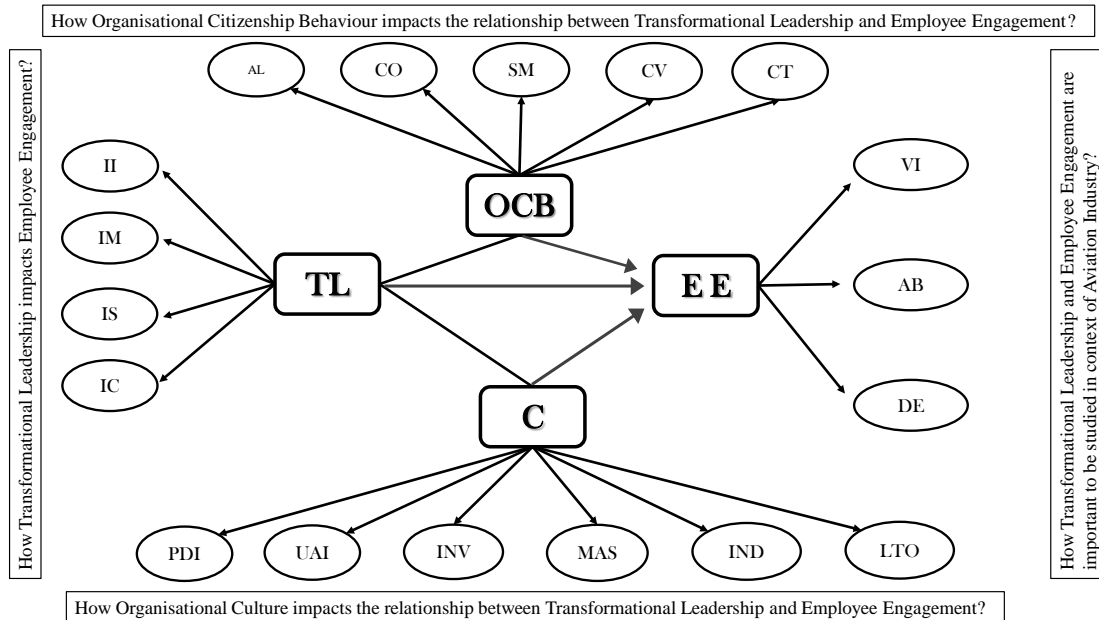
Organisational citizenship conduct was found to be crucial to an organization's success by Khan et al. (2019). Organisations must go beyond routine actions. Innovation and adaptability need actions that go beyond the requirements of standard job descriptions. Not only is unusual conduct necessary for creativity, but it's also crucial for continued existence (Pohl et al., 2019). One additional function that OCB may serve inside companies is as a system of support for collaboration in times of crisis or while implementing change (Haque et al., 2019). The performance and output of an organisation can benefit from OCB since it decreases conflict and promotes collaboration (Devece et al., 2016). Altruism, civility, cheering, peacekeeping, sportsmanship, civic virtue, and conscientiousness are all components of OCB, as outlined by Organ (1997). Public-spirited employees are more likely to help one another and work together well, which boosts productivity. The cheering, peacekeeping, and sportsmanship elements also reveal something about the character of interactions inside the workplace. Meanwhile, kindness and tact can head off misunderstandings and conflicts. Organisational Citizenship Behaviour (OCBs) are "employee behaviours that, although not critical to the task or job, serve to facilitate organisational functioning," as stated by Lee and Allen (2002, p.132).

Importance of Organisational Citizenship Behaviour in context of Aviation Industry

Organizational Citizenship Behavior (OCB) is highly important in the aviation industry as it contributes to the promotion of a strong safety culture, fosters collective responsibility among employees, and enhances customer satisfaction. Employees who exhibit OCB actively engage in safety-conscious behaviors, such as reporting hazards and adhering to safety protocols, thereby reducing the likelihood of accidents. Their commitment to going beyond their formal job roles promotes a sense of shared responsibility and teamwork, leading to a supportive work environment. Additionally, OCB positively impacts the customer experience by encouraging exceptional service and proactive problem-solving. Overall, OCB plays a crucial role in

ensuring safety, teamwork, and customer-centricity within the aviation industry.

3. CONCEPTUAL FRAMEWORK



The conceptual framework of the impact of transformational leadership on employee engagement mediated by Organizational Citizenship Behavior (OCB) and culture in the aviation industry can be outlined as follows:

1. Independent Variable: Transformational Leadership

Transformational leadership refers to a leadership style characterized by inspirational motivation, intellectual stimulation, individualized consideration, and idealized influence. In this framework, transformational leadership is the independent variable, as it is expected to have a direct impact on employee engagement.

2. Mediating Variables:

a) Organizational Citizenship Behavior (OCB):

OCB represents discretionary behaviors that employees engage in, which are not formally recognized or rewarded but contribute to the overall effectiveness and well-being of the organization. OCB is expected to mediate the relationship between transformational leadership and employee engagement. Transformational leaders are likely to inspire and motivate employees to engage in OCB, which, in turn, influences their level of engagement.

b) Organizational Culture:

Organizational culture represents the shared values, beliefs, and norms that guide behavior within an organization. It is expected to mediate the relationship between transformational

leadership and employee engagement. Transformational leaders can shape the culture by promoting values such as collaboration, innovation, and customer-centricity, which in turn influence employee engagement.

3. Dependent Variable: Employee Engagement

Employee engagement refers to the level of commitment, involvement, and enthusiasm that employees have towards their work and the organization. It is the ultimate outcome variable in this framework. Transformational leadership is expected to have a direct positive impact on employee engagement, and this relationship is hypothesized to be mediated by both OCB and organizational culture.

The proposed conceptual framework suggests that transformational leadership influences employee engagement indirectly, through its impact on OCB and organizational culture. Transformational leaders inspire and motivate employees to engage in OCB, fostering a culture that supports engagement. Ultimately, this leads to higher levels of employee engagement in the aviation industry.

4. METHODOLOGY

Rationale and Objective of Study

When measured in terms of both, economic output and number of jobs created, the aviation sector is often regarded as a powerhouse. It's a high-stakes field; therefore experts there can't afford to make any mistakes. Leadership is more important than ever in a sector as risky as this one. By doing this in-depth examination, airlines can determine the kind of leadership they need to best serve their workers.

The purpose of conducting this pilot study research on the impact of transformational leadership on employee engagement in the context of Indian aviation industry employees is multifaceted. Firstly, it serves as a feasibility assessment, allowing researchers to evaluate the practicality and viability of conducting the main study within the Indian aviation industry. This includes assessing the availability of participants, gaining access to relevant organizations, and ensuring the feasibility of data collection methods. By conducting this pilot study, researchers aim to identify any potential challenges or limitations and make necessary adjustments to enhance the overall quality and effectiveness of the main study.

Secondly, it helps researchers refine their methodologies and research instruments. It provides an opportunity to test the reliability and validity of data collection tools such as surveys, interviews, or observation protocols in the specific context of the Indian aviation industry. By gathering feedback and insights from pilot participants, researchers intend to make necessary improvements, validate the chosen research approach, and ensure that the methods align with the unique characteristics and dynamics of the industry.

Additionally, this pilot study allows researchers to familiarize themselves with the organizational and cultural nuances within the Indian aviation industry. It provides an opportunity to establish relationships, build rapport with key stakeholders, and gain a deeper

understanding of the industry's specific context. This knowledge will enable researchers to tailor their research design and data collection strategies to effectively capture the impact of transformational leadership on employee engagement within the Indian aviation industry.

Overall, the pilot study serves as a vital step in ensuring the success and relevance of the main research study.

Data Collection and Data Instrument

According to Zikmund et al. (2010), a research design is a comprehensive strategy for carrying out the research, including a detailed description of the methodologies and processes to be used in data collection and analysis.

Therefore, a quantitative approach has been used for this study, with the questionnaire serving as the major data collection instrument. In this research, a pilot study is used to develop and evaluate the questionnaire, the purposes of the pilot project were data collection, instrument validity assessment, and sample size determination

In order to collect data for this study, a well-structured questionnaire was developed and sent to people working in the aviation business. The information was collected using a stratified random sampling technique. During the course of the pilot project, the researcher provided respondents with guidance on the phrasing and interpretation of the questionnaire items. Time allotted for respondents to complete the questionnaires was taken into account throughout the preliminary study. On average, respondents spent between ten and fifteen minutes on this task.

The study's questionnaire also features a 5-point Likert scale, with 0 representing a severe disapproval and 4 representing a strong agreement. The survey was intended to be closed-ended. Experts used face validity procedures to evaluate the questionnaires for content validity before they were used. Meanwhile, Cronbach's Alpha was used to determine the dependability of the results, and it was found to be high.

Zikmund et al. (2013) recommended basing questionnaire items on conceptual findings and explanations evaluated in literature, which were then accepted and changed to meet the purpose of the study.

Table 1: Measurement Variables

Construct	No. of items	Adapted from	Scale
Transformational leadership	13	Bass, Bernard.M et al(2008); Maya.D.Vadgaonkar (2016)	0 - 4
Employee engagement	11	Schaufeli,Bakker UWES; Kavita(2020)	4
Organisational citizenship behaviour	10	Sowmiya.M (2019)	0 - 4
Culture	8	Roopali Bajaj (2019)	0 - 4

Pilot Study- Sampling Frame for Pilot Test

To create a sampling frame for a pilot study involving employees of the aviation industry, the researcher followed several steps. They identified the target population, which included various roles directly affected by leadership in the aviation industry. A comprehensive list of aviation companies was compiled, including commercial airlines, cargo carriers, maintenance

organizations, and airports. Industry associations, unions, and online directories specific to the aviation industry were also utilized to identify potential participants. Contacting aviation schools and training centers provided access to current and former students working in the industry. Ethical considerations and regulations were taken into account, and efforts were made to ensure a diverse representation of employees across different roles, experience levels, and types of organizations in order to obtain a comprehensive understanding of the industry.

Statistical analysis of pilot study

Table 2: Assessing normality of data

Variable	No.	Mean ± SD	Standard error of mean	Skewness	SE Skewness	Z Skewness	Kurtosis	SE Kurtosis	Z Kurtosis	Shapiro-Wilk		
										Statistic	df	Sig.
Culture	53	18.6 ± 5.07	.696	-.477	.327	-0.477	-.339	.644	-0.339	.960	53	.071
OCB	53	30.17 ± 5.18	0.712	0.262	0.327	0.262	-0.460	0.644	-0.460	.964	53	.115
EE	53	30 ± 4.6	.63406	-.208	0.327	-0.208	1.626	0.644	1.626	.959	53	.069

Results of **Shapiro-Wilk** normality tests (as sample size 53) for culture, OCB and Employee engagement are shown in Table 2. It is clear that for all of them p-value is greater than 0.05, which indicates normal distribution of data. The values for skewness and kurtosis are less than ±1 suggest normal distribution except for employee engagement. As the sample size is low, Z-score value less than 1.96 for skewness and kurtosis suggests normal distribution of the data.

Table 3: Descriptives

		Statistic	Std. Error	
Culture	Mean	18.6	0.69642	
	95% Confidence Interval for Mean	Lower Bound	17.2063	
		Upper Bound	20.0013	
	5% Trimmed Mean	18.7264		
	Median	20		
	Variance	25.705		
	Std. Deviation	5.07005		
	Minimum	7		
	Maximum	28		
	Range	21		
	Interquartile Range	7		
	Skewness	-0.477	0.327	
	Kurtosis	-0.339	0.644	
Organizational citizenship behaviour	Mean	30.1698	0.71259	
	95% Confidence Interval for Mean	Lower Bound	28.7399	
		Upper Bound	31.5997	
	5% Trimmed Mean	30.1751		
	Median	29		
	Variance	26.913		
	Std. Deviation	5.18777		
	Minimum	20		
	Maximum	40		
	Range	20		

Employee Engagement	Interquartile Range		7	
	Skewness		0.262	0.327
	Kurtosis		-0.46	0.644
	Mean		30	0.63406
	95% Confidence Interval for Mean	Lower Bound	28.7277	
		Upper Bound	31.2723	
	5% Trimmed Mean		30.0692	
	Median		30	
	Variance		21.308	
	Std. Deviation		4.61603	
	Minimum		18	
	Maximum		44	
	Range		26	
	Interquartile Range		5	
Skewness		-0.208	0.327	
Kurtosis		1.626	0.644	

Table 4: Tests of normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Culture	.156	53	.003	.960	53	.071
Organizational citizenship behaviour	.099	53	.200*	.964	53	.115
Employee Engagement	.123	53	.045	.959	53	.069

Normality check for Transformational Leadership;

Table 5: Descriptives

			Statistic	Std. Error		
TL_S	Mean		33.9057	1.23280		
	95% Confidence Interval for Mean	Lower Bound	31.4319			
		Upper Bound	36.3794			
	5% Trimmed Mean		34.5157			
	Median		34.0000			
	Variance		80.549			
	Std. Deviation		8.97489			
	Minimum		5.00			
	Maximum		48.00			
	Range		43.00			
	Interquartile Range		8.00			
	Skewness		-1.073	.327		
	Kurtosis		2.051	.644		
	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TL_S	.147	53	.006	.917	53	.001

a. Lilliefors Significance Correction

P value of Shapiro wilk is less than .05 indicates that the data is **not normal** for transformational leadership.

Assessing fit; Reliability, Item and Person Separation

Table 6 shows the value for person reliability, item reliability, person separation, item separation and Cronbach's alpha (KR-20) value of the present scale based on the **Rasch analysis in WINSTEPS**.

Table 6: The Value for Person Reliability, Item Reliability, Person Separation, Item Separation and Cronbach's Alpha (KR-20) Value of the Questionnaire

Statistics	Value
Cronbach's alpha (KR-20)	0.92
Person Reliability	0.90
Item Reliability	0.93
Person Separation	3.00
Item Separation	3.64

From Table 6 it can be seen that the value for person reliability is 0.90 with the person separation value of 3.00. According to Linacre (2006) and Bond & Fox (2015), value for accepting reliability in RM should be more than .50. For the person separation, the value of 3.00 is interpreted as very good, and this is supported by Krishnan and Idris (2014) stated that the person separation must be more than 1.00 suggesting that the respondents are measured across the spread. In this study, the value for item reliability is 0.93 with an item separation value of 3.64. Low-item separation i.e. less than 3 implies that the person sample is not large enough to confirm the item difficulty hierarchy (Linacre, 2011). As for the item separation value, the value of 3.64 is interpreted as good and fulfils the condition mentioned by Linacre (2003). Sumintono and Widhiarso (2015) stated that an item reliability which is higher than 0.94 is interpreted as 'excellent'. Bond and Fox stated that an item reliability value which is higher than 0.80 has a good value and is strongly acceptable. Meanwhile, Krishnan and Idris (2014) stated that an item separation value which is higher than 1.00 concludes that the items have enough spread. Moreover, the Cronbach's alpha (KR-20) value which is 0.92 indicates that the present instrument has a very good reliability of internal consistency (Sumintono & Widhiarso, 2015). Thus, this indicates that the Questionnaire is suitable for the actual research.

Table 7

No.	Constructs	No. of Items	Cronbach's Alpha	Result
1	Transformational Leadership	13	.913	Excellent
2	Employee Engagement	11	.607	Acceptable
3	Culture	10	.867	Very Good
4	Organisational Citizenship Behaviour	8	.882	Very Good
	Total		.923	Excellent

Cronbach's alpha was used to check for internal consistency in the data. For evidence of internal consistency, Nunnally (1978) proposed using an alpha of 0.70 as a bare minimum. Pallant (2001) states Alpha Cronbach's value above 0.6 is considered high reliability and acceptable index (Nunnally and Bernstein, 1994). Cronbach's Alpha readings in Table 7 are all above the threshold. These findings demonstrate that all of the components have high levels of reliability and internal consistency

Item Polarity

Item polarity is analysed to measure the construct validity. The criteria of good correlation are the values PTMEA should be greater than 0.20 (Bond & Fox, 2015). Table 8 shows there are no value of negative correlation and PTMEA of most of the items are greater than 0.20.

Table 8: Item Fit- shows the summary of item polarity analysis

Item	Measure	Infit MNSQ	Infit ZSTD	Outfit MNSQ (0.50-1.50)	Outfit ZSTD (-2.0-2.0)	PTMEA-CORR (0.40-0.85)
TL10	1.6	2.35	5.9	2.68	6.7	-.18
TL7	-0.32	0.26	-4.9	0.44	-3.2	.00
EE27	0.5	2.32	5.2	2.77	6.3	.02
EE22	2.04	2.09	4.7	2.45	5.5	.04
EE28	1.75	2.03	4.7	2.18	5.0	.06
EE29	0.85	1.5	2.5	1.75	3.4	.15
OCB33	0.32	1.4	1.9	1.44	2.0	.36
EE24	-1.42	1.12	.6	1	.1	.38
OCB35	0.12	1.01	.1	1.02	.2	.38
CUL47	0.37	1.11	.6	1.4	1.8	.39
EE25	-1.31	1.57	2.3	1.43	1.7	.39
TL13	0.12	0.86	-.7	1.93	3.6	.41
CUL40	0.03	0.83	-.8	0.89	-.5	.43
OCB34	-0.66	0.92	-.3	0.93	-.3	.44
EE26	-1.16	1.74	2.8	1.52	2.0	.44
EE21	-0.22	1.25	1.2	1.19	.9	.45
OCB31	-0.62	0.73	-1.2	0.73	-1.2	.45
OCB32	-0.62	0.78	-1.0	0.76	-1.1	.48
OCB30	0.03	0.7	-1.5	0.75	-1.2	.49
CUL43	0.29	0.79	-1.1	0.88	-.5	.52
EE23	-1.16	0.8	-.9	0.74	-1.2	.53
OCB37	-0.62	0.84	-.7	0.76	-1.1	.54
OCB36	-0.15	0.8	-.9	0.77	-1.1	.58
TL11	0.09	1.11	.6	1.06	.4	.58
EE19	-0.54	0.76	-1.1	0.74	-1.2	.59
OCB38	-0.96	0.75	-1.2	0.72	-1.3	.60
CUL42	0.59	1.02	.2	1.07	.4	.60
TL6	0	0.91	-.4	0.86	-.6	.60
EE20	-0.36	0.72	-1.3	0.68	-1.6	.61
OCB39	-0.74	0.45	-3.0	0.49	-2.8	.62
CUL44	0.57	0.84	-.8	0.88	-.6	.63
CUL45	-0.22	0.66	-1.7	0.69	-1.5	.63

TL9	0.03	0.94	-2	0.87	-6	.64
CUL46	0.15	0.62	-2.1	0.63	-2.0	.66
TL17	0.74	0.69	-1.9	0.7	-1.7	.67
CUL41	-0.22	0.76	-1.2	0.75	-1.2	.67
TL8	0.37	1.21	1.1	1.18	.9	.68
TL16	0.12	0.83	-.8	0.82	-.9	.68
TL18	0.42	0.56	-2.7	0.6	-2.3	.68
TL14	0.09	0.52	-2.8	0.51	-2.8	.68
TL12	-0.15	0.63	-1.9	0.56	-2.4	.70
TL15	0.24	0.54	-2.7	0.51	-2.9	.73

Table 8 shows the summary of item fit analysis based on the value of Infit MNSQ, Infit ZSTD, Outfit MNSQ, Outfit ZSTD and PTMEASURE CORR. Mean square (MNSQ) is used to identify misfit of the items measure Questionnaire. Table 8 shows that infit MNSQ values for all items are within the standard range of 0.6 to 1.4 suggested by Bond & Fox (2015) and ZSTD value fulfilled the range between -2 and 2 except few items. It means the items of Questionnaire fit the construct. The bold figures indicate that the items partly fulfil the criteria suggested by Boone et al. (2013). The items which fulfilled at least one of the criteria should be retained. An item is considered misfit if both infit MNSQ and outfit MNSQ > 1.5. (Sumintono and Widhiarso, 2015; Bond & Fox, 2015). Abdul Aziz et al., (2014) stated that the item is misfit if all the three criteria are out of the fit range. Thus, first 6 items were changed and removed from the instrument.

Table 9: Standardized Residual Variance (In Eigenvalue Units)

Total variance in observations	=	83.8	100.0%	100.0%
Variance explained by measures	=	41.8	49.9%	51.7%
Unexplained variance (total)	=	42.0	50.1%	100.0% 48.3%
Unexplained variance in 1st contrast	=	6.8	8.2%	16.3%
Unexplained variance in 2nd contrast	=	5.2	6.2%	12.3%
Unexplained variance in 3rd contrast	=	4.1	4.9%	9.7%
Unexplained variance in 4th contrast	=	3.2	3.8%	7.7%
Unexplained variance in 5th contrast	=	2.3	2.8%	5.5%

Based on Table 9, the value for the 'raw variance explained by measures' is 49.9%. According to Sumintono and Widhiarso (2015), a value which is equal to or higher than 50% is 'good' and it indicates that the Pilot Study Questionnaire has good evidence of uni-dimensionality, that is, the instrument undoubtedly measured the construct. Other than that, the unexplained variance for the 1st until 5th contrast is less than 10%, which falls in the ideal range value of less than 15%.

Data summarization and reduction are the fundamental goals of exploratory factor analysis, a statistical method (Tabachnick & Fidell, 2013). The authors state that the purpose of data summarization is to identify the most relevant organisational scheme for the study variables within the constraints of the identified logic factors. Contrast this with data reduction, which prunes each variable of irrelevant observations. In other words, exploratory factor analysis

(EFA) is a method for reducing a large number of questionnaire questions down to a single concept for the independent variable.

To ensure the data set was **fit for factor analysis**, we first run the **Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity**. Both assessments seek to evaluate the representativeness of a sample before drawing conclusions about the factorability of a matrix or data set (Hair et al., 2014). It is safe to infer that the factorability dataset exists if the KMO measure is more than 0.50 and Bartlett's Test of Sphericity is significant (Pallant, 2010).

After that, the underlying components were extracted using **Principal Component Analysis (PCA) with the Varimax** Rotation. To determine how many factors should be kept, principal components analysis (PCA) is used, and then the most common and appropriate orthogonal factor rotation approach, Varimax Rotation, is used to help explain the analysis of those factors (Hair et al., 2014). The authors also asserted that the varimax orthogonal method is a reliable analytic strategy for obtaining orthogonal rotation of components. Items with a loading score greater than 0.6 are kept, while those with a loading score below 0.6 are eliminated.

Factor loadings below 0.30 are often not understood; Tabachnick & Fidell (2013) claimed that this was the case. The author also showed that loadings over 0.71 are great, loadings between 0.63 and 0.55 are acceptable, loadings between 0.45 and 0.32 are fair, and loadings below 0.32 are poor.

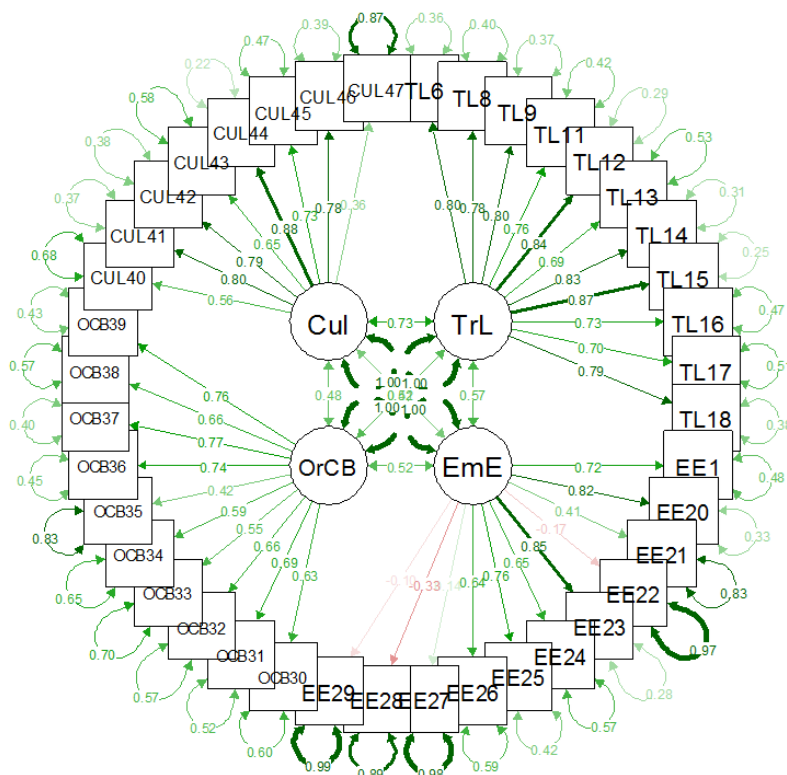
Reliability and Validity of Employee Engagement scale

The composite reliability (CR) of each construct is greater than or equal to 0.70 (Table 10) except the employee engagement factor (CR=.33), showing acceptable internal consistency of items in each scale. Modification has to be done to the employee engagement factor. We used average variance extracted (AVE) to assess convergent validity. According to Fornell and Larcker (1981), 0.4 of AVE is acceptable if the CR is higher than 0.6. The AVE of all constructs is either approximately 0.4 or above 0.5, except of Employee engagement factor, indicating not good but acceptable convergent validity. For discriminant validity, we followed Fornell and Larcker's (1981) criteria that the maximum shared variance (MSV) should be lower than AVE, and AVE should be higher than the average shared variance (ASV). Here, in case of the factor Culture, MSV is little higher than AVE which needs relook for modifications. Except that most of the constructs showed good discriminant validity.

Table 10: Construct validity (CR/AVE/MaxR (H)/MSV/ASV)

Factor	CR	AVE	MaxR(H)	MSV	ASV	TL	EE	OCB	C
TL	0.85	0.61	0.94	0.54	0.38	1			
EE	0.33	0.37	0.6	0.32	0.25	0.57	1		
OCB	0.69	0.43	0.89	0.27	0.29	0.52	0.52	1	
C	0.73	0.41	0.89	0.54	0.14	0.73	0.41	0.48	1

Figure: 1 CFA model



Analyzing CFA values involves evaluating several key indicators to assess the fit and quality of the Confirmatory Factor Analysis model.

1. Model Fit Indices:

Table 11: Model fit analysis

Factor	NPAR	CMIN	DF	p	CMIN/DF	CFI	TLI	RMSEA	SRMR
Default model	86	1504	734	0.000	2.04	0.56	0.53	0.14	0.12

Above Table suggests, model fit is acceptable, however modifications are required for a good model fit.

2. Factor Loadings: Assess the strength and significance of the relationships between the observed variables (items) and the latent factors. Generally, factor loadings above 0.3 or 0.4 are considered acceptable, with higher values indicating stronger relationships

It's important to interpret these CFA values in combination, rather than relying on a single indicator. A combination of good model fit indices, strong factor loadings, satisfactory reliability, discriminant validity, and cross-validation supports the quality and validity of the CFA model.

5. CONCLUSION

The purpose of this study was to examine the reliability and validity of the instrument that will be extensively used in the actual investigation. In conclusion, this article presents the findings of a pilot study aimed at evaluating the effectiveness of a questionnaire in measuring a specific construct. Through Confirmatory Factor Analysis (CFA), the study identified the need for modifications to six items in the questionnaire to improve its measurement properties and overall validity. The model fit indices, including the Chi-square test, CFI, TLI/NNFI, RMSEA, and SRMR, indicated a lack of good fit or suboptimal fit. These results indicated that the original questionnaire required further refinement to better capture the underlying constructs as model fit is acceptable, however modifications are required for a good model fit.

Upon examining the factor loadings, it was evident that six items displayed weak or non-significant loadings on their intended factors. This finding suggested that these items did not effectively measure the constructs of interest or were not aligned with the proposed theoretical framework. Based on the modification indices, researcher revised these problematic items and replaced to enhance the model fit and increase the accuracy of construct measurement. The modifications involved rephrasing the items, adding new items, and removing irrelevant or redundant ones.

These findings emphasized the importance of conducting pilot studies and utilizing statistical techniques such as CFA to assess the measurement properties of questionnaires before their widespread use. The identified modifications contributed to refining the questionnaire, enhancing its validity, and ensuring that it accurately captures the intended constructs. Overall, this pilot study served as an important step in the iterative process of questionnaire development, highlighting the need for modifications to improve the measurement properties and validity of the instrument. By addressing these issues, researchers could enhance the quality and accuracy of data collection, leading to more robust and reliable findings in future studies.

6. DECLARATION OF CONFLICTING INTERESTS

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References

1. Abdul-Aziz, A. R., Loh, C. L., & Jaafar, M. (2014). Malaysia's My Second Home (MM2H) Programme: An examination of Malaysia as a destination for international retirees. *Tourism Management*, 40, 203-212.
2. Airila, A., Hakanen, J. J., Schaufeli, W. B., Luukkonen, R., Punakallio, A., & Lusa, S. (2014). Are job and personal resources associated with work ability 10 years later? The mediating role of work engagement. *Work & Stress*, 28(1), 87-105.
3. Alfes, K., Truss, C., Soane, E., Rees, C., & Gatenby, M. (2010). Creating an engaged workforce: findings from the Kingston employee engagement consortium project.

4. Alves, J. R. X., & Alves, J. M. (2015). Production management model integrating the principles of lean manufacturing and sustainability supported by the cultural transformation of a company. *International Journal of Production Research*, 53(17), 5320-5333.
5. Bass, B. M. (1985). Leadership: Good, better, best. *Organizational dynamics*, 13(3), 26-40.
6. Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership*.
7. Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career development international*, 13(3), 209-223.
8. Besieux, T., Baillien, E., Verbeke, A. L., & Euwema, M. C. (2018). What goes around comes around: The mediation of corporate social responsibility in the relationship between transformational leadership and employee engagement. *Economic and Industrial Democracy*, 39(2), 249-271.
9. Bond, T., & Fox, C. (2015). *Applying the Rasch model: fundamental measurement in the human sciences*, 3 edn: Routledge
10. Bosdari, S., Danese, P., & Romano, P. (2016). Implementation of lean production in multinational corporations: A case study of the transfer process from headquarters to subsidiaries. *International Journal of Production Economics*, 176, 53-68.
11. Boone, W. J., Staver, J. R., & Yale, M. S. (2013). *Rasch analysis in the human sciences*: Springer
12. Chaudhary, R., & Sisodia, S. (2022). The Impact Of Transformational Leadership On Employee Engagement Mediated By Organisational Citizenship Behaviour And Employee Culture A Systematic Literature Review. *Journal of Positive School Psychology*, 6(8), 7178-7204.
13. Chin, T. L., Yap Peng Lok, S., & Kee Peng Kong, P. (2019). Does Transformational Leadership Influence Employee Engagement. *Global Business & Management Research*, 11(2).
14. Choudhuri, S., Dixit, R., & Tiwari, R. (2015). Issues and challenges of Indian aviation industry: a case study. *International Journal of Logistics & Supply Chain Management Perspectives*, 4(1), 1557-1562.
15. Datche, A. E., & Mukulu, E. (2015). The effects of transformational leadership on employee engagement: A survey of civil service in Kenya. *Journal issues ISSN*, 2350, 157X.
16. Daft, R. L. (2015). *Organization theory and design*. Cengage learning.
17. Dagar, R. *Navigating Crises: Leadership's Role In Fostering Employee Well-Being And Resilience*.
18. Devece, C., Palacios-Marqués, D., & Alguacil, M. P. (2016). Organizational commitment and its effects on organizational citizenship behavior in a high-unemployment environment. *Journal of Business Research*, 69(5), 1857-1861.
19. Fisher, E. M., & Wilmoth, M. C. (2018). Do I take the job?: Assessing fit with the organization. *Journal of Professional Nursing*, 34(2), 82-86.
20. Groysberg, B., Lee, J., Price, J., & Cheng, J. (2018). The leader's guide to corporate culture. *Harvard business review*, 96(1), 44-52.
21. Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European business review*, 26(2), 106-121.
22. Haque, A., Fernando, M., & Caputi, P. (2019). The relationship between responsible leadership and organisational commitment and the mediating effect of employee turnover intentions: An empirical study with Australian employees. *Journal of Business Ethics*, 156, 759-774
23. Howladar, M. H. R., Rahman, S., & Jewel, M. A. (2018). Deviant workplace behavior and job performance:

- The moderating effect of transformational leadership. Howlader, MHR Rahman, MS, & Uddin, MA,(2018). Deviant Workplace Behavior and Job Performance: The Moderating Effect of Transformational Leadership, Iranian Journal of Management Studies, 11(1), 147-183.
24. IBEF <https://commerce.gov.in/about-us/other-organisation/india-brand-equity-foundation/>
 25. Jain, P., & Duggal, T. (2018). Transformational leadership, organizational commitment, emotional intelligence and job autonomy: Empirical analysis on the moderating and mediating variables. *Management Research Review*, 41(9), 1033-1046.
 26. Janz, T. (1987). Measuring and shaping effective work cultures: Frontal assaults vs. flanking manoeuvres. *Journal of Management Development*, 6(4), 65-80.
 27. Jha, S., & Malviya, V. (2017). Impact of transformational leadership on employee engagement. *Pranjana: The Journal of Management Awareness*, 20(2), 15-19.
 28. Joseph, O. O., & Kibera, F. (2019). Organizational culture and performance: Evidence from microfinance institutions in Kenya. *SAGE open*, 9(1), 2158244019835934.
 29. Khan, N. A., Khan, A. N., & Gul, S. (2019). Relationship between perception of organizational politics and organizational citizenship behavior: testing a moderated mediation model. *Asian Business & Management*, 18, 122-141.
 30. Krishnan, S. A. R. A. S., & Idris, N. O. R. A. I. N. I. (2015). An overview of students' learning problems in hypothesis testing. *Jurnal Pendidikan Malaysia*, 40(2), 193-196.
 31. Kovac, H., Sirol, M., & Sumanjski, M. (2017). Leadership handbook. South East European Youth Network, Sarajevo, Bosnia and Herzegovina.
 32. <https://www.civilaviation.gov.in/>
 33. Larcker, D. F. (1981). The perceived importance of selected information characteristics for strategic capital budgeting decisions. *Accounting Review*, 519-538.
 34. Lee, K., & Allen, N. J. (2002). Organizational citizenship behavior and workplace deviance: the role of affect and cognitions. *Journal of applied psychology*, 87(1), 131.
 35. Linacre, A. (2003). The UK national DNA database. *The Lancet*, 361(9372), 1841-1842.
 36. Linacre, J. M. (2006). Data variance explained by Rasch measures. *Rasch Measurement Transactions*, 20(1), 1045.
 37. Linacre, J. (2011). A user's guide to Winsteps® Ministep: Rasch-model computer programs (3.72. 3). Abgerufen am, 24, 2019
 38. MacGregor, B. J. (1978). Leadership. New York, Torchbooks.
 39. Morgan, N. A., & Vorhies, D. W. (2018). The business performance outcomes of market orientation culture and behaviors. In *Innovation and strategy* (pp. 255-282). Emerald Publishing Limited.
 40. Mozammel, S., & Haan, P. (2016). Transformational leadership and employee engagement in the banking sector in Bangladesh. *The Journal of Developing Areas*, 50(6), 43-55.
 41. Muzondiwa, Y.T., Swarts, I., & Schultz, C.M. (2022). The relationship between transformational leadership, perceived organisational effectiveness and organisational culture in a selected multinational corporation in Africa. *SA Journal of Human Resource Management/SA Tydskrif vir Menslike hulpbronnbestuur*, 20(0), a1888.
 42. Nunnally, J. C. (1978). An overview of psychological measurement. *Clinical diagnosis of mental disorders: A handbook*, 97-146.

43. Nunnally JC, Bernstein IH. , Psychometric theory, 1994New YorkMcGraw-Hill
44. Organ, D. W. (1997). Organizational citizenship behavior: It's construct clean-up time. *Human performance*, 10(2), 85-97.
45. Pallant, J. (2010). *SPSS survival manual (4th ed.)*. Berkshire, England: Open University Press.
46. Pohl, S., Vonthron, A. M., & Closon, C. (2019). Human resources practices as predictors of organizational citizenship behaviour: The role of job breadth and organizational support. *Journal of Management & Organization*, 25(2), 224-238.
47. Robbins, S. P., Judge, T. A., & Vohra, N. (2019). *Organizational behaviour by pearson 18e*. Pearson Education India.
48. Rozkwitalska, M. (2017). Cognition of the multicultural work environment in multinational corporations and intercultural interaction outcomes. *Intercultural interactions in the multicultural workplace: traditional and positive organizational scholarship*, 37-51.
49. Schaufeli, W. B., & Salanova, M. (2008). 18 Enhancing work engagement through the management of human resources. *The individual in the changing working life*, 380.
50. Schein, E. H. (1984). Culture as an environmental context for careers. *Journal of Organizational Behavior*, 5(1), 71-81.
51. Squires, V. (2018). Northouse, PG (2016). *Leadership: Theory and practice* . Thousand Oaks, CA: Sage. Pages: 494. *Canadian Journal of Educational Administration and Policy*, (185).
52. Sumintono, B., & Widhiarso, W. (2015). *Aplikasi pemodelan rasch pada assessment pendidikan: Trim komunikata*
53. Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2013). *Using multivariate statistics (Vol. 6, pp. 497-516)*. Boston, MA: pearson.
54. Torrington, D., Hall, L., Taylor, S., & Atkinson, C. (2014). *Human Resource Management*. (no. Book, Whole). Harlow, England: Pearson.
55. Uddin, M. A., Rahman, M. S., & Howladar, M. H. R. (2017). Empirical study on transformational leadership, deviant behaviour, job performance, and gender: Evidence from a study in Bangladesh. *European Journal of Management Studies*, 22(2), 77-97.
56. Vance, R. J. (2006). *Employee engagement and commitment*. SHRM foundation, 1, 1-53.
57. Vipra, J., & Somayajula, D. (2022). *Access to the digital economy in BRICS countries*.
58. (PDF) *The relationship between transformational leadership, perceived organisational effectiveness and organisational culture in a selected multinational corporation in Africa*. Available from: https://www.researchgate.net/publication/363944745_The_relationship_between_transformational_leadership_perceived_organisational_effectiveness_and_organisational_culture_in_a_selected_multinational_corporation_in_Africa [accessed Jul 04 2023].
59. Yalabik, Z. Y., Popaitoon, P., Chowne, J. A., & Rayton, B. A. (2013). Work engagement as a mediator between employee attitudes and outcomes. *The International Journal of Human Resource Management*, 24(14), 2799-2823.
60. Zikmund-Fisher, B. J., Fagerlin, A., & Ubel, P. A. (2010). A demonstration of “less can be more” in risk graphics. *Medical Decision Making*, 30(6), 661-671.