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Development, Testing, and Psychometric Validation of Pareto Principle Questionnaire (PPQ) for Leaders at University Level in Pakistan

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Abstract

Leadership plays a basic role in an organization's never-ending success, and leaders' decision-making techniques are considered the basic cause of their success or failure. The Pareto Principle is a decision-making strategy used by leaders in organizations. The core aim of this study was the development and preliminary testing of a newly developed scale named "Pareto Principle Questionnaire" (PPQ) that would assess the application of the Pareto Principle by university-level leadership. The first sketch of the questionnaire was developed using literature related to the Pareto Principle. Through the multistage sampling technique, 227 top (Principal, Director, and Chairman) and middle (Head of departments, another supervisory faculty) level leaders were nominated for this study as a sample. Factor Analysis was accompanied by returned data from 227 leaders at the university level who responded to the questionnaire (PPQ). The PPQ consisted of five major factors and 52 items. The suitability of the model factorial validity and inter-item correction was obtained by exploratory factor analysis, and it was concluded that it satisfied statistical standards. The construct efficacy (0.95), convergent efficacy (0.94), and discriminant efficacy (0.97) of PPQ are also a good fit; however, some subscales revealed low internal consistency, indicating the need for supplementary research regarding PPQ. This was suggested based on the conclusion scale, which needs more empirical evidence from other organizations instead of university-level leadership for more generalized results.

Keywords: *Prioritization, Pareto Analysis, Pareto Thinking, Quadrants Matrix*

1. Introduction

The Pareto Law is a fascinating and dynamic fortified business and professional inquisition. A business expert, Wiesenfelder (2013), delineates that the Pareto Principle elucidates that in "*many situations, 80 percent of the effects or outcomes come from only 20 percent of the sources or causes"*(Wiesenfelder. 2013). The illustration concealed the Pareto Law was discovered in 1897, undeniably a century ago, by a renowned Italian economist, Vilfredo Pareto. His divulgence of 80/20 scrutiny today is known as the Pareto Principle. It has since been baptized numerous titles, including the Pareto Law, Pareto Principle, Principle of Imbalance, 80/20 Rule, and Principle of Least Effort (Koch, 2013; Reh, 2016). All this is demonstrated by experts who have been thinking about this longer than we have been actively discussing this assumption. In social sciences research, the Pareto Principle is called the 80/20 rule or Pareto Principle (Edwards, 2015).

The pitch of leadership application of the Pareto Principle was strappingly offered by Maxwell in 1997 in his book "*Becoming a Person of Influence"* in this book "Maxwell" transliterates The Pareto Principle and signposts the postulation of 80/20 rules (Maxwell & Dornan, 1997). Around a similar time, he yielded this notion in another book *(Maxwell, 2004),* "*The Success Journey: The Process of Living Your Dreams,"* printed in February 1997 and candle addition in 2004 and combat that there are a lot of ways to deal with sort out your projects recollecting your 20 % of your qualities that make great work, excellent work comes with you 20% strength (Maxwell, 1997). An account of the same notion is given by him in a couple of his books, "*Five Levels of Leadership Proven Steps to Maximize Your"* and *"The 21 Irrefutable Laws of Leadership: Follow them and people will follow you"* (Maxwell, 2007).

"You could use the 80/20 rule. Give 80 percent of your effort to the top 20 percent (most important) activities. Another way is to focus on exceptional opportunities that promise a huge return. It comes down to this: give your attention to the areas that bear fruit."

University level considered independent in assembling all its policies regarding personal development and utilizing HR (human resources) within the managing university leadership has more supremacies than any other level of education (Anwar, Yousuf, & Sarwar, 2011; Asif, 2012; Bilal & Khan, 2012). The frequent supposition of the great leadership expert Maxwell needs empirical support. In this regard, no such instrument exists in the field of society that measures the extent of Pareto Law usage and its consequences on the leadership level proposed by Maxwell (2005). This development and testing of PPQ was an attempt to support and fill the knowledge gap in the field.

2. Prioritization, Irrefutable Law of Leadership

If we want to rally humanity, the golden rule to flinch is to use the Pareto Principle in education. The literature advocates three strategic rudiments: recognizing the integral few handles, "*lead to exceptional results,*" devolution and contention Maxwell (Maxwell, 2002, 2007, 2008; Maxwell, 2016; Maxwell & Parrott, 2005). Pareto Principle conveyances propose a "couple truly critical reasons that clarify unrivaled instructive execution" (Maxwell, 2010, 2011, 2012, 2013; Maxwell, 2014). It mentions 80/20 methodologies and techniques that will authenticate splendid results. An Instructor can confine the clarifications inclinations and, after that, increase the event. By using the Pareto Law (Maxwell, 2013), pioneers can be gifted to mark tremendous advances in training and in (Maxwell, 2007, 2013). Prioritization is using 80/20 rules in the 17th indisputable law of leadership. Maxwell also specified the Pareto Principle with the successful journey of leadership.1st seven items of the PPQ were about prioritization.

3. The 80/20 Analysis

The leaders may use 80/20 in two ways, as shown in the figure.2 Conventionally, the Pareto Law is a prerequisite 80/20 inquiry, "*a quantitative method to establish the precise relationship between causes/input/effort and results/outputs/rewards*." Using empirical procedure (Craft & Leake, 2002), leaders might get outputs ranging from 50-50 to 99.9-0.1. Pareto analysis probably uses a hypothesized relationship and then calculates the facts regarding the exact relationship. When the input fails to establish a *marked imbalance* between cause and effect, then the action is taken (Koch, 2011a, 2013). The Pareto Law as an independent variable does not directly affect the leadership rating but only due to some aspects of "80/20 Analysis," which is a technique for aligning your activities using an 80/20 chart. The second part of the PPQ consisted of seven items measuring this factor.

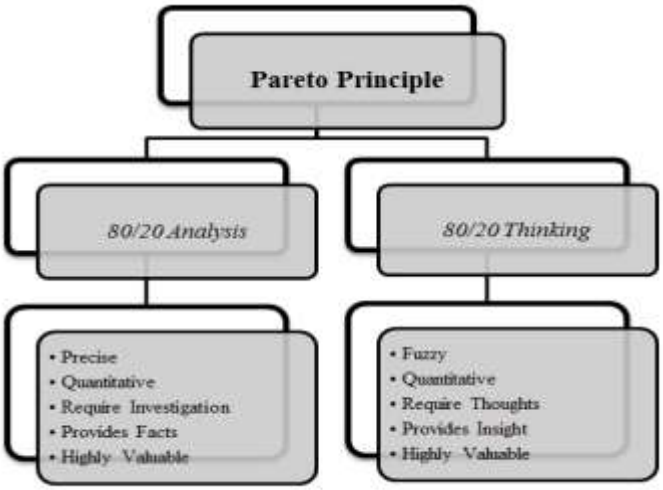

Figure No1. 80/20 Analysis and 80/20 Thinking

3.1.The 80/20 Thinking

An emerging and harmonizing method to use the Pareto Principle is "*80/20 Thinking"*. The assumption entails philosophical pondering that it is essential to set judgment on whether the leadership is practicing the Pareto Principle. One may follow up with the appreciative "80/20 Thinking" technique, which does not claim to collect information and to check the research hypothesis. Therefore, the term 80/20 thinking can be contextually misleading. It can be assumed that the 20%, and if leaders identify an association, will claim that 80/20. "Thinking is much less likely to mislead you than *conventional thinking. 80/20 Thinking is much more accessible and faster than 80/20 analysis. However, the latter may be preferred when the issue is extremely important, and you find it difficult to be confident about an estimate*" (Koch, 2011b, 2013; Zhu & Xiang, 2016). In the universities of Lahore, major types of duties are commonly observed. Senior and middle-level leaders must perform four (*Teaching Duties, Non-teaching/Administrative Duties, Dealing with Subordinates, and Dealing with Leadership)*.

3.2.Using the 80/20 principles to be a Better Leader

A Sales & Marketing Expert, Edwards (2015) published an inquiry article entitled "*Using the 80:20 Rule to be a Better Leader"*. In any case, given its broad versatility, it ought not to be unexpected that

the 80:20 rule can be connected to leadership, too, since leadership, as well, is tied in with concentrating on that which is generally critical. As you will see underneath, regardless of whether applied to ideation, people development (Maxwell, 2016) (Maxwell & Dornan, 2013), decision-making, people management, communication, personality productivity (Maxwell, 2011), and any other leadership are Pareto's Principle can be fabulous apparatus to enable you to lead all the more adequately (Edwards, 2015). Edwards illustrated the five key areas (***Decision-making, Ideation, Communication, People Management, and Personal Productivity***) in which the leaders execute 80/20 rules that, in return, make them better leaders (Edwards, 2015).

4. Four Quadrants Matrix

The famous leadership expert J.C Maxwell, in his book "*Developing Leadership within You*, "Set that the Pareto Law may be implemented by using the "Four Quadrants Cycle Matrix "*High Importance/High Urgency***,** *High Importance/Low Urgency***,** *Low Importance/High Urgency & Low Importance/Low Urgency*" noted in his books published (Maxwell, 2007, 2013).

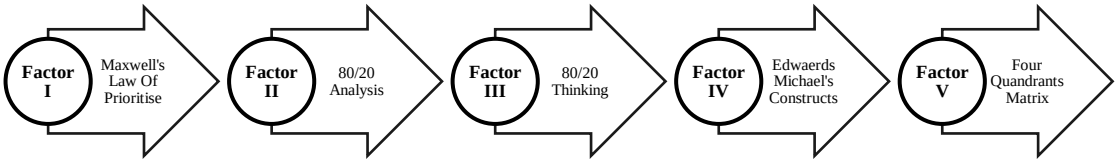

Figure No 2. Factors of the Pareto Principle

5. Purpose of the Study

This paper was intended to

1. Develop a questionnaire to a degree on the application magnitude of the Pareto Principle by university-level leadership in their duty task.
2. Test validity and reliability of the Pareto Principle Questionnaire.

6. Method

This paper intended to establish and validate a questionnaire (PPQ) for university-level leadership. The developed questionnaire would measure the utilization of the Pareto Law by the leadership of the university level in their teaching and non-teaching duties. The questionnaire was developed, conversed with experts, and used to amass data for the additional testing process.

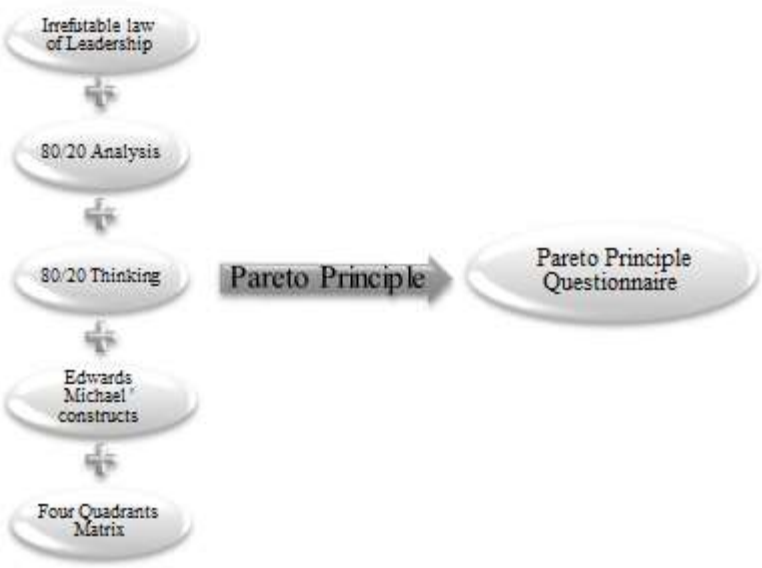

Figure No 3. Design of PPQ

Pareto Principle Questionnaire PPQ structured questionnaires were projected based on the discussed literature to measure the key major and minor factors (Depicted in Figures 1 – 5) of the Pareto Principle. The Pareto Principle Questionnaire (PPQ) was self-developed to assess how the leadership used 80/20 rules in their duty tasks at the university level. The Pareto Principle questionnaire was constructed by adjoining four research instruments. This section added demographics to collect data based on gender, sector, age, education, experience, department, Pay, and faculty rank. The zenith part of the PPQ comprised a requesting plea to the participants with vital information regarding the empirical development, researchers, and the aim of the ongoing study. The nadir section comprised a checklist of demographic flexibility. At the instrument's start, demographic variables make the participants aware of responding or rating their perception accurately (Hirschfeld et al., 2000). Considering this literature evidence, the demographic variable was decorated at the end of PPQ.

7. Participants

As per the facts and figures reclaimed from the HEC Site, there were 51 well-known universities in Punjab. According to the HEC (2015) 5th ranking list (*Universities/Degree Commending Institutions (DAIs*) of universities recognized and attested by the HEC, Islamabad. Awarding Institutions (DAIs): In Punjab, there were (27) public and (24) private Universities/Degrees. According to the planned facts and figures, only (10) public and (19) private universities are located in the Lahore District. Three public and nine private universities (in the case of private universities, three conditions) from the Lahore district were selected for this study. The selected universities have an education department and offer teacher education with regular faculty and are authentic by HEC Pakistan.

Table No 1

Public and private Universities hold the Education Department.

	Universities Located in Lahore	HEC Scores
Public	The University of Education Lahore	39.136
	The University of Punjab,(IER) Lahore	83.28
	Lahore College for Women University, Lahore	49.50
Private	University of Management & Technology, Lahore	46.08
	University of Lahore, Lahore	47.97
	Beacon house National University, Lahore	39.38

Through multistage sampling techniques, 227 top-level "*Principal, Directors, & Chairman*" and middle-level "*Heads of departments and other supervisory faculty*" leaders were chosen to participate in the study. The 227 (*Ample*) circulated Performa was received and subjected to subsequent statistical analysis.

8. Instrumentation

The paper aimed to establish and validate the questionnaire and the researcher's purpose in collecting data, general guidelines, and the significance of the implementation of the scale, which was expounded to the selected respondents in the cover letter enclosed with a questionnaire. The different instruments were divided into sections to avoid obscuring the respondents. The first section encompasses items based on Prioritization (Maxwell, 2007) and follows leaders during duties endorsed by Maxwell in the *"21 Irrefutable Laws of Leadership"*. The other part of PPQ consists of statements related to 80/20 analysis (Koch, 2013), and after the 2nd part, the 3rd part encompasses items based on the 80/20 Thinking factor (Koch, 2013). The 4th unit encloses items about the 80/20 rule to become an improved leader advocated by Edwards Michael's constructs (Edwards, 2015), and the next part of PPQ holds items linked to the four quadrants cycle matrix proposed by Edwards Michael (Maxwell, 1993). The ending section confined demographic variables to inquire about the data related to respondents.

Table No 2

Instruments for calculating key variables

Variables	Instrument and Factors	No. of Items
	Questionnaire II (PPQ For Leadership)	
Pareto Principle	Prioritization, indisputable law of leadership	1.1 to 1.7
Questionnaire	80/20 Analysis	2.1 to 2.7
	Thinking80/20	3.1 to 3.12
	Using the 80/20 Rules to be a Better Leader	4.1 to 4.14
	5. Four Quadrants Matrix	5.1 to 5.12
Demographic Variables	Gender, Sector, Age, Experience, Income, Designation, Faculty Rank & department were questioned as to the Demographic	

Variables in the last sections of the questionnaire.

9. Indicators- Items Match for PPQ

All the variables were considered for data analysis, and the researcher prepared an indicator-item match. The PPQ (*Pareto Principle Questionnaire*) contains five sections of the indicator-item Match exemplified:

Table No 3

S #	Variables	Indicators- items Match
1	Prioritization, indisputable law of leadership	PPL1- PPL7
2	80/20 Analysis	PA1- PA7
3	Thinking80/20	PT1- PT12
4	The use of 80/20 principles to be a Better Leader	ME1- ME14
5	Four Quadrants Matrix	QL1- QL12

The above-given table presents the characteristics-wise serialization of the study differently. Index assigned for *Prioritization* (PPL), *80/20 analysis* (PA), *80/20 Thinking* (PT), The use of 80/20 principles to be a *Leader* (ME), and *four quadrants Matrix* (QL). All the data collected was coded in SPSS with the above-declared item match indicators.

10. Pilot Testing

The developed scale (with subscales) contains 52 items (α = .95). PPQ has good internal firmness as per calculated values. *"The Irrefutable law of leadership subscale consisted of 07 items (α =.77), the 80/20 Analysis subscale consisted of 07 items (α =.73), and the 80/20 Thinking subscale consisted of 12 items (α =.85), Cronbach's alphas for the 14 Edwards Michael's Constructs and 12 Four Quadrants Matrix items were (α =.88) and (α =.87) respectively. The scale has upright internal consistency, with a Cronbach's alpha coefficient reported of .85. In the current study, the Cronbach's alpha coefficient was 0.94 (Pavot, Diener, Colvin, & Sandvik, 1991). The PPQ was reliable (52 items; α = 0.95)".* A few items were assessed with low interaction, and the subjects' conclusions were displayed in Table 7. The concluded Cronbach's alpha for fifty-two stated items is supposed to measure the use of the 80/20 rule by university-level leadership in their workplace. The examined values related to the reliability of PPQ are illustrated below table**:**

Table No 4

Internal consistency of the Pareto law by the leaders (N=60)

Type of Items	Items	Cronbach's Alpha
Total items	52	0.95

Indisputable law of leadership	07	0.77
80/20 test	07	0.73
Thinking80/20	12	0.85
Edwards Michael's manufacture	14	0.88
Four Quadrants Cycle Matrix	12	0.87

11. Validation of Instrument

The Pareto Principle Questionnaire was developed to estimate the 80/20 rule's application by the leadership in their daily matters. The developed PPQ was offered to experts for their valuable and constructive feedback. The three experts were requested to check the face validity and certify the PPQ's validity under the criteria. 1st is stated indicators were inclusive in all relevant aspects of measurement and measuring the research objectives. The 2nd criteria indicators were mutually exclusive with clear and anticipated meaning in the perspective of research objectives. The PPQ questionnaire was amended, and items were draped as the panel of experts suggested. Per the expert's certification instrument, the PPQ maintained upright content validity with stated constructs and clear intended meanings; all items were mutually exclusive. The PPQ was declared a valid tool for measuring the application of 80/20 rules by the university-level leadership.

12. Statistical Analysis of Data

Data were equipped for analysis. Missing values, outliers, positive correlations, and normalities were assessed. SPSS -19 and AMOS-18 versions were used to statistically test the PPQ. Descriptive analysis was used to interpret quantitative data. The bivariate correlation was used to quantify the validity of PPQ Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA).

Table No 5

Gender & Sector Wise Distribution of Participants (N=227)

S #	Demographics	Total	Percentage	Mean	SD
1	Public	140	61.7%	1.38	.48
2	Private	87	38.3%		
3	Male	122	53.5%	1.46	.50
4	Female	105	46.3%		

The table represents the organizational profile of participants among n=227 (M=1.38 & SD=.48) respondents, 140 (61.7%) from the public sector, and the remaining 87 (38.3%) respondents from the private category. Further, it also exhibited the gender-wise dispersal of the respondents. The gender-wise distribution of the n = 227 (M=1.46 & SD=.50) respondents, 122 (53.5%) male, and 105 (46.3%) females, fit in the pattern from which data is collected and finalized for inquiry and interpretation.

Table No 6

Correlations among Factors (N=227)

#	Key Factors of PPQ	PPQ	PPL	PA	PT	ME	QL
1	Pareto Principle Questionnaire (PPQ)	1	.495**	.706**	.850**	.923**	.861**
2	Prioritization Law of Leadership (PPL)		1	.297**	.330**	.389**	.254**
3	Pareto Analysis (PA)			1	.534**	.671**	.439**
4	Pareto Thinking (PT)				1	.692**	.675**
5	Michael Edwards's Constructs (ME)					1	.739**
6	Four Quadrants Matrix (QL)						1

**. Close relation is significant at the 0.01 level (2-tailed).

The relationship between the Pareto laws questionnaire, five factors (*Prioritization Law of leadership, Pareto Analysis, Pareto Thinking, Michael Edwards's Constructs*, *and Four Quadrants Matrix*) bivariate correlation was conducted. The correlation coefficient *"Pearson product-moment"* is the best way to measure the procurement of relationship values between different (Lattin, Carroll, & Green, 2003; Pallant, 2005; Pavot et al., 1991). At first, the analysis was organized to measure the missing values, normal data, homoscedasticity of variance, and linger of the collected data, which were evaluated and reported (Keith, 2014). A strong positive correlation was assessed between the five leadership factors and the PPQ application of university-level leadership in Pakistan. The calculated coefficient of five factors r ≡.49, r ≡.70, r ≡.85, r ≡.92 & r ≡.86 respectively (J. Cohen, Cohen, West, & Aiken, 1983; M. D. Cohen, March, & Olsen, 1972) acknowledged that r = .10-.29 very small close relation, r =.30-.49 medium correlation and r =.50 -1.0 nominates a large extent of correlation between tested variables. Partial close relation analysis was also used to discover the association between five factors and PPQ. The results demonstrated that the five leadership factors are positively associated with the PPQ scale.

13. Factor Analysis

EFA extracts progressive factors from large data by specifying the number of factors without determining the consideration of the stated items. Factor analysis supposed variables are loaded to a specific factor, and factors are characterized based on extracted (Khan & Adil, 2013). EFA is considered an association in the situation of a large number of indicators and factorial structure with the capacity of a research instrument in a given multitude, which is ambiguous. Often, the circumstance of developing new instruments EFA is followed by CFA. Hence, the PPQ was a self-developed research instrument. The analysis of validity was accompanied as suggested by the literature. Stimulatingly, CFA "*Confirmatory Factor Analysis"* (Brown, 2003) was conducted when the capacity of the stated factors of being tested either in the form of a hypothesis or the pre-ordained observational subjected discoveries (Wang & Wang, 2012). The researcher aimed to attempt the number of variables that cannot be directly quantified. This issue in the illustrated picture can be solved with EFA. FA is a statistical method for determining many indicators in an interrelated from of theory of stated variables. FA was deliberated as a set of methods needed to summarize and be used for dimension reduction in a

large set of indicator items. Expert (Khan & Adil, 2013). The factor analysis is considered a reliance method necessary for assessing this study's basic structure of indicators and factors.

Factor Analysis is a method conducted to understand the structure and arrangement of factors. Second, build a poll to measure the ultimate variable and summarize collected data for a more reasonable size. Allotment as a part of the data allowed for analysis to distinguish little established stated uncorrelated factors to replace a unique organization of associated factors in subsequent multivariate exploration (Field, 2005).

13.1. Exploratory Factor Analysis

The Factor loadings compromise essential techniques to validate a research instrument or research scale development. In education and psychology, analysts commonly use EFA to test the validity of an instrument. Regardless of the likelihood, it was advocated that the researcher state items and extract factor loadings in the proposed theory. The EFA is considered an imperative development in testing the validity of the underlying research instrument (Khan & Adil, 2013). In the current study total, a total of fifty-two indicators of PPQ were used to conduct PCA *"Principal Components Analysis"* using SPSS-18. The precondition to conducting PCA was that the data were initially screened for analysis of factor analysis. The suitability of data was considered and assessed. Descriptive and correlational matrices among the stated indicators & factors were evaluated. The correlation matrix in Table Name shows a correlation among factors exposed to a positive correlation between five factors and the PPQ mean score. The majority of coefficients in the tested list were above 3. The Kaiser-Meyer-Oklin obtained value was .83, greater than the value of .6 (Kaiser, 1970, 1974), and Bartlett's Test of Sphericity (Bartlett, 2014) touched statistical significance, supplementary the factorability of the close relation matrix in the calculated results. The Principal components analysis uncovered the index of thirteen (*7*) components with involves above the criteria value 1, elucidation 30.90%, 9.1%, 6.6%, 5.8%, 5%, 4.5% & 3.2%, of the variance, respectively. An inspection of the scree plot exposed a vivacious inspection after the second extracted component. Castelli's screen analysis was indispensable for retaining the two extracted components and for supplementary analysis of PPQ. Furthermore, the measured results were verified using parallel analysis. The findings revealed that thirteen parts have acceptable (greater than criterion value 1) for the randomly deposited Data Matrix.

13.2. Confirmatory Factor Analysis

The CFA was also organized to assess the measurement model's statistical validity and model fit. The statistical validity also concludes that PPQ is presented in the given output of the AMOS figure.

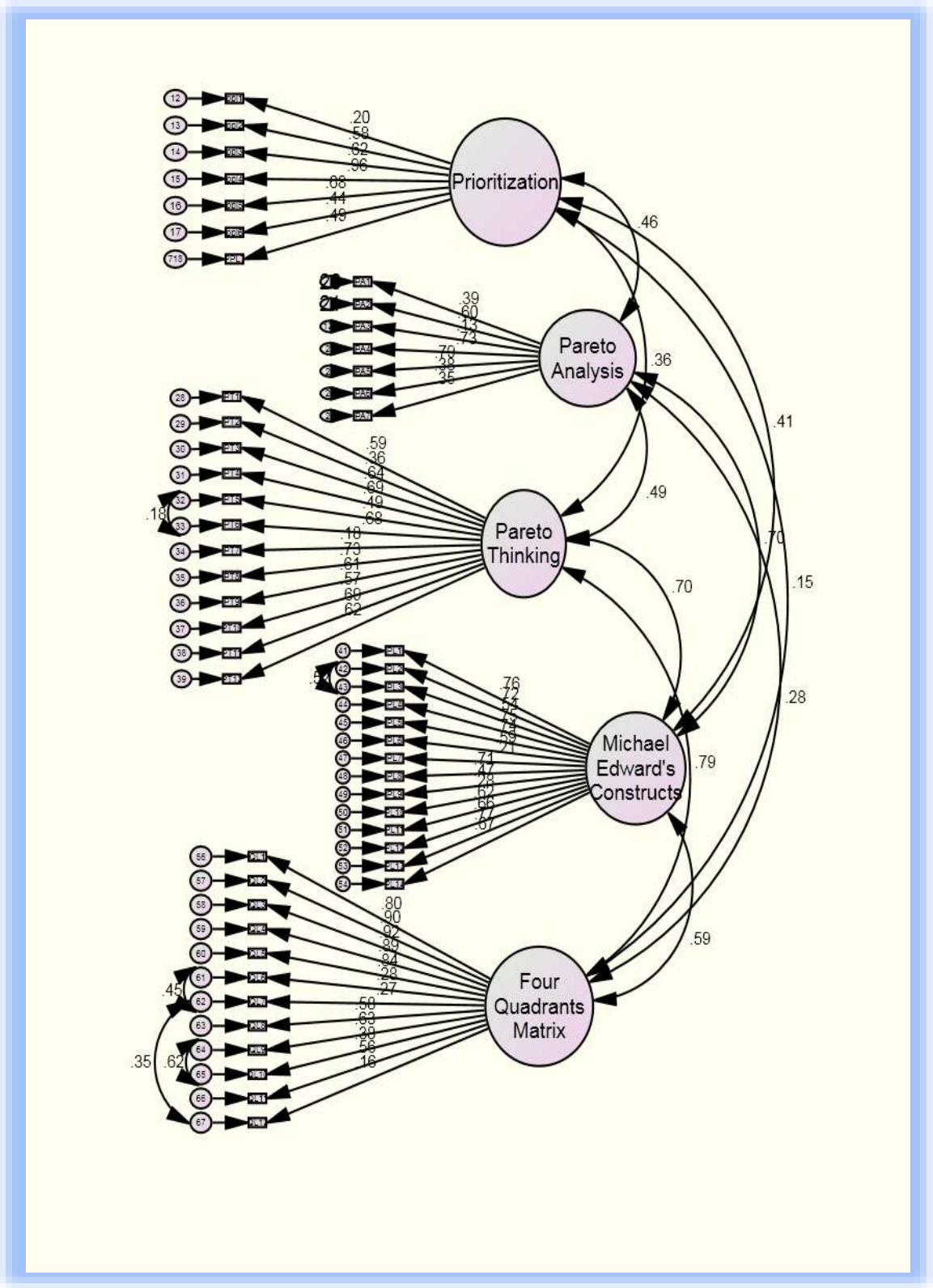
Prioritization
Pareto Analysis
Pareto Thinking
Michael Edward's Constructs
Four Quadrants Matrix
.46
.36
.41
.49
.70
.15
.70
.28
.79
.59

Figure No 4. PPQ & CFA

Table No 7

The Validity of the Pareto Principle Questionnaire

S.#	Discriminant Validity	Convergent Validity	Construct Validity	Expert Validity
Statistical Values	**AVE**	**SMC**	**PCA**	*Panel of Experts*
Ellipses	Average Variance Extracted	Squared Multiple Correlation	Factors Loadings	
Equations	$\mathbf{AVE} = \frac{\sum_{i=1}^{n} L_i^2}{n}$	$R_{y_1}^2 = 1-(1-R_{y_1}^2)(1-R_{y_2}^2)\ldots(1-R_{y_p}^2)$	$y_1 = \eta_1 + \varepsilon_1$ $y_2 = \lambda_{y21}\,\eta_1 + \varepsilon_2$	
PPL	0.65	0.91	0.81	Mutually exclusive
PA	0.77	0.90	0.90	
PT	0.82	0.80	0.88	
ME	0.90	0.77	0.91	
QL	0.88	0.88	0.90	
Total	0.97	0.94	0.95	Finest

Content validity guaranteed and

The above table represents the factor-wise values of statistical sustainability of the Pareto law questionnaire. The construct sustainability PCA (0.95), Discriminant validity AVE (0.97), and congruent validity SMC (0.94) of the Pareto law questionnaire have an acceptable level. The parameter for the range of each value is depicted in Figure 10.

Table No 8

Reliability of the Pareto Principle quiz

S.#	Composite Reliability	Cronbach's Alpha	Guttmann Coefficient
Statistics	**CR**	**R**	**Lambda 4**

Ellipses	Composite Reliability	Internal Consistency	Split-Half
Equations	$CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum Var(\varepsilon_i)}$	$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$	$\lambda_2 = 1 - \Sigma\sigma_i^2/\sigma_x^2 + \sqrt{(n\Sigma\Sigma\sigma_{ij}^2/(n-1))/\sigma_x^2}$
PPL	0.92	0.85	0.67
PA	0.81	0.77	0.72
PT	0.88	0.88	0.81
ME	0.98	0.94	0.90
QL	0.95	0.92	0.85
Total	0.90	0.95	0.97

The above table indicates the factor-wise reliability values of the Pareto Principle Questionnaire. The Composite reliability CR (0.90), Cronbach alpha R (0.95), and Guttmann coefficient Lambda 4 (0.97) of the Pareto Principle questionnaire are declared good. The PPQ has an acceptable level of all values. The parameter for the range of each value is depicted in Figure 10.

Table No 9

Model Fit

Model	**NFI** (Delta1)	**RFI** (rho1)	**IFI** (Delta2)	**TLI** (rho2)	**CFI**
Default Model	.911	.851	.951	.834	.955
Saturated model	1.0		1.0		1.0
Independent Model	.000	.000	.000	.000	.000

The model x Statistics $\chi^2 = f_{\mathrm{ML}}(N-1)$

Comparative Fit Index $CFI = \frac{d_{null} - d_{specified}}{d_{null}}$

Tucker-Lewis Index (TLI/ NFI)

$$TLI = \frac{\left(\frac{\chi^2_{null}}{df_{null}} - \frac{\chi^2_{specified}}{df_{specified}}\right)}{\left(\frac{\chi^2_{null}}{df_{null}} - 1\right)}$$

Root Mean Square Error of Approximation

$$RMSEA = \sqrt{\frac{(\chi^2_S - df_S)/N}{df_S}} = \sqrt{\frac{(\chi^2_S/df_S) - 1}{N}}$$

The results were mentioned as Chi-square = 57.802 at degree of freedom =16 levels of probability = .000 Sig. *Tucker-Lewis Index (TLI) by* (Tucker & Lewis, 1973), *also called NFI by* (Bentler & Bonett, 1980). The calculations also disclose good fit indices (*comparative fit index*) CFI= .955, TLI=.834, IFI=.951, RFI=.851 & NFI=.911. the literature (Bollen, 1984; T. A. Brown, 2003; Keith, 2014; Khan & Adil, 2013; Pallant, 2005; Wang & Wang, 2012), the criteria worth each measure.

S#	Fit Test	Good Fit	Moderate Fit	Literature support
1	x^2	$0 \leq x^2 \leq 2df$	$0 \leq x^2 \leq 3df$	(Wang & Wang, 2012).
2	x^2 /df	$0 \leq x^2 / \leq df \leq 2$	$0 \leq x^2 / \leq df \leq 3$	(Keith, 2014).
3	GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 0.95$	(Khan & Adil, 2013).
4	CFI	$0.97 \leq CFI \leq 1.00$	$0.95 \leq CFI \leq 0.97$	(Wang & Wang, 2012).
5	RMSEA	$0 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$	(Bollen, 1984).
6	NFI	$0.05 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$	(J. Cohen, et al., 1983).
7	TLI	$0.05 \leq TLI \leq 1.00$	$0.90 \leq TLI \leq 0.95$	(T. A. Brown, 2003).
8	P value	$0.05 \leq p \leq 1.00$	$0.01 \leq p \leq 0.05$	(Pallant, 2005).

Figure:5 Parameters of Goo Fit Values of Model

14. Result & Discussion

The Pareto Principle Questionnaire PPQ for leaders at the university level was considered to have confident content validity by the quality of the assumption that the development of items pool, the expert validity was also certified the questionnaire was valid and appropriate to measure the practice of Pareto Principle by leaders at the university level. Moreover, the goodness-of-fit for the five-factor and 52-item model lastly espoused was also confirmed by CFA. Notable, little inconsistency was observed between the concrete data and factor structure of PPQ. It may be because of sampling error or other threats to validity. Overall, 52 items model goodness-of-fit of five factors, 52 items set covariance among the error variance, were also statistically satisfied and met the criteria. The components observed by covariance were sought to have resemblances in all five factors. It was also observed that the actuality of extracted items was from factors one and three of the Pareto Principle Questionnaire. Consequently, eliminating eight items with a weak relationship to the PPQ was deliberated to have a refined, cautious assortment of items that did not overlap the content of other factors in the questionnaire. However, the authors note that this fluctuates considerably for those who can afford adequate items. Comprehensively, study results show that the factor structure of the PPQ, along with the coefficient with 5-factors 52-items, was both theoretically tested and a valid fit for further use in the concerned field. The results table specifies the factor-wise values of the statistical sustainability of the Pareto law questionnaire. The construct validity PCA (0.95), Discriminant validity

AVE (0.97), and congruent validity SMC (0.94) of the Pareto Principle questionnaire are in a sustainable range. The reliability of the Pareto Principle Questionnaire was also acceptable. The Composite reliability CR (0.90), Cronbach alpha R (0.95), and Guttmann coefficient Lambda 4 (0.97) of the Pareto Principle questionnaire are declared good. The PPQ has a preferable range of all values. The parameter for the range of each value is displayed in Figure 10. Notable invitation to the readers: this study was conducted at one district and specific universities. Participants were selected, but almost all the data were independent observations that may cause any other loop. The supreme validation of an instrument is only conceivable when it is contextually tested or validated by others, so we invite all the researchers of the concerned field they use (PPQ) in their specific context or purpose regarding the assumption of PPQ. Second, this questionnaire is purely designed concerning J.C Maxwell's assumptions of the Pareto Principle and Leadership Success. It may be effective in other management fields after strong testing worldwide. It is strongly noted that Maxwell's name. The EFA is related in conditions when the factorial formation of an instrument for given masses is dark, as a rule, in the situation of forming new instruments. Strikingly, confirmed Factor Analysis (CFA) is used when data on the dimensionality of the stated factors are unclear and under scrutiny, either taking into account theory or observational revelations. To research, the specialist endeavors to sum up factors that can't straightforwardly be measured. The issue in the image with EFA is a strategy for deciding a group of factors. Factor analysis talks about many techniques required for outlines and measurement of decreases of things. The literature describes factor analysis as a dependence methodology whose basic purpose is to portray the fundamental arrangement among the factors in the assessment. Factor Analysis is a strategy that may be used for (an) indulgent the structure of a game plan of factors, (b) fabricate a survey to quantify a crucial variable, (c) lessen enlightening assortment to a more sensible size while taking as an incredible piece of the principal information as could be permitted, and (d) recognize another, somewhat set of un-correlated factors to displace the special course of action of associated factors in coming about the multivariate investigation. The calculated factor loading has offered central information to the PPQ and scales development, as instructive and mental examiners use EFA to test the validity of the instrument and its development process as often as possible. Despite the likelihood that scientists think things typify factors extracted incomplete hypothesis, EFA can be a basic step in the fundamental research instrument approval (Khan and Adil, 2013). Complete 52 things of the Pareto Principle Questionnaire (PPQ) were imperiled to (PCA) *"Principal Components Analysis"* utilized by using SPSS-18 *"Statistical Package for Social Sciences."* Essential to implementing PCA is that the information was screened for factor analysis, and appropriateness was considered. A review of the relationship framework among things and factors was evaluated, and the lattice in the table uncovered the nearness of positive connection and most of the coefficients of .3 or more. Head segments analysis (PCA) uncovered the sign of thirteen (7) segments with eigenvalues over the standards esteem 1, explanation 30.90%, 9.1%, 6.6%, 5.8%, 5%, 4.5%, and 3.2%, of the difference individually. An investigation of the scree plot pitched a lively break after the subsequent segment. With the Castelli's scree test, it was obvious to hold two parts for beneficial examination. Further, the outcomes were continued by parallel analysis, which uncovered that 13 segments with eigenvalues were more prominent than rule esteem (1) for a haphazardly brought forth information matrix. Literature and studies were scarce 1st attempts in this field, so a limited number of studies were found to compare the factor analysis results.

15. Conclusion

Instantly, PPQ was an attempt to measure the degree to which university leaders use 80/20 rules and, in exchange, how their leadership skills increase in the form of five levels of leadership intended by

Maxwell. This questionnaire will support the theory of the 80/20 rule and its effects on leadership development. The PQQ is also a useful validation to invite future research to test it in a different firm to compare the results. Last but not least, this was a piece of contextual empirical evidence to add to the theory of leadership literature. This scale is useful to assess the application of 80/20 rules by educational leadership at the university level. The leader would benefit to apply their 80/20 power while decision-making for maximum output. As affirmed by the literature, the 80/20 rule is very productive for leadership to gain the maximum output, so this psychometric validation of PPQ would be very useful for leaders when directing rules. The basic aim of the study was the improvement and preliminary testing of a newly developed scale named PPQ that would assess the application of the Pareto law by university-level leadership. The PPQ consisted of five major factors and 52 items. EFA obtained the suitability of the model factorial validity and inter-item correction, and it was concluded that it satisfied statistical standards. The construct sustainability (0.95), congruent validity (0.94), and discriminant validity (0.97) of PPQ are also a good fit. However, some subscales revealed low internal consistency and indicated the need for supplementary research regarding PPQ.

16. Implication for Practices

PPQ (Pareto Principle Questionnaire) is lengthily suitable to measure the Pareto law application by leadership at the university level. The content of the questionnaire anticipated the meanings of the indicators, mutually exclusive for measuring the application of the 80/20 by the leadership at the university level. Moreover, testing the reactivity and sensitivity of the questionnaire would be an enduring challenge. As indicated in the introduction section of this paper, the literature on testing Maxwell's assumption regarding the influence of Pareto law on leadership levels was scarce. In this regard, this questionnaire attempts to measure the degree to which the university leaders use the Pareto Principle and, in return, how their leadership skills increase in the form of five levels of leadership proposed by Maxwell. Future research may be conducted in another field to support the theory of the 80/20 rule and its effects on leadership development.

Last but not least, this was a piece of contextual empirical evidence to add to the theory of leadership literature. This scale is useful to assess the application of 80/20 rules by educational leadership at the university level. The leader would benefit from applying their 80/20 power while decision-making for maximum output. As affirmed by the literature, the 80/20 rule is very productive for leadership to gain the maximum output, so this psychometric validation of PPQ would be very useful for leaders during decision-making. The PQQ is also a useful validation to invite future research to test it in a different firm to compare the results. In the context of theoretical implication, the study was significant in meaning the application of the Pareto Principle by the leader and the performance output due to this principle through application. On the other side, the practice of this scale was a significant contribution to the theory. As stated by the literature, positivism aims to fill the knowledge gap. Practically, this questionnaire was also beneficial for the subordinates to assess the decision-making strategies of their leaders to gain the maximum output. There should be a proper mechanism for leadership decision-making at the university level, and at the end of the academic year, all decisions made should be analyzed using 80/20 charting. In this way, the top-level leadership of universities can improve productivity using limited and useful man money and material resources. To develop a quality system of decision-making by leaders of universities, there should be a statistical way out, like the Pareto Principle. Future research may use this questionnaire to add more indicators of leaders' decision-making (formal & informal). PPQ's statistical application and analysis can help the top-level measure their decision-making process regarding output. PPQ was an attempt to measure the degree to which

the university leaders use the Pareto Principle and, in return, how their leadership skills increase in the form of five levels of leadership proposed by Maxwell. Future research may be conducted in another field to support the theory of the 80/20 rule and its effects on leadership development. Universities should use this technique to assess prioritization during decision-making.

17. Recommendations

Based on the results of the above debate, the discussion and implications of the research are recommendations for future research in leadership and management. The stated below recommendations were:

1. A study should be conducted using qualitative exploration to assess the effectiveness of the Pareto principle questionnaire.
2. A multi-phase mixed method design is the best suggestion for future research testing this questionnaire in their related fields.
3. There should be a proper mechanism for leadership decision-making at the university level, and at the end of the academic year, all decisions made should be analyzed using 80/20 charting. In this way, the top-level leadership of universities can improve productivity using limited and useful man money and material resources.
4. To develop a quality system of decision-making by leaders of universities, there should be a statistical way out, like the Pareto Principle.
5. This developed, tested questionnaire may also be utilized to assess the current level of educational leaders in the journey of leadership skills development.
6. Future research may use this questionnaire to add more indicators of leaders' decision-making (formal & informal).
7. Policymakers should offer a self-assessment mechanism in decision-making by the leadership of universities by proposing the Pareto Principle law with its benefits and utility.
8. The statistical application and analysis of PPQ can help the top level measure their decision-making process regarding output.
9. Universities should use this technique to assess prioritization during decision-making.
10. PPQ was an attempt to measure the degree to which the university leaders use the Pareto Principle and, in return, how their leadership skills increase in the form of five levels of leadership presented by Maxwell. Future research may be conducted in another field to support the theory of the 80/20 rule and its effects on leadership development.

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