Youth Leadership Qualities and Competencies: Scale Development and Preliminary Validation

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Abstract: A valid and reliable scale measuring multifactor leadership qualities and competencies of young adults was deemed necessary, which will aid in answering research and methodological concerns that lead to "empirically established non-arbitrary responses to design challenges," which were addressed in the full-scale study of springtide leadership. Three hundred fifty students from Pre-University and Under Graduates colleges were randomly selected for this preliminary trial and validation of an instrument. The findings were investigated using descriptive and inferential methods. Item objective congruence and item-total correlation were used to reduce the scale. The instrument's consistency and reliability were established through item analysis. The six dimensions, namely verbal and nonverbal communication, self-development, personal attributes, group dynamics, civic engagement and social responsibility, and decision-making, were identified by rerunning linear structural equation modelling (SEM). The application of SEM in confirmatory component analysis revealed a good fit for this structure. The scale exhibited impressive composite reliability and measurement invariance across gender, locale, grade, and age groups. The association between MFLQ scores and the student leadership roles also showed satisfactory concurrent and criterion-related validity for the scale. The findings indicate that the MFLQ is a reliable and practical tool for measuring youth leadership qualities and competencies. The current endeavour is a groundbreaking attempt to develop a multifactor leadership qualities and competencies questionnaire.

1 INTRODUCTION

Leadership development is an integral component of students' holistic health and holistic development, which depends on their availability to various learning experiences, a prerequisite for optimising potential. Alexander Astin's (1984) theory of student involvement explains how colleges and universities see how students change and grow due to their involvement outside of the classroom. It is a scientific topic of study and practical skill that refers to an individual's or organisation's ability to "lead." "A leader is a group member who significantly influences followers and how group members behave in critical situations" **(**Ford, 2021). A massive revolution in education is anticipated to grasp the contributing agents in students' leadership development. According to Leung, Raymong Ng, and Chan (2011), student involvement measures the amount and quality of physical and psychological energy students put into their collegiate experience. This involvement can manifest in many ways, including academic work, extra-curricular activities, and takes up leadership responsibilities. It is a proven fact and confirmed a boon or panacea for some of the most perplexing populace in cutting-edge society (Barber et al., 2005). According to Astin's Involvement Theory (1984), the student must be actively engaged on campus for maximum growth and learning. The quality and quantity of a student's involvement on campus directly impact the amount of learning and personal development that the student experiences. One of the primary benefits of participating in extra-curricular activities is the opportunity to develop leadership skills.

Many extra-curricular activities, such as student councils, clubs, and sports teams, NCC and NSS

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provide opportunities for students to take on leadership roles. Extra-curricular activities thus provide different settings where "students can learn about themselves and their worlds, as well as uncover opportunities for creating their interpretations of success." These programmes allow youngsters to explore independence, peer relationships, skills, and leadership in a safe environment, fostering positive growth and holistic health.

2 LITERATURE REVIEW

The Development Theory of Leadership: Based on the tenets of the development theory of leadership, this research provided first validation for the MFLQ. According to Linden and Fertman's (1998) development theory of leadership, every youngster has the potential to become a leader. It demonstrates leadership qualities in normal, daily situations with others at home, at school, and in the neighbourhood. Five areas are identified as crucial to the creation of young leaders following the theory: (1) leadership information and knowledge; (2) leadership attitude, (3) communication skills; (4) decision-making, and (5) stress management (Ricketts & Rudd, 2002). Youth leadership potential may be measured along these five characteristics, encompassing the mental, emotional, and physical growth of potential leaders (Linden & Fertman,1998). Communication, decision-making, and stress management are just a few of the many leadership abilities that Linden and Fertman (1998) claim high-potential youth learn. The capacity to articulate thoughts and share knowledge with others is a hallmark of good communication abilities. Several studies have shown that influential leaders inspire and influence their followers through words (Boies et al., 2015). Decision-making skills represent the ability to make good choices with available information. Leaders' effectiveness in resolving complex challenges inside their companies is crucial to the success of their teams and the organisations (Mumford et al., 2000). Based on the results of prior studies, the development theory of leadership was formulated (Fertman & Long, 1990; Fertman & Chubb, 1992; Wald & Pringle, 1995; and Long et al., 1996).

Further studies corroborated the hypothesis. The idea aligns with other holistic, integrative perspectives on learning, such as Kolb's (2014) experiential learning theory, which considers experience, perception, cognition, and action equally. After conducting a systematic review of research on youth leadership development, Ricketts and Rudd (2002) developed a theoretical framework for youth leadership development along the five dimensions outlined by their methodology. Bruce and Stephens (2017) proposed a practical framework to enable student leadership development in various organisations and student councils. There are undoubtedly other essential qualities and competencies, including civic engagement and social responsibility, self-development, and group dynamism. Researchers have created several leadership development scales, but none specifically for the Indian context, and this study will fill that gap and present a multidimensional construct for the Indian context. In conclusion, the theory offers a reliable basis for conducting these analyses of young leadership growth.

3 STUDENT LEADERSHIP DEVELOPMENT

Numerous academic research studies are available on developing students' leadership and behavioural characteristics and academic excellence. This section reviews previous studies on crucial leadership attributes for rationale. Dhanmeher (2014) discovered that extra-curricular activities for high school and college students could strengthen social interaction, leadership, healthy recreation, self-discipline, and self-confidence. Sports and other co-curricular activities create opportunities for students to achieve and have meaningful roles in their school community. Leadership entails making wise decisions, defining a clear vision, setting attainable and measurable goals, and empowering followers to achieve those goals. Recognising and focusing on our values enables us to achieve success. Personal Attributes/Behaviour refers to individuals' socially responsible lifestyle choices to live up to their ideals, acting to 'be the change you wish to see in the world' **(**Mohr, 1978**).** It is a crucial first step toward maximising your leadership skills. Group dynamics helps comprehend decision-making **(**Chapman et al., 2006**)** and the growth of civic engagement and social responsibility in emerging societies. "Group dynamics is a system of social behaviour and psychological processes of leaders" **(**Ehrlich & Jacoby, 2009**).** Bass (1990) defines transformational leadership as a customised concern, intellectual stimulation, inspirational motivation, and idealised influence. Influential leaders communicate well. It is an essential attribute that leaders strive to be prepared to communicate effectively and persuasively. Civic Responsibility includes creating

sustainable development, changing the mindset, taking the country forward, contributing to the regular revision of educational policies and thus exploring new avenues (Blair, 2010**)**." As Day (2004**)** stated, self-awareness informs us about knowing your characteristics and how your actions affect others, business outcomes, etc." As indicated by Hayes (2014), pupils' commitment to school-based ECAs worked on their talents and skills interchangeably with other aspects of their lives, such as school, work, and home.

The study's foundational aim is to collect and analyse data as a prelude to full-scale substantive survey research on student leadership qualities and competencies. Based on the identified gaps in existing research and to get the answer, the following research questions are proposed for the study.

4 METHODS

Several stages and phases of preliminary assessment are involved in conducting a pilot study through an "introspective" survey approach. We tried to catch up and attain it through the steps governed by Eldridge (2016).

(i) Designing the pilot study: Formulating the research question, objectives, and intent was part of the theoretical framework. Then, an exhaustive review of pertinent literature was carried out to become familiar with the substantial literature. The suitable statistical techniques were bracketed since the present investigation is exploratory and quantitative, and data obtained from participants need to be statistically analysed. For psycho-social and demographic variables, three NCC battalions and six potential (PU/UG) institutions of urban and rural vicinities were earmarked for this preliminary inquiry. This way, the research design was framed.

(ii) Pre-Try out: As part of an interdisciplinary research project, the researcher collected literature, past research studies, and documents on leadership attributes/qualities and discussed them with experts in leadership attributes/grades. Pre-try-out was carried out using the Item Objective Congruence (IOC). The IOC Index screens item quality and validates content (Rovinelli & Hambleton, 1977**)**. The Pilot form of the questionnaire was subsequently rolled out.

(iii) Sample and sampling Technique: 350 NCC-trained and non-NCC students enrolled in pre-university and undergraduate programmes at higher education institutions in Bangalore's rural and urban areas ranging from 16 to 20 years old made up the study's population. The Non-proportionate stratified random sampling technique was used to draw the sample based on the accessibility and juxtaposition of the respondents with a self-developed tool to collect the data for this feasibility study. A duly signed consent was obtained, and a necessary mass briefing was given to participants before starting the test.

5 DATA ANALYSIS

The analysis was carried out with a prior assessment of the validity and reliability of the empirical data, including other psychometric properties of the tool. The following steps were observed.

Respondents' Basic Profile: The classification of the sample value according to different variables.

Table 1: The socio-demographic profile of respondents.

Age	Range 16-20 yrs.
Gender	Male – 169 (48.3), Female-181 (51.7)
Locality	Urban – 183 (52.3), Rural – 167 (47.7)
Nature of Institution	Autonomous- 85 (24.3),Govt.-88(25.1),Pvt-81 (23.1),Pvt UA 81 (23.1)
Stream of Education	Science 101 (28.9), Arts- 108(30.9), Commerce- 100(28.6)

Source- primary data. * Fig in brackets indicate %

Sample Adequacy: Kaiser-Meyer-Olkin (KMO) Test estimates how to fit the information for Factor Analysis. The test estimates and examines sufficiency for every factor and the total model. As per the reference values expressed by Meyer, it is 0.979 (Marvelous) for the current pilot study.

Internal Consistency and Reliability: It was established by applying Cronbach's Alpha and Item Analysis.

Table 2: KMO and Bartlett's Test for Leadership Qualities.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.979
Bartlett's Test of Sphericity	Approx. Chi-Square	16111.474
	df	528
	Sig.	0.000

Table 3: The Polarity and Reliability of subsets of the Final Multifactor Leadership Questionnaire.

Components	Mini.	Max.	Mean	Std. Dev.
Verbal and Non-Verbal Communication	2.00	5.00	4.247621	.5289574
Self-Development	2.20	5.00	4.078286	.4714635
Personal Attributes	2.50	5.00	4.434286	.4817250
Group Dynamics	2.20	5.00	4.426857	.5024511
Civic Engagement and Social Responsibility	2.60	5.00	4.351429	.4708533
Decision Making	2.43	5.00	4.363265	.4780981
N	350			

Source: Primary Data

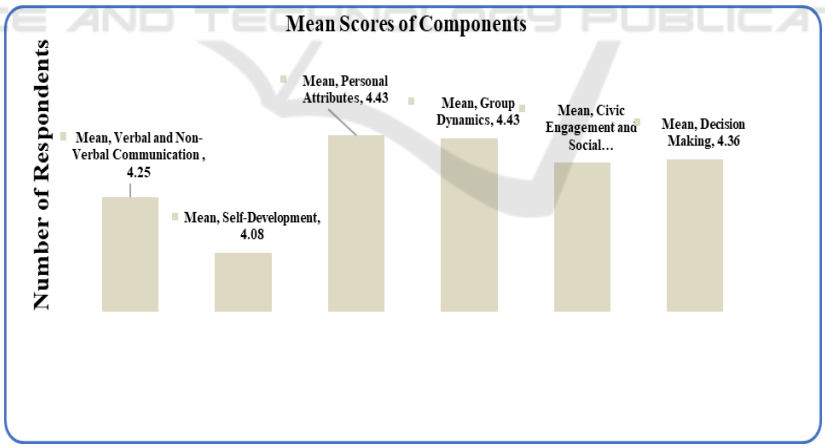

Figure 1: Descriptive Statistics of Components of Multifactor Leadership.

Figure 1 represents the descriptive statistics of the minimum, maximum, average and standard deviation of six components of the multifactor leadership style. The items of each component are 1 to 5 scales from Strongly Disagree e to Strongly Agree, in which the mean value of more than 3 indicates the respondents' acceptance of the leadership style.

Hence, for the present questionnaire, Cronbach's Alpha score was observed as ≥0.9, which was "Excellent". Thus, the study's empirical data results are reliable and relevant for verifying the study's premise. Table 3 represents the descriptive statistics of the minimum, maximum, average and standard deviation of six components of the multifactor

leadership style. Since the items of each component are 1 to 5 scale from Strongly Disagree to Agree Strongly, the mean value of more than 3 indicates the acceptance of the agreeable responses of respondents to Leadership qualities. For the final scale of leadership qualities, there were 20 items to be discarded. Out of 52 items, 32 were selected to be included in the final form of the scale to measure the leadership qualities of PU and UG students in the present study.

Item-Analysis: Through the Item Analysis, the Corrected item-total Correlation was obtained, items with less than 0.30 score of Corrected item-total Correlation were rejected, and the rest were included in the final form of the scale. "The subscales with a corrected item-total correlation less than 0.30 are unacceptable" Cristobal et al. **(2007).** However, 0.20 is an acceptable result for inter-item and item-total correlation in exploratory research." The rule of thumb regarding item-total correlation is 0.3. As to alpha, any item that, if deleted, alpha increases is questionable. However, several parameters, including validity, should be considered when evaluating an item.

Table 4: Descriptive Statistics of Components of Multifactor Leadership.

Item-Total Statistics
Item Analysis of Multifactor Leadership Questionnaire

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach'sAlpha if the Item Deleted
Q1	208.03	244.23	.25	.91
Q2	207.58	241.83	.82	.90
Q3	207.57	240.95	.87	.90
Q4	208.05	253.47	.06	.91
Q5	207.54	241.18	.88	.90
Q6	207.56	240.23	.90	.90
Q7	208.14	244.87	.23	.91
Q8	209.41	249.49	.17	.91
Q9	208.08	255.81	-.02	.91
Q10	207.58	240.25	.88	.90
Q11	207.56	240.87	.91	.90
Q12	207.57	240.56	.89	.90
Q13	207.59	253.47	.11	.91
Q14	207.59	252.62	.15	.90
Q15	208.07	254.83	.01	.91
Q16	209.28	249.07	.19	.91
Q17	207.55	240.60	.87	.90
Q18	208.03	255.14	.00	.91
Q19	207.56	240.95	.84	.90
Q20	207.53	243.69	.72	.90
Q21	207.54	242.82	.78	.90
Q22	207.55	257.30	-.10	.91
Q23	207.57	241.86	.82	.90
Q24	209.37	251.46	.13	.91
Q25	207.73	253.45	.06	.91
Q26	207.89	251.46	.10	.91
Q27	208.04	254.01	.04	.91
Q28	207.55	241.28	.83	.90
Q29	207.52	242.87	.77	.90
Q30	207.58	241.80	.80	.90
Q31	208.04	254.84	.01	.91
Q32	209.59	251.66	.10	.91
Q33	208.03	254.08	.04	.91
Q34	207.59	240.89	.82	.90
Q35	208.02	255.29	-.00	.91
Q36	207.55	240.84	.86	.90
Q37	207.67	243.35	.63	.90
Q38	207.55	243.13	.75	.90

The discrimination index in the form of Corrected item-total Correlation measures how well an item discriminates between high and low scores. The index is a fraction ranging from -1 to 1. A positive discrimination index of at least 0.2 suggests that high scorers are likelier than low scorers to answer correctly. Negative indices should be investigated for flaws or miskeying. These are rejected, whereas those

closer to 1 (or 0.3) are retained. Of 52 statements, 32 were chosen to be included in the final scale to assess students' leadership qualities.

The standardised factor loadings in the measurement model, as indicated in figure 2, has a p-value less than 0.05, which is statistically significant. Its high composite reliability and low average variance values indicate an excellent measuring instrument's consistency. The Cronbach alpha for all of the components is more than 0.80. As a result, the model's indicators and latent.

The composite reliability and average variance values are valid (Table 5). It is possible to develop the structural model and test the hypothesis using indicators and the latent component of the present model.

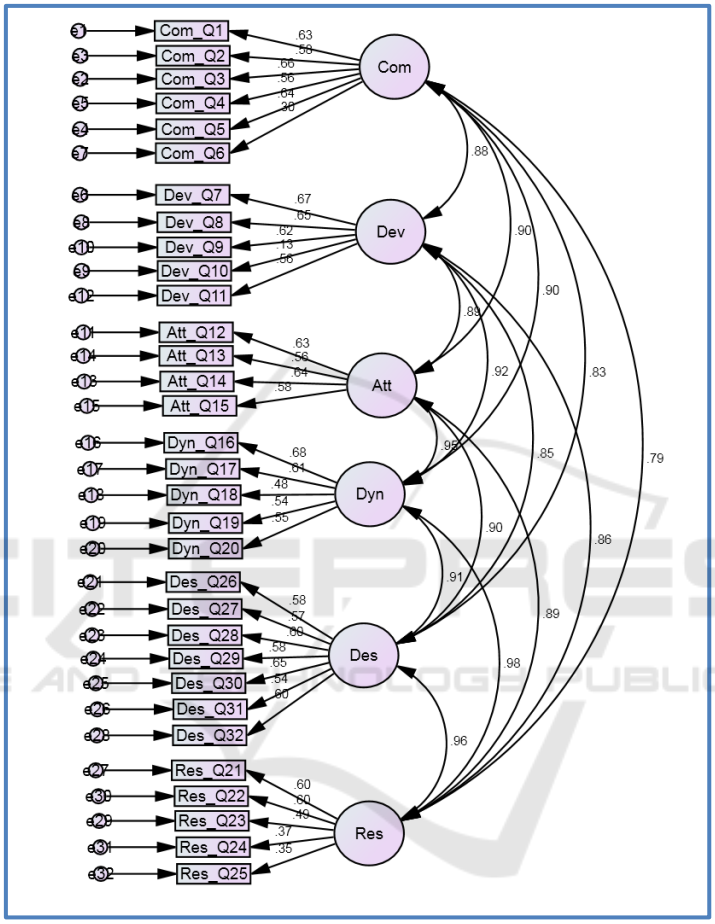

Figure 2: Measurement Model of Leadership Qualities.

6 DISCUSSION

Prelims: Based on the outcomes of pre-survey preparation, the proposed conceptual model (Figure 1) appeared promising while conducting a large-scale study with the presented socio-demographic profile of respondents in table 1. The inclusive and exclusive criteria, time management, and non-verbal behaviour, including technical malfunctions noted throughout the sampling procedure and data collection, were documented for future reference. We made a note to estimate the variability of outcomes to help determine sample size, and preliminary data collection, establish what resources (financial, personnel, and logistics) are needed for planned research and analyse suggested data processing procedures to detect potential challengesfactors can be utilised to construct a structural model and test the hypothesis.

Table 5. Item Total Statistics

component	1	2	3	4	5	6
1	.984	.092	.068	.137	.023	-.014
2	-.094	.438	.611	.155	-.088	.628
3	.009	-.312	.210	-.093	.907	.165
4	-.104	.706	.119	.089	.334	-.598
5	-.020	.346	-.741	.282	.239	.440
6	.113	.291	-.123	-.928	.002	.162

Table 6: Component Transformation Matrix

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

The relationships between the components before and after rotation are shown in the Component Transformation Matrix. Estimates of the correlations between each variable and the estimated components may be found in the principal components analysis's pivotal output, the rotated component matrix, usually known as the loadings.

Table 7: Results of CFA (Measurement Model) of Construct of Leadership Qualities.

Items	Unstandardised Estimate	Standardise Estimate	SE.	Critical Region	P	Reliability		Validity			
						CR	Cronbach alpha	AVE	MSV	Convergent	Discriminant
Com_Q1	1.000	.632				0.740	0.724	0.817	0.331	AVE > 0.5	MSV < AVE
Com_Q2	.821	.581	.044	18.747	***						
Com_Q3	.906	.663	.043	20.823	***						
Com_Q4	.810	.556	.045	18.069	***						
Com_Q5	.932	.641	.046	20.283	***						
Com_Q6	.530	.303	.051	10.460	***						
Dev_Q7	1.000	.673				0.770	0.794	0.856	0.318	AVE > 0.5	MSV < AVE
Dev_Q8	1.092	.649	.051	21.579	***						
Dev_Q9	.958	.621	.046	20.779	***						
Dev_Q10	.277	.128	.061	4.522	***						
Dev_Q11	.858	.559	.045	18.910	***						
Att_Q12	1.000	.626				0.795	0.895	0.903	0.364	AVE > 0.5	MSV < AVE
Att_Q13	.836	.563	.045	18.442	***						
Att_Q14	.972	.638	.048	20.427	***						
Att_Q15	.854	.582	.045	18.961	***						
Dyn_Q17	.836	.605	.039	21.247	***	0.709	0.706	0.964	0.330	AVE > 0.5	MSV < AVE
Dyn_Q18	.749	.476	.044	16.956	***						
Dyn_Q19	.776	.542	.040	19.166	***						
Dyn_Q20	.780	.552	.040	19.517	***						
Dyn_Q16	1.000	.476									
Des_Q26	1.000	.579				0.786	0.785	0.916	0.345	AVE > 0.5	MSV < AVE
Des_Q27	.925	.568	.053	17.595	***						
Des_Q28	.923	.600	.050	18.318	***						
Des_Q29	.932	.582	.052	17.927	***						
Des_Q30	.988	.647	.051	19.332	***						
Des_Q31	.939	.535	.056	16.826	***						
Des_Q32	.943	.597	.052	18.257	***						
Res_Q21	1.000	.596				0.706	0.871	0.964	0.244	AVE > 0.5	MSV < AVE
Res_Q22	.984	.600	.052	18.772	***						
Res_Q23	.838	.489	.052	15.972	***						
Res_Q24	.769	.372	.061	12.612	***						
Res_Q25	.900	.355	.074	12.084	***						

Bartlett's test of sphericity: To lay out whether your correlation matrix is a character framework, apply Bartlett's sphericity test. As expressed by Bartlett, this recommends that factors are interrelated and unsatisfactory for structure identification. Factor examination might help provide information on the off chance that the importance level is under 0.05. For this situation, as mentioned in table 2, it was sig ** (p=0.00).

Item Analysis: Pre-pilot testing survey instrument comprised 60 items. The Item Objective Congruence Formula was applied to the obtained responses of the subject experts, and it was narrowed down to 52 statements. The Corrected item-total Correlation was drawn as stated in table 4, and 20 items having less than 0.30 score of Corrected item-total Correlation were rejected. The rest 32 statements were included in the final form of the scale. When it comes to item-total correlation, the rule of thumb is 0.3. In terms of alpha, anything whose alpha increases when removed is suspect. However, various factors should be considered when evaluating an item, including validity, reliability, and discrimination measures. The reliability coefficients showed some improvement in reducing items in the present case. It indicates that item analysis was used successfully to reduce the scale and proved consistent and reliable.

Reliability and Validity: Only the Verbal and Non-Verbal Communication component has a reliability score of less than 0.7. In all, the instrument's Cronbach's Alpha is 0.96. Thus, the study's empirical data results are reliable and relevant for verifying the study's premise. The number of items and reliability of the responses of the items of the construct of leadership qualities is represented in table 3. Among six sub-factors of leadership quality, the measure of reliability, i.e., Cronbach alpha, is highest for personality attributes (0.89) and lowest for group dynamics (0.70). However, the Cronbach alpha values for all six constructs are more than 0.7. The overall reliability of all 32 items of leadership quality is 0.92; hence, the responses for leadership quality items are consistent and reliable. The items' validation of their respective factors is reflected in the model for measuring leadership quality. The factor loading is shown by the path coefficients on the arrow. Figure 2 presents the critical region, p-value, test of validity and reliability, numerical unstandardised and standardised coefficient of the factor loadings, and critical and standardised coefficients. Because the p-values are less than 0.05, the Standardised Factor Loadings in the Measurement Model have a statistical significance level of 5%. The resulting average variance and composite reliability are valid, and the Cronbach alpha for each construct is more than 0.80. Table 7 shows that for all of the constructions, Convergent Validity AVE > 0.5 and Discriminant was MSV < AVE. Therefore, it indicates that the consistency of the instrument is good. Thus, indicators and latent factors of this model can be used for building the structural model and testing the hypotheses in a large-scale study.

Reflections:

Pilot study observations have extraordinary consequences from both a professional and a personal standpoint. The most far-reaching stuff I have realised is summarised here.

Extensive Review of Literature: Clear ideas and views sail better than dark thoughts. The constructs that the researcher will unearth have to be thoroughly reviewed.

Articulation in Local Direct: It is good to start the survey questions with simple language explaining the issue and illustrating what it implies and the attitude I wanted to approach the participants. To address the needs of native speakers, I felt it was necessary to translate the questionnaire into local diction with the assistance of language experts.

To determine sample size by estimating variability in outcomes: The pilot study assisted me in reducing the possibility of errors or problems and identifying and resolving as many manageable issues or difficulties in sampling as feasible.

Designing a research protocol: More specifically, the pilot study assisted me in developing a clear research roadmap that included data collection techniques, methodology, data evaluation, and a theoretical framework, thus assessing whether the research protocol was realistic and workable.

Assessing the proposed data analysis techniques: It is, however, useful to evaluate the anticipated benefits from a pilot study can help with the search system itself, leading to tremendous implications that last till the end of the remaining research, and the researchers themselves improve their search ride and professional competence.

Assessing the practicality of a (full-scale) study/survey: What should be kept in mind and prompted me in several instances is the

recommendation of Thabane et al. (2010), who emphasise the importance of pilot studies being well-designed with clear feasibility targets, clear analytic plans, and unambiguous criteria for judging feasibility success.

Odds and Ends: Several issues from professional, social, ethical, and cultural viewpoints have been uncovered when conducting the pilot studies. Pilot studies can help with the search system, leading to tremendous implications until the remaining research end. The researchers themselves improve their search ride and professional competence before doing one, as there may be circumstances where just a few benefits are possible. However, numerous benefits can also be obtained.

Suggestions: The results support that the Multifactor Leadership Qualities and Competencies Scale (MFLQ) merits more psychometric investigation. Nonetheless, the CFI value in this study is close to the threshold value, suggesting that more research is needed to enhance the fit indices of the leadership development scale. To guarantee that the same amount of statements is evaluating each component of leadership development, statements should be amended, added, modified, or eliminated to increase consistency/reliability. In addition, test-retest data should be gathered to determine the leadership development scale's reliability and validity. In addition, the causes and effects of leadership development may be evaluated using a triangulation method. Finally, it is a questionnaire-based survey study with its limitations.

7 CONCLUSION

Exciting findings were discovered about the correlation between demographic factors and Multifactor Leadership Qualities and Competencies Scale (MFLQ) scores in this investigation. It is generally accepted that "Pilot Research aids in guiding the construction of a study plan rather than being a test of the already-developed plan." A pre try-out was run before the main study to ensure the validity and reliability of the evaluation tool. We created a standardised questionnaire for the primary research that has acceptable psychometric properties. We were able to hone our research techniques for the main inquiry by conducting preliminary validation. This paper reports the development and validation of the Multifactor Leadership Qualities and Competencies Scale (MFLQ) instrument, intended to provide valid, reliable, and comparable data on undergraduate students' self-evaluated skills and qualities in holistic development in the Indian context, considering the limitations.

LIST OF ABBREVIATIONS:

MFLQ- Multifactor Leadership Qualities and Competencies Scale
CCA- Co-curricular Activity
ECA- Extra-Curricular Activity
NCC – National Cadet Corps
IOC- Item Objective Congruence

ETHICAL CLEARANCE

Ethical guidelines were followed, and permission was taken from the Pre University and Under Graduate colleges and NCC Units/Battalions of Bangalore, India. The responses recorded from the participants were voluntary, and consent was obtained from them.

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