

## **CHAPTER- IV**

### **PRESENTATION AND ANALYSIS OF DATA**

This is a presentation of the detailed data of information collected through interviews conducted and literary source materials search on Karuppudayar Vaithianathan's contribution towards physical education and sports in relation to career and personality traits. The statements responded on Likert scale in the behavior, rating opinion questionnaire by athletes, coaches, students, sportsmen, physical educationists, principals of physical education colleges, professors / assistant professors working in physical education colleges, heads of departments of Physical Education in different Universities, sports journalists, friends have been statistically analysed and interpreted in this chapter. It also includes the findings and discussions on K.Vaithianathan's personality traits analysed through Cattell's sixteen-personality factor analysis questionnaire.

#### **4.1 KARUPPUDAYAR VAITHIANATHAN'S FAMILY BACKGROUND**

K.Vaithianathan's family had its origin in a remote rural village, Minnampalli in Salem, District, Tamil Nadu state, in the southern part of India. His father, Mr. P. Karuppudayar, lived in Minnampalli, and his mother, Mrs. K. Alamelu Ammal was from Umayalpuram, Attur Taluk, Salem District. Both his father and mother were from a rural area and settled in Minnampalli, after their marriage. Apart from his parents, he had two elder sisters and one younger brother and none of them had shown any interest in sports and games.

Alderman states that individuals are born with a “blueprint” of basic traits. For example, the child of athletic parents might inherit certain basic traits which, if nurtured, could lead him or her to select the same sports as or similar to those of his parents. However, in the case of K.Vaithianathan, it was found that his parents were from a rural area and the hard working nature of his parents, simplicity of their life styles and honesty in every effort, were traits inherited by young K.Vaithianathan from his parents.

He started his studies at Minnampalli elementary school at Ayothiyapattinam village. Though he could not have any access to any organized sports and games activities when he was studying at elementary school, the bare minimum facilities provided at his high school, in the form of 200 meter track facilities, football field and kabaddi had attracted him towards sports and games during his high school life.

K.Vaithianathan used to witness sports activities of the seniors in the school especially football and kabaddi tournaments. He slowly developed a fascination towards playing kabaddi. The keen interest shown by K.Vaithianathan towards sports and games was observed by his physical education teachers Mr. Shanmugam and Mr. Perumal, who selected him for the school kabaddi team. Thus, K.Vaithianathan became an outstanding Kabaddi player during his school days. He played Kabaddi both at District and Divisional level competitions. He was found to be the number one player in the team and because of him the school team won the matches both at the district and divisional levels.

Purely because of his personal effort and interest, K.Vaithianathan participated in high jump and long jump events when he was studying in 10<sup>th</sup> standard. He got the 1<sup>st</sup> place in the high jump competition and was overjoyed.

During school days, he was the goal keeper of the school football team. Since there were no regular coaching and participation in the school, the team could not come out in flying colours.

K.Vaithianathan is from a remote rural area. His parents did not have any sports background. However, he showed interest in sports and games and participated and won at the district and divisional level competitions only because of his own effort and personal interest, which shows his determination to achieve the best in sports and games right from his school years.

#### **4.2 CONTRIBUTION TO PHYSICAL EDUCATION AND SPORTS DURING COLLEGE DAYS**

The college days of K.Vaithianathan started in July, 1965 after he had successfully completed his S.S.L.C. in April, 1965. When he was studying Pre University Course (P.U.C.) he was a hosteller. In July, 1967 he joined Government College at Salem and got Graduation in B.Sc. (Maths) in 1970.

He represented the Government Arts College, Salem, and participated in the Inter collegiate Athletic meet .He won gold medals in high jump and long jump. When he was

studying in the 2<sup>nd</sup> year B.Sc. (during 1968-69), he participated in the inter zone Athletic competitions of Madras University held at Coimbatore and won the silver in high jump.

Purely out of his own efforts and interest and his achievements in sports during school and college days, K.Vaithianathan decided to take up physical education as his profession and sought admission to B.P.Ed course at Alagappa College of Physical Education, Karaikudi. He got admission in B.P.Ed course in the year 1970-71. His outstanding performances both in academic and sports participation made him get admission in M.P.Ed course in 1971-72. During these professional courses in physical education, K.Vaithianathan showed greater interest in participating in sports and games. He continuously participated in a number of inter collegiate and inter zonal athletic competitions during his college days and won 1<sup>st</sup> place in high jump, long jump, and 110 M hurdles.

He has created a new record at Alagappa college of physical education in high jump with 1.80 meters and 110 meters hurdles with 16.1 seconds. The new record created in Long jump at Alagappa college of physical education was 6.63 meters. He has also participated in a number of open meets, especially in the All India open meet organized by Coimbatore District.

His outstanding performance in sports and games and academics made the management of the Alagappa college of physical education invite him to be the Assistant Professor of the College immediately after his completion of M.P.Ed course. As Assistant Professor of the College, he represented the college of physical education and participated

in 110 Meters Hurdles, High Jump, 4 x 100 meters Relay and was placed 1<sup>st</sup> and in Long Jump he secured the 2<sup>nd</sup> place.

Table I shows the achievements of K.Vaithianathan in different levels of competitions.

**Table I**

**Achievements of Vaithianathan in Sports and Games**

<b>Year</b>	<b>Level</b>	<b>Competition</b>	<b>Place</b>
1964	District	Inter School - Kabaddi	Won
1964	Inter-Zone	Inter Zonal - Kabaddi	Won
1965	District	High Jump	1 <sup>st</sup>
1965	District	Broad Jump	2 <sup>nd</sup>
1967	Inter collegiate	High Jump Long Jump	1 <sup>st</sup> 1 <sup>st</sup>
1968	Inter Zonal	High Jump Long Jump	1 <sup>st</sup> 2 <sup>nd</sup>
1970-71	Inter collegiate	High Jump Long Jump	1 <sup>st</sup> 2 <sup>nd</sup>
1971-72	Inter collegiate	High Jump Long Jump 110 M Hurdles	1 <sup>st</sup> (NR 1.80m) 1 <sup>st</sup> (NR 6.63m) 1 <sup>st</sup> (NR 16.1 s)
1971-72	Inter Zone	High Jump Long Jump 110 M Hurdles	1 <sup>st</sup> 2 <sup>nd</sup> 1 <sup>st</sup>
1971-72	All India Open Meet	110 M Hurdles High Jump Long Jump Triple Jump Relay 4 x 100 M	15.8 Sec 1.87 m 6.83 m 14.56 m 1 <sup>st</sup>
1973-74	Inter - University	110 Meters Hurdles High Jump Long Jump 4 x 100 M Relay	1 <sup>st</sup> 1 <sup>st</sup> 2 <sup>nd</sup> 1 <sup>st</sup>
1974	Open National Athletic Meet at Madurai	High Jump 110 M Hurdles	Participation Participation
1975	All India Inter State Athletic Meet at Palai	High Jump 110 M Hurdles	Participation Participation

Table I shows that K.Vaithianathan had begun to participate in sports and games in a humble way right from his school days, first in Kabaddi and through his own efforts and the interest had developed his skills and interest in sports and games in football and in athletics. At the college level and afterwards, he preferred to participate in athletic events such as high jump, long jump, 110 M Hurdles, 4 x 100 M relay etc. He had secured places at the inter collegiate level, inter zonal level, state level and national level and thus contributed for the physical education and sports.

#### **4.3 CONTRIBUTIONS AS PHYSICAL EDUCATIONIST**

Having completed his graduation from Madras University in the year 1970, B.Sc. (Maths), K.Vaithianathan opted to be a physical educationist by doing the professional degrees Bachelor of Physical Education and Master of Physical Education, which he successfully completed in the years 1971 and 1972 respectively. During M.P.Ed, he selected his area of specialization, Track and Field for practicals and Research and Statistics and Training Methods for the theoretical part. His untiring efforts to excel in the field of physical education and research prompted him to work for Doctor of Philosophy (Ph.D.) in Physical Education from Annamalai University. No wonder his burning passion coupled with perseverance and industry got him his doctorate in his chosen field.

Immediately after completing M.P.Ed. degree, he joined as physical director at Erode Arts College in which he served for one year and was appointed Assistant Professor

in Alagappa College of Physical Education, Karaikudi in which he served for about a year. Then, he was appointed as Assistant Professor in the Annamalai University. After completion of 15 years of service at Annamalai University, Vaithianathan served as Reader and Head (on lien) in the Department of Physical Education, Pondichery University, Pondicherry for one year. After the completion of lien, he came back to Annamalai University and was posted as Professor & Director, Department of Physical Education and Sports Sciences, Annamalai University. His contribution through different professional institutions to the cause of physical education and sports is listed in Table II.

**Table II**

**Vaithianathan's Contribution towards Physical Education and Sports through Different Professional Institutions**

<b>Designation</b>	<b>Period</b>	<b>College / University</b>	<b>No. of Years Served</b>
Physical Director	12.7.72 to 29.6.73	Erode Arts College	1 Year
Assistant Professor	30.6.73 to 2.9.74	Alagappa College of Physical Education	1 Year
Assistant Professor	3.9.74 to 31.10.89	Annamalai University	15 years
Reader & Head (on lien)	1.11.89 to 26.9.90)	Dept. of Physical Education, Pondicherry University, Pondicherry	1 Year
Professor & Director / Head	27.9.90 to Sept 2009	Dept of Physical Education and Sports Sciences, Annamalai University, Annamalai Nagar	19 years
Vice Chancellor	1.9.2009 - 31.7.2012	Tamil Nadu Physical Education and Sports University, Chennai	3 Years

As shown in table II, K.Vaithianathan started his career as physical director in Erode Arts college and his thrust to contribute for the physical education and sports by educating future physical educationists made him move to Alagappa college of physical education and Annamalai University where he trained the physical education teachers doing Bachelor of Physical Education and Master of Physical Education courses.

When the Government of Tamil Nadu introduced +2 at school level during 1978, there was an urgent need for upgrading the working physical education teachers who were holding either Diploma in Physical Education (D.P.Ed) or B.P.Ed degrees. The Government had formulated a scheme to upgrade the working teachers to qualify Master's degrees (M.P.Ed) by permitting the physical education teacher training institutions / universities to start summer M.P.Ed and summer B.P.Ed courses. While other Physical Education teacher training institutions came forward to run summer M.P.Ed courses for the Diploma and Degree holders, the Annamalai University shouldered the responsibility of conducting summer B.P.Ed course for the benefit of working physical education teachers who were holding only Certificate course in physical education. K.Vaithianathan's contribution in formulating suitable syllabus, course contents, training schedules, providing accommodation during training timings, preparation of trainees etc were well commended by the trainees cum working physical education teachers throughout the state. Practically, K.Vaithianathan and some other colleagues involved in this programme had to forego their summer vacations for years together. This really proved the commitment that K.Vaithianathan had to the profession of physical education and his dedication.



Pondicherry Central University was established in the year 1985 and departments were established one after the other. Having found the need for a well dedicated physical educationist for the establishment of physical education department, the University invited K.Vaithianathan to head the department of physical education. K.Vaithianathan accepted the offer with lien on the present post in Annamalai University and served at Pondicherry University for establishing the University's Physical Education and Sports University and starting B.Sc. (Physical Education), B.P.Ed and M.P.Ed courses by inviting experts in the field in addition to the staff of the Department. The valuable guidance and encouragement given by K.Vaithianathan in establishing the department of physical education served as a foundation for all its future activities in Pondicherry University.

Retaining the lien on the position at Annamalai University, K.Vaithianathan rejoined Annamalai University to take up the post of Professor and Head of the department of physical education and sports sciences, Annamalai University. With his multifarious professional experience in the field of physical education, K.Vaithianathan observed the following:

- (a) Physical educationists throughout the country, especially in the state are lacking the exposure of research experience in physical education and sports.
- (b) Existing rules and regulations of the Universities and Institutions do not encourage the working physical educationists to qualify for research degrees such as M.Phil

- (c) Given adequate opportunity to the qualified, working physical educationists to qualify further for research degrees such as M.Phil and Ph.D would definitely improve the perspectives of physical education and sports, which in turn would benefit the country as a whole.

Keeping the above in mind, K.Vaithianathan started working on formulating a distance education programme in Master of Philosophy in physical education which would give more opportunities for the working physical educationists to involve in researches in physical education and sports. As Head of the department of physical education and sports sciences of Annamalai University, he pioneered in this venture and of course he was highly successful in creating research interests among the working physical educationists, which resulted in a plenitude of basic researches in the field of physical education and sports sciences under the able guidance of qualified, experienced researchers in the field.

#### **4.4 CONTRIBUTION TO RESEARCH IN PHYSICAL EDUCATION**

As professor of physical education in the department of physical education and sports, K.Vaithianathan has guided a number of full- time M.Phil scholars and part- time and full- time Ph.D scholars. K.Vaithianathan has guided more than 52 M.Phil scholars and produced 24 Ph.D. scholars. He has guided researches in different areas of physical education, such as,

Researches on science of coaching

Training effects on physical fitness

Training effects on physiological variables

Training effects on psychological variables on different population such as players of different levels, athletes of different disciplines etc

Researches on Prediction of playing ability

Prediction of playing ability of different sports and games from physical fitness variables

Prediction of playing ability of different sports and games from physiological variables

Prediction of playing ability of different sports and games from psychological variables

Prediction of playing ability of different sports and games from anthropometric variables

Researches on Formulation of Norms:

Norms for physical fitness levels of school level players and athletes

Norms for physical fitness levels of college level players and athletes

Norms for skills in different sports and games

Researches on Benefits of Yogic Practices

Influence of Yogic practices for Health Education

Influence of Yogic practices for weight management

Yogic practices as Yogic therapy for different ailments

And Researches of Inter-disciplinary nature.

#### **4.5 UGC SPONSORED RESEARCHES IN PHYSICAL EDUCATION**

Traditionally, universities have been the centers of research. Although, the Government has a network of science and technology laboratories for research and development, the major base of researchers in science and technology remains with the universities. Therefore, university and college teachers need to be supported to meet this requirement.

The University Grants Commission strives to promote teaching and research in emerging areas in Humanities, Social Sciences, Languages, Literature, Pure sciences, Engineering & Technology, Pharmacy, Medical, Agricultural Sciences etc. The emphasis would be on supporting such areas that cut across disciplines and subjects such as health, gerontology, environment, biotechnology, stress management, WTO and its impact on economy, history of science, Asian philosophy and many other areas, as it would be identified by subject experts.

There are disciplines such as defence and strategic studies which include national security affairs, insurance and banking, economics and world trade which in a true sense are multidisciplinary in nature, cutting across disciplines of sciences, humanities and social science, and are of importance in a rapidly changing global scenario. These and allied disciplines need to be studied and researched in a more organized manner. Institutionalization of such activities is a need of the present times.

Research grants for physical education and sports is a scarce one, as only few teachers, come forward to opt for researches and very few are getting the grants. K.Vaithiyanathan, out of his deep interest in research in physical education contributes to his chosen field by undertaking the following minor and major projects with UGC Assistance.

#### **4.5.1 Minor Research Projects**

Effects of circuit training and training on selected physical and physiological variables. A UGC minor project with a grant of Rs.10,000 between 1989 and 1990.

#### **4.5.2 Major Projects**

UGC Special Assistance Programme (SAP, DRS-1) projects on University Youth, Rural Youth and Special Population between 2007 and 2012 with a UGC research grant of Rs.31.00 lakhs.

#### **4.6 Contribution as Resource Person in National, International Level Workshops / Seminars in Physical Education, Sports and Allied Disciplines**

As a learned resource person, in the field of physical education and sports, K.Vaithianathan was invited to serve as resource person / chairperson for different workshops and seminars organised by the different Universities and Autonomous bodies throughout the length and breadth of our country. His contribution towards the development of physical education and sports in these workshops and seminars were mainly on the following broad field of research oriented Articles and Lectures/

Presentations and almost all the physical educationists and sports scientists in our country had attended his workshops / seminars and got benefited in one way or the other.

#### **4.6.1 Special Lectures Delivered**

In more than 31 UGC Academic Staff Colleges in Southern Universities for the last 15 years on:

1. Talent Identification and its promotion on scientific lines.
2. Role of physical fitness in competitive sports
3. Professional preparation
4. Training Methodology
5. Role of research & statistics in physical education and sports
6. Latest changes in the rules & regulations of IAAF
7. Computerized Statistical application in physical education and sports research.

#### **4.7 CONTRIBUTION AS COACH**

Apart from serving as a leading physical educationist, K.Vaithianathan contributed towards the development of sports and games. He was known for his dedication as a coach. Through his untiring efforts he has produced:

1. An Asian Gold Medalist – Mr. A. Rajan , 1981
2. A SAF Games Gold Medalist Mr. R. Ananda Natarajan 1989.

3. An Indian Athlete – Mr. J. Jaikumar 1990
4. More than 35 National place holders in Athletics for the last 32 years.

#### **4.8 CONTRIBUTION TO PHYSICAL EDUCATION AND SPORTS BY SERVING STATUTORY BODIES**

Apart from his heavy routine, responsibilities as a Professor and Head of the department, K.Vaithianathan involved himself in the promotion of physical education and sports, through the length and breadth of our country by serving as a member of expert committees constituted by the Government of India, State Governments and University Grants Commission, Member of board of studies, and Board of examiners in different Universities and Autonomous Institutions. Member of Selection Committee's to recruit physical education and sports personnel for different Universities and Autonomous Colleges. The lists of such contributions made through different academic and statutory bodies for physical education and sports are given in Tables III, IV, V, VI.

**Table III****Contribution made through Different Expert Committees formed by Different Statutory Bodies**

<b>S.No</b>	<b>Served As</b>	<b>Appointed By</b>	<b>Purpose</b>
1	Visiting Commission	TN Govt and MS University	To affiliate Dr. Sivanthi Adithanar College of Physical Education, Tiruchendur
2	Visiting Commission	University of Madras	To give permanent Affiliation to Sri Sarada College of Physical Education
3	Question Paper Review Committee	University Grants Commission, New Delhi	To review Question Paper for NET Examinations
4	Member – Review Committee	Association of Indian Universities	Players’ Eligibility Review for Inter University Competitions
5	Convenor - Review Committee	Association of Indian Universities	Players’ Eligibility Review
6	Expert Committee Member	University Grants Commission	Award of Centre of Excellence in Physical Education for Gurunak Dev University, Amritsar
7	Member – TN Planning Commission	Government of Tamil Nadu	TN Planning Commission Working Committee (Sports)
8	Member Advisory Committee	University Grants Commission	UGC SAP Advisory Committee for Dept of Physical Education, Alagappa University.
9	Dean, Faculty of Education & Syndicate Member	Annamalai University	For the administration of Annamalai University
10	Member – Steering Committee	Annamalai University	For Organizations of Functions including Physical Education and Sports Department
11	Member – Establishment Committee	Annamalai University	To oversee the affairs of the Establishment of the University
12	Convenor – Disciplinary Committee	Annamalai University	To oversee the Discipline of the Student Community in the Campus



13	Member - NSS	Annamalai University	To advice NSS Programmes of various Departments of Annamalai University
14	Member in Advisory Committee	Annamalai University	To oversee the functioning of Adult Education, Continuing Education and Extension Service of the University

**Table IV**

**Contribution made through Serving Board of Studies of Academic Bodies for courses in Physical Education and Sports**

<b>S.No</b>	<b>Name of University / Institution</b>	<b>No. of Years Served</b>
1	Annamalai University	28 years
2	University of Madras	8 years
3	Alagappa University	15 Years
4	Madurai Kamaraj University	6 Years
5	Gulbarga University	6 Years
6	Bangalore University	9 Years
7	Mysore University	3 Years
8	Bharathidasan University	10 Years
9	Bharathiar University	8 Years
10	Manonmaiam Sundaranar University	6 years
11	Pondicherry University	8 Years
12	Sri Venkateswara University	6 Years
13	Calicut University	6 years
14	Kerala University	3 Years
15	Mangalore University	5 Years
16	Periyar University	6 Years
17	YMCA College of Physical Education	20Years
18	Sri Poondi Pushpam College, Tanjore	15 Years

**Table V****Contribution made through Serving Board of Examiners and Question Paper Setting  
in Physical Education and Sports Courses**

<b>S.No</b>	<b>Name of University / Institution</b>	<b>No. of Years Served</b>
1	Annamalai University	28 years
2	Alagappa University	15 Years
3	Avinashilingam Home Science University	15 Years
4	Amaravathi University, Amaravathi	5 Years
5	Bangalore University	9 Years
6	Bharathiar University	8 Years
7	Bharathidasan University	10 Years
8	Calicut University	6 years
9	Cananur University Calicut	6 Years
10	Gulbarga University	6 Years
11	Kerala University	3 Years
12	LNIPE, Gwalior	6 Years
13	Madurai Kamaraj University	6 Years
14	Mangalore University	5 Years
15	Nagarjuna University, Gundur	6 Years
16	Osmania University, Hyderabad	7 Years
17	Pondicherry University	8 Years
18	Punjab University, Chandigar	3 Years
19	Patiala University, Punjab	4 Years
20	Sri Poondi Pushpam College, Tanjore	15 Years

**Table VI****Contribution made through Serving Board of Selection for Appointment of Staff for Physical Education and Sports Departments**

<b>S.No</b>	<b>Name of University / Institution</b>
1	Annamalai University
2	Anna University
3	Alagappa University
4	Bangalore University
5	Bharathiar University
6	Bharathidasan University
7	Calicut University
8	Cananur University Calicut
9	Gulbarga University
10	Kalyani University
11	LNIFE, Gwalior
12	Madurai Kamaraj University
13	Mangalore University
14	M.G. University, Kotayam
15	M.S. University, Tirunelveli
16	Nagpur University, Nagpur
17	NIT, Warangal
18	Osmania University, Hyderabad
19	Pondicherry University
20	Periyar University, Salem
21	S.V. University, Thirupathy
22	University of Madras, Chennai
23	University of Agriculture Science, Bangalore
24	YMCA College of Physical Education, Chennai
25	Maruthi College of Physical Education, Coimbatore
26	Dr. Sivanthi Adithanar College of Physical Education
27	Sri Sarada College of Physical Education, Salem

#### **4.9 CONTRIBUTION MADE THROUGH ORGANIZING INTER UNIVERSITY TOURNAMENTS.**

Talents and performance of athletes and sportsmen could not be highlighted unless it was exhibited. Providing such opportunities to the sportsmen and creating awareness among public, are vital for promotion of sports in the country. Unless a sport / games are organized there cannot be participants and there cannot be spectators. Thus organization of inter university sports competitions contributed:

- To encourage sportsmanship and healthy competitions among the colleges involved.
- To organize Zonal and Inter-Zonal tournaments in the recognized games and sports, towards selection of University Teams.
- To raise the general standards of sports and games towards achievement in Inter-University / National / Inter-National tournaments.
- To organize competitions for the total personality development of all students in order to serve the community towards its advancement.

Organising a tournament or a competition, where hundreds of sportsmen compete in different sports and games and thousands of spectators witness the competitions is the core contribution towards sports development. K.Vaithianathan has deftly handled this arduous task for the promotion of sports. The list of inter university tournaments organized by K.Vaithianathan is presented in Table VII, and the list of state level tournaments organized is presented in Table VIII.

**Table VII****Contribution of K. Vaithianathan by organizing Inter University Tournaments**

<b>S.No</b>	<b>Year</b>	<b>Tournaments Organized</b>
1	Dec 1991	South Zone Inter University Athletic Meet for Men and Women
2	Dec 1992	South Zone Inter University Hockey Tournament
3	Jan 1994	All India Inter University Ball Badminton (Men) Tournament
4	Jan 1994	All India Inter University Tennis (Women) Tournament
5	Nov 1996	South West Zone Inter University Handball Men
6	Jan 1997	All India Inter University Hockey Tournament
7	Feb 1997	South West Zone Inter University Tennis (Men)
8	Oct 1997	All India Inter University Football (Women) Tournament
9	Dec 1997	South Zone Inter University Basketball for Men
10	Jan 1998	South West Zone Inter University Kho Kho Men
11	Nov 1998	South Zone Inter University and Inter Zone Table Tennis (M &W)
12	Jan 1999	All India Inter University Ball Badminton (Women) Tournament
13	Feb 1999	South Zone Inter University and Inter Zone Tennis (M)
14	Dec 1999	South Zone Inter University Hockey Men
15	Oct 2000	South West Zone Inter University Kho Kho (Women) Tournament
16	Oct 2001	South Zone and Inter Zone Inter University Volleyball (Men) Tournament
17	Dec 2001	South West Zone Inter University Basketball (Men) Tournament
18	Sep 2002	South West Zone Inter University Handball (Men & Women) Tournament
19	Dec 2002	South Zone and Inter Zone Inter University Basketball(Men) Tournament
20	Oct 2003	South West Zone and Inter Zone Inter University Football (Men) Tournament
21	Nov 2003	South Zone Inter University Football (Men) Tournament
22	Dec 2003	South Zone and Inter Zone Inter University Kabaddi (Men) Tournament
23	Oct 2004	South Zone and Inter Zone Inter University Badminton (Men & Women) Tournament
24	Dec 2004	South Zone and Inter University Hockey (Men) Tournament
25	Jan 2006	South West Zone and Inter Zone Inter University Handball (Men & Women) Tournament
26	Feb 2006	All India Inter University Ball Badminton (Men) Tournament
27	Oct 2006	South Zone and Inter University Hockey (Men) Tournament
27	Oct 2006	South Zone and Inter University Badminton (Men & Women) Tournament
28	Feb 2006	All India Inter University Tennis (Women) Tournament

**Table VIII****Contribution of K. Vaithianathan by organizing State Level Tournaments**

<b>S.No</b>	<b>Year</b>	<b>Tournaments Organized</b>
1	Aug 1993	Dr. Rajah Sir Muthiah Memorial Open Tennis Championship
2	Feb 1994	Tamil Nadu & Pondy State Inter Physical Education Tournament
3	Feb 1995	Tamil Nadu & Pondy State Inter Physical Education Tournament
4	Aug 1995	CWG – AITA Tamil Nadu State Open Tennis Championship
5	Feb 1996	Tamil Nadu & Pondy State Inter Physical Education Tournament
6	Mar 1998	State Level Inter Collegiate Basketball (Men) Tournament
7	Jan 1998	Tamil Nadu Inter University Volleyball (Men) Tournament
8	Oct 1998	Tamil Nadu Inter University Football (Men) Tournament
9	Mar 1999	Tamil Nadu & Pondy State Inter Physical Education Tournament

#### 4.10 CONTRIBUTION THROUGH ORGANIZING SEMINARS

Seminars are primarily arranged to discuss current issues and problems so as to share ideas. A seminar provides small group discussions in a formal setting with a clear agenda. In a seminar, a speaker presents a theme or a set of papers and the general theme is discussed by all those who participate.

The chairman/chairperson of the seminar guides, directs, coordinates and organizes the discussion in a systematic manner in order to optimize time, resources and get more benefits. In a seminar, teachers can discuss problems regarding admission, staff, development, evaluation, new idea of teaching or relevant innovations etc. In a seminar, a teacher may contribute a paper or an idea, constructively criticise or review a conventional approach.

**Table IX**

##### **Contribution Made through Organizing National Level Seminars**

<b>S.No</b>	<b>Sponsoring Authority</b>	<b>Theme of Seminar</b>	<b>Conducted on</b>
1	U.G.C. National Level Seminar	Physical Education and Sports in the New Millennium	16 <sup>th</sup> & 17 <sup>th</sup> March 2001
2	U.G.C. National Level Seminar	Training Aspects of Health, Fitness and Excellence in Sports and Games	28 <sup>th</sup> & 29 <sup>th</sup> March 2002
3	U.G.C. National Level Seminar	Emerging Trends in Physical Education and Sports Sciences	3 <sup>rd</sup> & 4 <sup>th</sup> March, 2003
4	U.G.C. National Level Seminar	Multi Disciplinary Approach for Promoting Quality in Physical Education and Sports	5 <sup>th</sup> & 6 <sup>th</sup> March 2004
5	U.G.C. National Level Seminar	Contribution of Scientific Findings of Allied Subjects for the Promotion of Physical Education and Sports	10 <sup>th</sup> & 11 <sup>th</sup> March 2006

#### 4.11 CONTRIBUTION THROUGH ORGANIZING WORKSHOPS

It is generally organized by an institution or association in order to develop certain instructional materials, books, resource materials, supportive material, work book etc. Workshops can be organized to develop certain skills of teachers.

Teachers could be trained in certain new laboratory skills, develop a question bank, analyse questions for different examinations and suggest reforms. A workshop could mean hard and concentrated work on the part of experienced teachers to create certain educational materials. A workshop comprises a small, selected group of teachers or experts drawn from actual working situations or related experts who conduct and guide some activities in order to help the participants enhance their skills in their chosen field.

**Table X**

##### **Contribution Made through Organizing Workshops**

<b>S.No</b>	<b>Sponsoring Authority</b>	<b>Theme of Workshop</b>	<b>Conducted on</b>
1	A.I.U National Level	University Sports Management for Director Sports and Secretaries	30 <sup>th</sup> Sept to 3 <sup>rd</sup> Oct 2004
2	Annamalai University National Level	Sports Medicine	29 <sup>th</sup> Jan 2007
3	U.G.C. National Level Workshop	Computerized Application of Statistics in Physical Education and Sports Research	3 <sup>rd</sup> to 5 <sup>th</sup> March, 2007



#### **4.12 CONTRIBUTION MADE THROUGH ORGANISING REFRESHER COURSE**

The Academic staff orientation scheme is an outcome of the NPE (1986). The NPE, in its programme of action, makes a sharp reference to the crucial link between teacher motivation and the quality of education. Teachers, as we know, occupy a key position in the education system. The quality, competence and character of teachers, are of utmost importance. They influence the standard of education and thus contribute to its national development. The teachers should function as effective instruments of development and social change.

The UGC-ASC came into being with an overall objective of acting as an agency to bring about changes and development in education. It is meant to involve itself in the improvement of courses, curriculum, examination reforms, improvement in the management of higher education, and to bring about a closer linkage between society and Higher Education through meaningful study and Research.

For the benefit of teachers working in physical education colleges and Directors of physical education, with the approval of the UGC and the Academic staff college, K.Vaithianathan has organized and conducted refreshers courses as detailed in Table XI, which was very useful and beneficial for the teachers and Directors of physical education to identify talents, application of modern trends, area of research in physical education and sports.

**Table XI****Contribution made through Organising Refresher Course**

<b>S.No</b>	<b>Sponsoring Authority</b>	<b>Theme of Refresher Course</b>	<b>Conducted on</b>
1	UGC Sponsored	Research Methodology and Applied Statistics	25.11.98 to 16.12.1998
2	UGC Sponsored	Modern Trends in Physical Education and Sports	16.2.99 to 8.3.1999
3	UGC Sponsored	Physical Education and Sports	28.2.2000 to 19.3.2000
4	UGC Sponsored	Area of Research and Application of Statistics in Physical Education and Sports	23.12.2003 to 11.1.2004
5	UGC Sponsored	Talent Identification and Application of Modern Techniques and Training in Sports	1.12.2006 to 31.12.2006

**4.13 CONTRIBUTIONS IN DIFFERENT SEMINARS AND WORKSHOPS**

Apart from organizing Seminars / Workshops / Refresher courses, K.Vaithianathan also contributed through his expert guidance and researches and attended a number of National level seminars / Workshops and Orientation courses and presented papers. The following are such contributions made by him:

1. Eighteen National level Seminars and presented Papers
2. Five Workshops at National Level
3. One Orientation Course
4. One Indian Sports Congress
5. One International Workshop on Sports Psychology
6. Five International Conferences

#### **4.13.1 Additional Responsibilities**

1. Warden, Thendral Illam, Annamalai University from Oct 1990 to June 2000
2. Warden Annamalai University Canteen from Oct 1990 to 30<sup>th</sup> June, 1996
3. Convenor, Warden's Council, Annamalai University from November 1993 to June 2000
4. Organising Secretary of various Inter University Tournaments from 1990 to 2008.

#### **4.14 PERSONALITY FACTOR ANALYSIS**

##### **Sixteen Primary Traits**

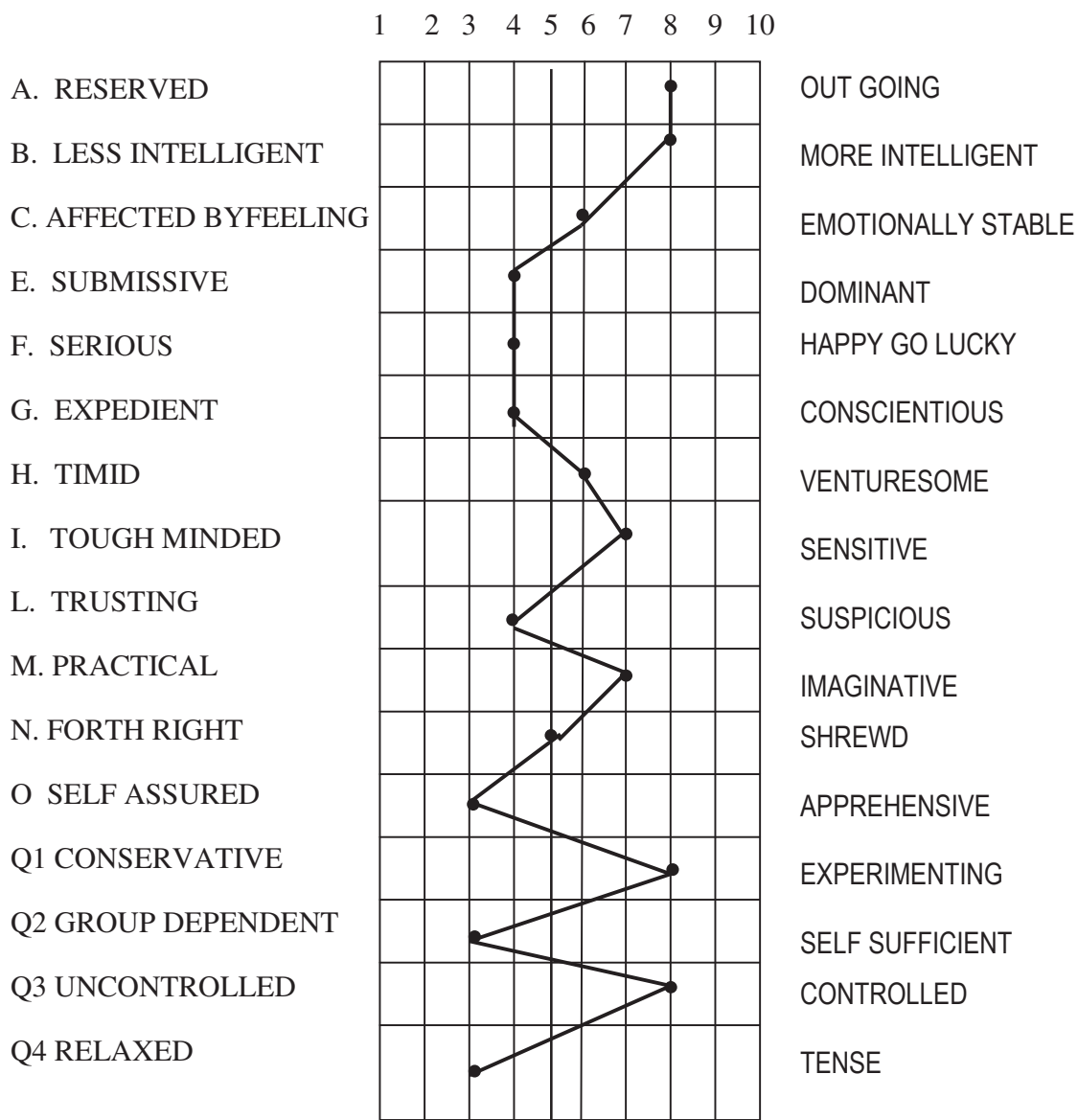
K.Vaithianathan's personality traits were analysed using Cattell's 16 Personality factor analysis questionnaire Form 'A', which was administered to him. The raw scores obtained through analysis of the responded questionnaire had been converted into sten scores after the process of an age correction using the formula referred to. On the basis of the sten scores secured, the findings and discussions have been made and presented. The raw scores obtained, the age correction scores and the sten scores calculated for the traits have been presented in Table XII.

TABLE XII

**RAW SCORES, RAW SCORES CORRECTED BY AGE AND STEN SCORES ON  
KARUPPUDAYAR VAITHIANATHAN'S  
PERSONALITY TRAITS**

Trait	Bipolar form of the Trait	Raw Score	Raw Scores Corrected	Sten Score
A	Reserved Vs Outgoing	16	12	8
B	Less Intelligent Vs More Intelligent	16	12	8
C	Affected by Feelings Vs Emotionally Stable	19	15	6
E	Submissive Vs Dominant	12	9	4
F	Serious Vs Happy-go-Lucky	8	5	4
G	Expedient Vs Conscientious	11	9	4
H	Timid Vs Venturesome	14	12	6
I	Tough minded Vs Sensitive	15	13	7
L	Trusting Vs Suspicious	6	4	4
M	Practical Vs Imaginative	15	13	7
N	Forth-Right Vs Shrewd	15	12	8
O	Self-assured Vs Apprehensive	8	5	4
Q1	Conservative Vs Experimenting	16	13	8
Q2	Group Dependent Vs Self-sufficient	9	6	5
Q3	Uncontrolled Vs Controlled	18	15	7
Q4	Relaxed Vs Tense	10	7	3

**Figure IV: GRAPHICAL PRESENTATION OF PERSONALITY TRAITS OF KARUPPUDAYAR VAITHIANATHAN**



**Factor A: Reserved Versus Outgoing**

K.Vaithianathan has scored a sten of eight in this trait as indicated in Table X and the personality profile graph (Figure IV). On the basis of the score obtained, he is found to be outgoing in this factor. Though he started his life in a rural area, for his graduation and professional training he moved to townships and cities where he taught and coached teacher trainees throughout his career. This brought him to be more outgoing, taking care of every need of the trainees and to be a model for them to serve the students better.

**Factor B: Less Intelligence Versus more Intelligence**

The subject has obtained a sten scores of eight which tends to be more intelligent. As a person who has actively involved himself in teaching and coaching teacher trainees, preparing research scholars in different broad field of areas and in innovating new programmes, K.Vaithianathan's intelligence shone like the brilliant sun. The findings of this study also prove the same.

**Factor C: Affected by feelings Versus Emotionally Stable.**

The analysis shows that K.Vaithianathan has made a sten score of six as indicated in Table X. This brings out the fact that he slightly drifts towards being emotionally stable. However, his involvement in teaching and coaching as a professional notwithstanding, and as a teacher who had to share the sorrows and happiness of the students whom he taught, he was also affected by emotions, feelings, which is proved in the findings of this study.

**Factor E: Submissive Versus Dominant**

K.Vaithianathan has secured a sten score of four, which reflects a personality trait of being more submissive than dominant. As a teacher, sports administrator, researcher, guide and supervisor of different academic functions, there is every possibility that he could have become a dominant personality. However, his politeness and courtesy inherited from his parents made him contribute all that he could be in a gentle manner and by giving opportunities to his colleagues and juniors to grow and develop. The findings of this study proved that he always wanted to be polite rather than dominant.

**Factor F: Serious Versus Happy-Go-Lucky**

The sten score of four, shows K.Vaithianathan's personality trait factor. This shows that he is serious and restrained rather than happy-go-lucky. K.Vaithianathan is always serious in discharging the responsibilities and never allows things to go awry. The findings of the study on his personality proves it true as he respects the inner values.

**Factor G: Expedient versus Conscientious**

The analysis of the data as presented in Table X, shows a sten score of four. It leads to the conclusion that K.Vaithianathan is slightly expedient rather than over conscientious and had a balanced approach in this factor. His career required at times to act expediently and other times, conscientiously, which formed the similar personality behaviour.

**Factor H : Timid Versus Venturesome**

K.Vaithianathan has scored a sten of six as indicated in Table X and presented in the graph, by which it is found that he is more venturesome than timid. As a leading physical educationist and a sports personality he had to make a balanced approach towards venturesome, which proves the fact that he was called to serve as Vice Chancellor of the Tamil Nadu Physical Education and Sports University, which he took up with certain degree of venturesome.

**Factor I : Tough-minded Versus Sensitive**

The obtained sten score of seven leads one to conclude that he is more sensitive than tough minded. However, in action K.Vaithianathan used to be more tough-minded in handling tough situations. His nature of a sensitive approach in every issue proves that he might have handled the issue with a sensitive mind.

**Factor L: Trusting Versus Suspicious**

K.Vaithianathan has scored a sten score of four in this factor as figuratively shown in the graph (Figure IV). This proves that he is free of jealous tendencies, is adaptable, cheerful, uncompetitive, concerned about others, and a good team worker. This was proved in the case of K.Vaithianathan who always trusts others and does things as a good team worker.



**Factor M: Practical Versus Imaginative**

The analysis shows that the subject scored a sten score of seven. The scores show a high score direction towards being imaginative. This shows the tendency of the subject that he was self-motivated, imaginatively creative, concerned with 'essentials' and physical realities, the qualities which are very much required to be a successful physical educationist and sports scientist.

**Factor N: Forthright Versus Shrewd**

The scores presented in Table X with graphical presentation show that the subject scored a sten score of eight. Individuals who score high on Factor N tend to be polished, experienced, and shrewd. Their approach to people and problems are usually being perceptive, hard-headed. On many occasions as the head of the department, resource person, guide, supervisor and organizer, K.Vaithianathan had to be shrewd to tackle the situations in an imaginative way with his experienced handling. He is highly technical and clever in meeting situations both as a physical educationist and a sports scientist.

**Factor O: Self Assured Versus Apprehensive**

The subject obtained a sten score of four. This shows that the subject tends to be unruffled and to have an unshakable nerve. He seems to have a mature mind, not anxious, confident in himself and his capacity to deal with things. The results prove that the subject possesses this personality factor, which is the main reason for his success in all his endeavours.

**Factor Q<sub>1</sub>: Conservative Versus Experimenting**

K.Vaithianathan has obtained a sten score of eight, a high directional score towards experimenting. This shows that the subject was experimenting more than being conservative. High scores in Factor Q<sub>1</sub> show that the subject tends to be interested in intellectual matters and to have doubts on fundamental issues. The presentations also prove that K.Vaithianathan was experimenting intellectually in handling the classes as well doing researches of his choice.

**Factor Q<sub>2</sub>: Group Dependent Versus Self-sufficient**

The analysis of Table X shows that K.Vaithianathan scored a sten score of five, which shows that he is both group-oriented and self-sufficient. As a prominent resource person in physical education, he is self-sufficient and in moving with his staff members in implementing academic programmes, he becomes completely group-oriented. The individual who scores low on Factor Q<sub>2</sub> prefers to work and make decisions with other people and likes to win social approval and admiration. These are the qualities required to be an able administrator to lead a group of intellectual and well-disciplined people.

**Factor Q<sub>3</sub>: Uncontrolled Versus Controlled**

As far as this factor is concerned, K.Vaithianathan scored seven, a trend towards high sten scores, which show that he has a strong control over his emotions and general behaviour, inclined to be socially aware and careful and aware of what is commonly

termed “self respect” with a high regard for social reputation. Effective leaders are high in this factor.

K.Vaithianathan’s contributions in his career and sports are themselves a proof that he is more controlled with a high regard for social reputation and is an effective leader in various positions in physical education and sports departments.

#### **Factor Q<sub>4</sub>: Relaxed Versus Tense**

The sten score of three scored by the subject in this factor of personality trait is considered the low scores. This proved that the subject tends to be sedate, relaxed, composed, and satisfied. As noted earlier, his achievements in his career as a physical educationist, coach, sports scientist and researcher made him approach any problem in a relaxed manner without any tension and was satisfied with the outcome of his efforts.

#### **4.15 FACTOR ANALYSIS OF THE QUESTIONNAIRE ADMINISTERED**

Apart from the collection of data and Cattell’s 16 PF questionnaire for analyzing Karuppudayar Vaithianathan’s contribution towards physical education and sports in relation to career and personality traits, the investigator administered questionnaire among sportspersons, athletes, sports organizers, sports administrators, sports journalists, physical educationists and coaches to scientifically test the contribution of K.Vaithianathan’s contribution to the field of sports and physical education, leadership, sociability, achievement in sports, the results of which are presented below.

The results of factor analysis such as communalities, Eigen values and percent of variance, factor loadings and identification of common dimensions on variables related to the contributions of K.Vaithianathan towards physical education and sports in relation to his career and personality traits are presented below. In this analysis each statement in the questionnaire is termed as an independent variable.

The communalities of the data analysed are presented in Table XIII.

**TABLE XIII**  
**COMMUNALITIES**

Variable	Extraction	Variable	Extraction	Variable	Extraction
VAR001	0.994384	VAR022	0.990547	VAR043	0.861256
VAR002	0.989921	VAR023	0.994068	VAR044	0.988014
VAR003	0.993935	VAR024	0.995244	VAR045	0.985537
VAR004	0.990742	VAR025	0.991147	VAR046	0.99501
VAR005	0.989662	VAR026	0.995103	VAR047	0.988513
VAR006	0.683501	VAR027	0.991304	VAR048	0.983696
VAR007	0.993124	VAR028	0.995202	VAR049	0.992609
VAR008	0.996015	VAR029	0.990574	VAR050	0.993875
VAR009	0.991226	VAR030	0.993997	VAR051	0.929328
VAR010	0.924053	VAR031	0.992378	VAR052	0.915614
VAR011	0.993397	VAR032	0.484524	VAR053	0.74202
VAR012	0.968177	VAR033	0.956085	VAR054	0.994695
VAR013	0.995457	VAR034	0.947482	VAR055	0.950313
VAR014	0.992345	VAR035	0.994253	VAR056	0.704517
VAR015	0.992073	VAR036	0.625298	VAR057	0.979904
VAR016	0.993878	VAR037	0.992775	VAR058	0.905099
VAR017	0.995304	VAR038	0.918965	VAR059	0.948428

VAR018	0.995518	VAR039	0.921652	VAR060	0.91958
VAR019	0.988679	VAR040	0.98815	VAR061	0.986309
VAR020	0.998301	VAR041	0.991909	VAR062	0.971593
VAR021	0.995082	VAR042	0.844784	VAR063	0.921911

**TABLE XIII**  
**COMMUNALITIES (Continued)**

Variable	Extraction	Variable	Extraction	Variable	Extraction
VAR064	0.993633	VAR084	0.923134	VAR104	0.818429
VAR065	0.98841	VAR085	0.958214	VAR105	0.784875
VAR066	0.973479	VAR086	0.704837	VAR106	0.768373
VAR067	0.993124	VAR087	0.827535	VAR107	0.984364
VAR068	0.99425	VAR088	0.985969	VAR108	0.99507
VAR069	0.977654	VAR089	0.993533	VAR109	0.677382
VAR070	0.853374	VAR090	0.993651	VAR110	0.812988
VAR071	0.721948	VAR091	0.817722	VAR111	0.450135
VAR072	0.992629	VAR092	0.910911		
VAR073	0.990368	VAR093	0.685112		
VAR074	0.972575	VAR094	0.802606		
VAR075	0.984276	VAR095	0.987769		
VAR076	0.872592	VAR096	0.928116		
VAR077	0.774918	VAR097	0.909156		
VAR078	0.863776	VAR098	0.99069		
VAR079	0.74552	VAR099	0.990832		
VAR080	0.847336	VAR100	0.980895		
VAR081	0.996866	VAR101	0.988364		
VAR082	0.993928	VAR102	0.986645		
VAR083	0.853091	VAR103	0.962419		

Extraction Method: Principal Component Analysis

The initial Eigen values and total variance are presented in Table XIV.

**TABLE XIV**  
**TOTAL VARIANCE**

Component	INITIAL EIGEN VALUES		
	Total	% of Variance	Cumulative %
1	31.17829	28.08855	28.08855
2	17.43082	15.70344	43.79199
3	12.73948	11.47701	55.269
4	12.02538	10.83368	66.10268
5	9.146797	8.240358	74.34304
6	4.600266	4.144384	78.48742
7	3.916575	3.528446	82.01587
8	3.556437	3.203997	85.21986
9	2.517969	2.268441	87.4883
10	2.323364	2.093121	89.58142
11	1.898466	1.71033	91.29175
12	1.377663	1.241137	92.53289

#### **4.15.1 Identification of Factors (Dimensions) and Discussion**

In order to find out the dimensions of variables related to the contributions of Karuppudayar Vaithianathan towards physical education and sports, the data matrix 111 x 80 was considered for factor solution. In order to arrive at a new independent factor 111 x

80 correlation matrix of the variables related to the contribution of K.Vaithianathan towards physical education and sports development was considered and reduced to 111 x 12 factor solution which explained, 92.532 percent of the variance of the original variables. The unrotated factor matrix obtained is given in Table XV. It was further rotated using Normal Varimax rotation procedure and was considered for interpretation and descriptions of the 12 new independent factors. The Rotated Factor Matrix (111 x 12 ) (Table XIV) showed the loading of each variable. The signs of the loading imply the directions of associations. The size of each value indicates the degree of association of each variable with the appropriate dimension. The twelve new independent factors, which emerged accounts for 92.532 percent of the total variance.

According to Zeller and Carmines (1980), the decision about how many factors are to be interpreted, is based upon, whether a factor removes more than the average amount of total variance from the matrix. Rotating factors with Eigen values of 1.00 or higher while excluding from the rotation factors with Eigen value of less than 1.00 accomplish this purpose. It must be pointed out, however, that this decisional criteria is arbitrary; there will be circumstances in which one will want to rotate more or fewer factors than is indicated by the 1.00 criterion. Thus, in this study, eight factor components are selected.

A projection is not considered as significant in naming a factor unless it is as large as 0.40. In naming the factors, Thurstone's (1947) suggestion is followed. Thurstone says, "a projection or factor loading of 0.20 accounts for only 4 percent of the total variance of a test. We are not regarding a projection as significant in naming a factor



unless it is as large as 0.40". So, factor loadings of 0.4 and above are considered for interpretation and naming of the factors.

All the fourteen factors with their factor loadings are discussed and interpreted in Tables XV to XXVIII.

**TABLE XV**  
**UNROTATED FACTOR ANALYSIS MATRIX**

	1	2	3	4	5	6	7	8	9	10	11	12
VAR001	0.196	0.757	0.049	-0.409	0.363	0.048	0.028	0.040	-0.236	0.039	-0.139	0.023
VAR002	0.250	0.693	0.034	-0.183	0.548	0.042	-0.239	-0.103	-0.141	0.061	0.043	-0.128
VAR003	-0.647	0.137	-0.642	0.185	0.043	0.192	0.061	-0.030	0.138	-0.177	0.077	0.102
VAR004	0.546	0.696	0.344	-0.118	0.086	0.137	-0.056	-0.012	-0.115	0.137	-0.111	0.039
VAR005	0.836	0.325	0.133	0.152	-0.107	0.177	0.057	-0.054	-0.167	0.182	-0.184	0.007
VAR006	0.359	-0.268	0.318	-0.364	0.375	0.172	-0.060	0.094	0.143	-0.087	0.160	-0.116
VAR007	-0.141	-0.174	0.232	-0.505	-0.293	0.318	-0.349	0.434	-0.328	0.002	0.174	-0.008
VAR008	0.551	0.330	-0.170	0.271	0.318	-0.229	0.186	-0.450	0.255	0.036	-0.126	-0.089
VAR009	0.407	0.346	0.329	-0.581	0.324	0.003	0.312	-0.145	0.084	0.003	-0.138	-0.102
VAR010	-0.544	0.159	0.486	0.433	0.129	0.337	0.072	0.070	0.051	0.019	-0.187	0.034
VAR011	-0.435	0.047	-0.029	0.751	0.250	0.129	0.255	0.249	-0.054	-0.020	-0.143	0.086
VAR012	-0.489	0.270	-0.240	0.373	-0.498	0.297	0.073	0.102	0.268	-0.159	-0.089	0.051
VAR013	-0.038	-0.428	-0.472	-0.061	-0.241	0.257	-0.383	0.459	-0.229	0.214	0.069	0.021
VAR014	-0.561	-0.553	-0.053	-0.040	-0.140	0.343	-0.065	0.336	-0.109	0.265	-0.046	0.168
VAR015	0.144	-0.722	-0.602	0.063	0.126	0.093	-0.112	-0.077	0.136	-0.125	-0.082	0.006
VAR016	-0.677	-0.146	0.413	0.014	0.481	0.220	-0.016	0.030	0.140	0.055	0.040	0.198
VAR017	-0.564	0.187	0.456	0.274	0.549	0.198	0.039	0.126	-0.030	-0.016	0.016	-0.006
VAR018	0.277	-0.842	-0.376	0.068	0.058	0.085	0.019	0.036	0.188	-0.111	0.060	-0.014
VAR019	-0.545	0.031	-0.627	-0.246	0.154	0.130	0.342	0.087	0.113	0.111	0.119	0.179
VAR020	-0.413	-0.306	-0.120	0.705	0.371	0.176	-0.091	0.046	0.147	0.106	-0.089	-0.063
VAR021	-0.634	-0.178	0.447	0.450	-0.110	0.289	-0.130	-0.057	0.196	-0.007	-0.064	-0.018
VAR022	0.411	-0.291	0.460	-0.650	-0.034	0.237	0.181	0.019	-0.036	0.095	-0.048	-0.015
VAR023	-0.306	-0.025	0.615	0.587	-0.131	0.280	-0.194	-0.118	0.112	0.069	-0.107	-0.022
VAR024	-0.265	-0.687	0.015	0.289	0.525	0.185	0.160	0.129	-0.041	-0.103	-0.062	-0.009
VAR025	-0.182	-0.793	0.223	0.260	0.401	0.105	0.158	0.039	-0.105	-0.052	-0.016	0.016
VAR026	-0.618	-0.150	0.416	0.372	0.286	0.362	0.204	0.124	-0.012	0.011	-0.058	-0.071
VAR027	-0.379	-0.316	0.622	0.324	0.156	0.268	0.310	0.250	0.019	-0.032	0.009	0.001
VAR028	0.868	-0.299	0.185	0.241	0.133	0.075	-0.095	-0.066	-0.058	0.097	-0.092	0.044
VAR029	0.653	-0.275	0.200	0.228	0.132	0.137	-0.494	-0.294	0.107	0.094	-0.098	-0.013

VAR030	-0.284	-0.585	0.124	0.562	0.027	0.245	-0.298	-0.180	0.229	-0.012	-0.071	-0.025
VAR031	0.139	0.549	0.623	0.019	0.313	-0.217	0.222	-0.196	0.083	0.093	-0.156	0.101
VAR032	-0.048	0.414	0.261	0.165	-0.005	0.201	0.375	0.052	-0.080	0.045	0.150	0.034
VAR033	0.770	-0.323	0.170	0.190	0.102	-0.150	-0.188	0.093	-0.032	-0.338	-0.007	0.020
VAR034	0.647	0.095	-0.375	-0.235	-0.106	0.332	0.337	0.109	-0.051	0.099	-0.252	0.036
VAR035	0.356	0.374	-0.691	0.192	0.405	0.173	-0.084	0.029	0.071	-0.064	0.033	-0.017
VAR036	0.611	0.109	-0.308	0.027	0.098	0.248	-0.037	-0.086	-0.022	0.006	0.057	-0.248
VAR037	0.752	0.097	-0.391	0.276	0.364	0.130	-0.113	-0.074	-0.069	0.026	0.022	-0.124
VAR038	0.185	0.790	-0.400	0.182	0.117	0.120	0.088	0.070	-0.086	0.082	-0.078	0.080
VAR039	0.663	0.181	-0.315	-0.225	-0.090	0.316	0.347	0.088	-0.058	0.103	-0.220	0.018
VAR040	0.583	0.128	-0.340	-0.259	-0.172	0.242	0.029	-0.401	-0.016	0.161	0.110	0.402
VAR041	0.175	0.765	-0.394	0.250	0.183	0.039	-0.111	-0.105	0.047	-0.041	0.231	0.208
VAR042	0.537	0.588	-0.108	0.321	0.144	0.064	0.089	0.194	0.001	-0.058	0.139	0.047
VAR043	0.646	-0.241	0.217	-0.249	0.482	-0.001	0.082	0.126	-0.119	0.001	0.087	-0.016
VAR044	0.644	0.088	-0.282	0.396	-0.482	0.258	0.051	0.001	0.144	-0.010	-0.010	-0.084
VAR045	0.507	0.060	-0.242	0.361	-0.511	0.126	-0.147	-0.392	0.061	0.037	0.272	-0.059
VAR046	0.615	-0.413	-0.487	0.047	0.372	0.093	0.189	0.137	-0.025	-0.055	0.040	-0.014
VAR047	0.586	-0.690	-0.003	-0.219	-0.050	-0.030	-0.008	0.131	0.217	0.199	-0.112	0.012
VAR048	0.617	-0.552	-0.127	0.333	-0.145	-0.246	0.173	-0.004	-0.069	0.191	0.116	0.076
VAR049	0.196	-0.087	0.433	0.154	0.754	-0.141	0.319	-0.091	0.120	0.091	-0.116	0.000
VAR050	0.461	0.138	-0.365	-0.334	-0.268	-0.580	0.129	0.262	-0.120	-0.064	-0.069	0.031
VAR051	0.843	-0.240	0.159	0.225	0.099	0.021	0.170	0.072	-0.138	0.087	-0.084	0.079
VAR052	0.203	0.366	-0.708	0.057	0.275	-0.122	-0.116	-0.016	0.093	0.302	-0.094	0.150
VAR053	0.685	0.116	0.325	0.307	0.021	0.007	-0.153	-0.060	-0.053	0.044	0.125	-0.103
VAR054	0.576	0.197	0.257	0.612	-0.317	0.036	-0.227	-0.142	0.026	0.054	0.022	-0.078
VAR055	0.828	-0.300	0.125	0.187	0.114	-0.039	0.158	0.086	-0.033	-0.039	0.244	0.126
VAR056	0.515	0.471	-0.135	0.320	0.176	0.074	-0.158	-0.071	-0.065	0.036	0.075	-0.138
VAR057	0.704	-0.268	0.187	0.178	0.057	-0.239	-0.230	0.098	-0.096	-0.455	-0.072	0.032
VAR058	0.010	0.294	-0.459	-0.369	0.482	-0.021	-0.307	-0.009	0.265	0.204	-0.019	0.180
VAR059	0.729	-0.247	0.155	0.140	0.033	-0.327	0.101	0.252	-0.003	0.224	0.170	-0.226
VAR060	0.351	0.500	-0.085	0.231	0.024	-0.470	-0.132	0.360	-0.014	-0.287	-0.172	0.076
VAR061	0.591	0.292	0.400	0.327	-0.071	-0.300	-0.221	0.106	0.201	0.179	0.213	0.107
VAR062	0.295	-0.037	0.064	0.081	0.063	0.637	0.076	-0.392	-0.264	-0.458	0.093	0.125
VAR063	0.537	0.132	-0.313	-0.311	-0.221	-0.198	-0.210	0.312	0.402	0.074	-0.117	-0.100
VAR064	0.538	0.617	0.379	-0.117	0.215	-0.074	0.276	-0.107	0.109	-0.046	-0.036	-0.106
VAR065	0.462	-0.358	0.378	0.401	0.252	-0.127	-0.099	0.347	0.331	0.101	0.111	0.041
VAR066	0.629	0.061	-0.330	0.236	0.309	-0.113	-0.183	0.287	0.358	0.155	-0.044	0.176
VAR067	0.438	-0.648	-0.445	-0.034	0.361	0.115	-0.096	-0.130	-0.007	0.017	-0.042	-0.101
VAR068	0.255	-0.484	-0.630	0.399	-0.222	-0.032	0.011	0.230	-0.077	0.155	0.042	-0.061
VAR069	0.043	0.727	0.260	0.199	-0.130	0.262	0.241	0.301	0.114	-0.131	0.229	-0.153
VAR070	0.535	0.321	0.479	-0.058	0.322	0.029	-0.248	0.091	0.133	-0.077	0.181	0.032
VAR071	0.660	0.110	-0.308	0.107	0.224	0.045	-0.136	-0.067	-0.101	-0.206	-0.080	-0.185
VAR072	0.595	-0.423	-0.498	0.037	0.367	0.070	0.202	0.057	-0.141	0.009	-0.005	-0.080
VAR073	-0.311	0.266	-0.073	0.054	0.266	0.272	-0.520	0.469	-0.338	0.256	0.011	-0.005

VAR074	0.655	0.176	-0.319	-0.193	-0.095	0.248	0.292	0.257	0.122	-0.152	0.246	-0.232
VAR075	0.686	0.092	-0.384	0.253	0.337	0.091	-0.096	-0.196	-0.240	0.123	-0.046	-0.221
VAR076	0.656	0.166	-0.245	-0.252	-0.116	0.407	0.000	0.041	0.286	-0.091	0.014	-0.141
VAR077	0.577	-0.246	0.255	-0.293	0.387	0.128	-0.133	0.067	0.113	-0.013	-0.023	0.170
VAR078	0.501	-0.252	0.338	-0.578	0.165	0.212	-0.084	-0.023	0.052	0.075	-0.101	0.043
VAR079	0.205	0.706	0.065	-0.362	0.056	0.172	0.093	0.127	-0.014	-0.009	0.073	-0.082
VAR080	0.200	0.390	0.027	0.694	-0.248	-0.049	0.211	0.086	-0.092	0.183	0.113	0.057
VAR081	0.607	-0.723	-0.204	0.230	0.016	0.060	0.068	-0.011	0.006	-0.003	-0.006	-0.045
VAR082	0.686	-0.209	0.152	0.329	-0.546	0.140	0.049	-0.073	0.013	0.067	-0.025	-0.133
VAR083	0.714	-0.292	0.221	0.097	-0.033	-0.119	-0.168	-0.029	-0.178	-0.231	-0.252	0.087
VAR084	0.517	0.233	0.464	-0.014	-0.391	0.008	-0.197	0.100	0.098	-0.299	-0.248	0.153
VAR085	0.709	0.341	0.398	0.329	-0.059	0.016	0.037	0.136	-0.165	0.096	-0.017	0.110
VAR086	0.524	0.231	0.436	-0.096	0.347	0.052	-0.202	-0.007	-0.030	0.065	0.010	0.093
VAR087	-0.174	0.439	-0.245	-0.064	0.632	0.085	-0.070	-0.025	0.042	-0.062	0.282	0.208
VAR088	0.787	-0.274	0.158	0.177	0.059	-0.194	0.063	0.121	-0.278	-0.221	-0.196	0.104
VAR089	0.588	-0.688	0.004	-0.233	-0.069	0.117	0.068	-0.135	0.085	0.032	0.096	0.249
VAR090	0.412	-0.704	-0.144	-0.303	0.435	0.039	0.119	0.042	-0.082	0.021	-0.052	0.018
VAR091	0.096	0.375	-0.520	-0.405	0.335	0.282	-0.056	0.051	0.157	-0.081	0.031	-0.059
VAR092	-0.186	0.199	-0.330	0.771	0.074	0.117	0.122	-0.042	-0.050	-0.196	0.227	0.072
VAR093	0.587	0.246	0.379	0.123	-0.211	0.045	0.143	0.105	-0.084	0.087	0.142	-0.089
VAR094	0.541	0.151	0.361	-0.045	-0.326	-0.068	0.063	0.372	0.264	-0.156	0.032	0.079
VAR095	0.689	-0.300	0.312	-0.185	-0.320	0.065	0.013	-0.281	0.000	0.073	0.283	0.146
VAR096	0.751	-0.204	0.306	-0.109	-0.158	0.218	-0.010	0.125	0.330	-0.106	0.094	0.006
VAR097	-0.405	0.217	0.370	0.546	0.337	-0.128	-0.004	0.251	0.093	0.186	0.071	-0.145
VAR098	-0.080	0.345	0.241	-0.689	-0.349	0.281	-0.304	0.163	-0.105	-0.015	0.004	-0.028
VAR099	0.522	0.720	-0.084	0.355	0.102	0.064	0.083	0.093	-0.129	0.069	-0.069	0.099
VAR100	0.686	-0.264	0.265	-0.202	-0.326	0.011	0.290	-0.111	-0.102	0.059	0.289	0.173
VAR101	0.253	-0.171	0.355	-0.812	-0.110	0.246	-0.019	-0.012	0.130	0.014	0.010	-0.136
VAR102	0.616	-0.263	0.261	-0.310	0.573	0.034	-0.172	-0.013	-0.022	-0.003	0.094	-0.074
VAR103	0.606	0.123	-0.364	0.188	0.261	-0.091	0.045	0.328	0.005	-0.456	0.012	0.137
VAR104	0.720	-0.171	0.144	-0.143	-0.211	0.222	0.246	0.207	0.093	-0.013	-0.075	0.137
VAR105	0.410	0.558	-0.049	-0.045	-0.233	0.316	-0.087	-0.021	0.143	0.034	-0.335	0.068
VAR106	0.436	0.555	-0.040	-0.031	-0.214	0.303	-0.101	0.094	0.290	-0.108	-0.126	0.007
VAR107	0.581	0.091	-0.315	0.344	-0.504	0.072	0.264	0.100	-0.021	0.213	-0.189	-0.016
VAR108	0.740	-0.214	0.068	0.558	-0.237	0.053	-0.007	-0.073	-0.060	0.095	-0.094	0.014
VAR109	0.735	-0.196	0.106	0.138	0.054	0.123	-0.062	-0.058	-0.049	0.158	-0.108	0.062
VAR110	0.649	0.212	0.382	0.298	-0.038	-0.035	-0.173	-0.095	-0.098	0.073	0.225	0.069
VAR111	0.011	-0.162	0.177	-0.307	0.149	-0.216	0.328	0.033	0.270	0.181	0.084	-0.089

**TABLE XVI**  
**ROTATED FACTOR ANALYSIS MATRIX**

	1	2	3	4	5	6	7	8	9	10	11	12
VAR001	-0.126	-0.710	0.316	0.515	0.151	0.208	0.008	-0.132	0.129	0.042	-0.060	-0.059
VAR002	0.031	-0.557	0.303	0.721	0.027	-0.132	0.041	-0.128	-0.007	0.038	-0.078	-0.152
VAR003	-0.687	0.178	-0.585	0.256	-0.137	-0.057	-0.034	0.126	-0.050	0.159	0.065	0.110
VAR004	0.450	-0.708	0.280	0.375	0.095	0.216	0.028	0.078	0.011	0.036	-0.070	0.000
VAR005	0.752	-0.237	0.128	0.319	0.179	0.444	0.059	0.075	-0.017	0.082	-0.054	-0.042
VAR006	0.124	0.114	0.767	0.042	-0.084	-0.115	-0.013	0.093	0.039	0.029	0.180	-0.029
VAR007	-0.100	-0.137	0.330	-0.347	0.104	-0.042	-0.837	0.047	-0.005	0.104	0.094	-0.027
VAR008	0.339	-0.017	-0.019	0.552	0.136	0.063	0.734	0.019	-0.035	-0.046	-0.087	-0.065
VAR009	-0.003	-0.470	0.702	0.146	0.174	0.245	0.393	0.015	0.019	0.020	0.069	-0.081
VAR010	-0.079	-0.325	-0.216	-0.187	-0.842	0.016	-0.010	0.078	-0.054	0.065	-0.093	-0.004
VAR011	-0.086	0.074	-0.544	0.105	-0.764	0.153	0.050	-0.140	0.185	-0.068	0.069	0.040
VAR012	-0.257	-0.102	-0.745	-0.116	-0.180	0.112	-0.098	0.500	-0.056	0.095	0.068	0.053
VAR013	-0.073	0.511	-0.101	0.035	0.152	0.113	-0.815	0.027	-0.063	-0.109	-0.024	0.004
VAR014	-0.365	0.372	-0.057	-0.399	-0.348	0.159	-0.581	-0.047	-0.183	-0.072	-0.081	0.165
VAR015	-0.113	0.955	0.039	0.137	0.111	0.018	-0.016	0.093	0.040	0.098	-0.121	-0.020
VAR016	-0.436	-0.093	0.207	-0.171	-0.762	-0.246	-0.024	-0.098	-0.097	0.002	-0.096	0.230
VAR017	-0.242	-0.337	0.031	0.047	-0.866	-0.191	0.008	-0.177	0.038	0.004	0.032	-0.006
VAR018	0.072	0.964	0.171	-0.042	0.065	0.033	-0.001	0.109	0.046	0.033	0.094	0.037
VAR019	-0.838	0.172	-0.197	0.192	0.032	0.209	-0.024	-0.063	-0.154	-0.051	0.191	0.264
VAR020	-0.081	0.452	-0.355	0.159	-0.760	-0.133	0.016	-0.040	-0.084	-0.111	-0.123	-0.057
VAR021	-0.060	-0.028	-0.286	-0.437	-0.737	-0.241	-0.071	0.205	-0.206	0.082	-0.143	-0.011
VAR022	0.159	-0.060	0.832	-0.343	0.161	0.301	-0.060	0.059	-0.105	0.105	0.083	0.021
VAR023	0.333	-0.182	-0.249	-0.332	-0.713	-0.192	-0.028	0.186	-0.207	0.094	-0.209	-0.038
VAR024	-0.182	0.636	0.154	-0.074	-0.668	0.009	0.019	-0.234	0.140	0.063	0.047	-0.029
VAR025	-0.001	0.608	0.235	-0.285	-0.609	-0.032	0.041	-0.314	0.080	0.084	0.024	0.004
VAR026	-0.216	-0.046	-0.080	-0.243	-0.921	0.014	-0.031	-0.086	-0.079	0.076	0.086	-0.059
VAR027	0.023	0.002	0.081	-0.465	-0.840	0.061	-0.012	-0.063	0.045	0.010	0.225	0.046

VAR028	0.822	0.320	0.363	0.185	0.005	0.161	0.087	-0.010	0.067	0.043	-0.107	0.017
VAR029	0.714	0.298	0.330	0.210	-0.040	-0.187	0.032	0.171	-0.127	0.106	-0.378	-0.050
VAR030	0.138	0.550	-0.197	-0.223	-0.588	-0.294	-0.030	0.180	-0.192	0.107	-0.264	-0.032
VAR031	0.225	-0.709	0.239	0.060	-0.234	0.014	0.519	-0.129	0.062	-0.117	-0.112	0.089
VAR032	0.086	-0.454	-0.121	0.032	-0.259	0.209	0.098	-0.048	-0.076	0.101	0.325	0.105
VAR033	0.696	0.339	0.313	0.080	0.106	-0.118	0.069	0.055	0.460	0.077	0.015	-0.047
VAR034	0.163	0.109	0.198	0.326	0.374	0.751	-0.008	0.198	0.020	0.096	0.101	0.008
VAR035	-0.024	0.153	-0.144	0.945	0.112	0.107	0.050	0.116	0.097	0.051	0.070	-0.016
VAR036	0.322	0.159	0.138	0.522	0.235	0.180	0.017	0.142	-0.098	0.152	0.141	-0.212
VAR037	0.474	0.286	0.095	0.782	0.121	0.129	0.093	-0.012	0.048	0.082	0.033	-0.129
VAR038	0.004	-0.417	-0.346	0.716	0.103	0.304	0.032	0.046	0.057	-0.001	0.039	0.044
VAR039	0.198	0.014	0.203	0.348	0.364	0.727	0.027	0.182	0.008	0.097	0.127	0.000
VAR040	0.228	0.055	0.140	0.335	0.562	0.285	0.066	0.106	-0.286	0.340	-0.100	0.425
VAR041	0.050	-0.352	-0.363	0.787	0.133	-0.100	0.099	0.073	0.017	0.098	0.075	0.237
VAR042	0.424	-0.295	-0.138	0.620	0.027	0.153	0.082	0.099	0.210	-0.029	0.285	0.086
VAR043	0.342	0.158	0.744	0.211	0.022	0.097	0.059	-0.211	0.193	-0.021	0.161	0.012
VAR044	0.609	0.200	-0.333	0.211	0.263	0.330	0.005	0.444	-0.077	0.105	0.166	-0.042
VAR045	0.603	0.176	-0.378	0.153	0.395	-0.056	0.060	0.251	-0.345	0.269	0.081	0.025
VAR046	0.180	0.692	0.276	0.458	0.129	0.291	0.071	-0.086	0.191	0.019	0.217	0.013
VAR047	0.343	0.616	0.523	-0.176	0.229	0.209	-0.022	0.140	-0.015	-0.251	-0.051	0.066
VAR048	0.628	0.621	-0.021	-0.076	0.212	0.171	0.133	-0.216	0.011	-0.156	0.123	0.137
VAR049	0.167	-0.007	0.476	0.161	-0.524	0.030	0.553	-0.295	0.116	-0.171	0.002	0.031
VAR050	0.077	-0.013	-0.013	0.058	0.806	0.210	0.035	-0.108	0.406	-0.319	0.104	-0.014
VAR051	0.755	0.254	0.302	0.133	0.023	0.349	0.123	-0.109	0.169	-0.006	0.066	0.061
VAR052	-0.130	0.084	-0.209	0.778	0.284	0.145	0.063	-0.038	-0.055	-0.267	-0.200	0.145
VAR053	0.803	-0.103	0.152	0.204	-0.005	-0.071	0.072	0.027	0.007	0.026	0.069	-0.070
VAR054	0.909	-0.112	-0.275	0.105	-0.021	-0.060	0.068	0.211	-0.073	0.049	-0.057	-0.074
VAR055	0.712	0.334	0.325	0.132	0.093	0.109	0.132	-0.086	0.182	0.023	0.298	0.204
VAR056	0.459	-0.184	-0.103	0.646	0.058	-0.001	0.068	0.040	-0.004	0.046	0.048	-0.132
VAR057	0.655	0.262	0.248	0.025	0.146	-0.166	0.063	0.034	0.585	0.111	-0.045	-0.091
VAR058	-0.418	-0.029	0.242	0.668	0.197	-0.119	-0.026	0.090	-0.077	-0.230	-0.252	0.204

VAR059	0.683	0.238	0.275	0.037	0.175	0.068	0.086	-0.162	0.088	-0.417	0.296	-0.104
VAR060	0.282	-0.297	-0.242	0.334	0.212	-0.053	0.075	0.055	0.666	-0.284	-0.026	-0.045
VAR061	0.791	-0.289	0.029	0.143	0.058	-0.238	0.108	0.101	0.063	-0.352	0.056	0.208
VAR062	0.228	0.066	0.147	0.154	-0.125	0.120	0.028	0.099	0.005	0.906	0.086	0.039
VAR063	0.144	0.065	0.165	0.234	0.590	0.096	-0.075	0.473	0.139	-0.454	-0.004	-0.048
VAR064	0.349	-0.617	0.339	0.287	0.077	0.152	0.465	0.075	0.098	-0.020	0.171	-0.066
VAR065	0.615	0.310	0.276	0.011	-0.371	-0.162	0.067	0.109	0.194	-0.422	0.133	0.155
VAR066	0.364	0.287	0.091	0.638	0.080	0.060	0.063	0.223	0.214	-0.425	-0.044	0.226
VAR067	0.097	0.839	0.351	0.316	0.113	0.074	0.026	-0.085	-0.032	0.096	-0.088	-0.109
VAR068	0.223	0.772	-0.388	0.129	0.182	0.225	-0.220	-0.048	0.004	-0.176	0.119	-0.034
VAR069	0.154	-0.670	-0.209	0.173	-0.211	0.107	-0.014	0.308	0.054	0.010	0.526	-0.036
VAR070	0.483	-0.383	0.499	0.306	-0.085	-0.248	0.040	0.144	0.154	-0.039	0.085	0.086
VAR071	0.363	0.181	0.118	0.575	0.238	0.077	0.089	0.058	0.215	0.166	-0.003	-0.256
VAR072	0.179	0.684	0.261	0.443	0.156	0.330	0.077	-0.199	0.125	0.044	0.162	-0.076
VAR073	-0.165	-0.233	-0.061	0.384	-0.329	-0.091	-0.753	-0.147	0.001	-0.153	-0.153	-0.074
VAR074	0.197	0.069	0.190	0.371	0.395	0.340	-0.013	0.322	0.074	0.055	0.602	-0.092
VAR075	0.455	0.248	0.062	0.726	0.155	0.176	0.097	-0.179	-0.057	0.118	-0.056	-0.260
VAR076	0.221	0.054	0.290	0.381	0.357	0.281	-0.023	0.561	-0.070	0.137	0.203	-0.065
VAR077	0.299	0.149	0.757	0.163	-0.011	0.019	0.004	0.081	0.144	0.011	-0.073	0.174
VAR078	0.194	0.023	0.860	-0.068	0.146	0.143	-0.062	0.120	-0.045	0.072	-0.111	0.043
VAR079	-0.057	-0.656	0.207	0.347	0.196	0.174	-0.043	0.158	0.006	0.031	0.225	-0.042
VAR080	0.527	-0.225	-0.599	0.155	-0.138	0.188	0.091	-0.062	-0.032	-0.114	0.211	0.107
VAR081	0.482	0.824	0.182	0.013	0.080	0.184	0.055	-0.011	0.047	0.047	0.069	-0.026
VAR082	0.830	0.208	-0.086	-0.198	0.194	0.260	0.017	0.258	-0.124	0.093	0.096	-0.101
VAR083	0.670	0.223	0.293	-0.055	0.164	0.072	0.049	-0.007	0.389	0.148	-0.229	-0.072
VAR084	0.577	-0.370	0.136	-0.199	0.176	0.052	-0.021	0.442	0.360	0.101	-0.158	0.036
VAR085	0.836	-0.356	0.065	0.184	-0.036	0.223	0.027	-0.015	0.165	-0.033	0.075	0.089
VAR086	0.458	-0.324	0.525	0.280	-0.078	-0.072	0.032	-0.019	0.084	0.001	-0.099	0.081
VAR087	-0.385	-0.214	0.069	0.665	-0.162	-0.237	0.053	-0.132	0.038	0.078	0.098	0.258
VAR088	0.694	0.250	0.256	0.018	0.138	0.220	0.098	-0.171	0.512	0.072	-0.036	-0.035
VAR089	0.347	0.601	0.509	-0.182	0.268	0.152	0.037	0.057	-0.068	0.157	0.014	0.301

VAR090	0.022	0.672	0.656	0.071	0.065	0.189	0.029	-0.228	0.110	0.018	0.012	0.012
VAR091	-0.435	-0.069	0.211	0.662	0.227	0.103	-0.061	0.242	-0.015	0.082	0.092	-0.029
VAR092	0.058	0.130	-0.715	0.353	-0.347	-0.086	0.106	-0.054	0.067	0.211	0.235	0.093
VAR093	0.666	-0.319	0.118	-0.003	0.088	0.183	0.024	0.054	-0.005	-0.022	0.283	-0.018
VAR094	0.501	-0.238	0.184	-0.168	0.179	0.105	-0.002	0.414	0.312	-0.195	0.256	0.136
VAR095	0.644	0.127	0.409	-0.251	0.381	0.015	0.065	0.063	-0.222	0.227	0.111	0.243
VAR096	0.593	0.135	0.490	-0.072	0.134	0.096	0.026	0.472	0.062	0.022	0.215	0.107
VAR097	0.040	-0.267	-0.247	0.050	-0.717	-0.248	0.057	-0.164	0.010	-0.390	0.096	-0.073
VAR098	-0.187	-0.579	0.320	-0.186	0.315	0.009	-0.519	0.288	-0.095	0.131	-0.049	-0.060
VAR099	0.461	-0.441	-0.220	0.634	0.028	0.300	0.097	0.017	0.159	-0.011	0.063	0.058
VAR100	0.578	0.092	0.366	-0.284	0.397	0.223	0.087	-0.057	-0.095	0.171	0.302	0.276
VAR101	-0.053	-0.136	0.801	-0.307	0.289	0.092	-0.127	0.269	-0.178	0.095	0.064	-0.073
VAR102	0.323	0.170	0.858	0.271	0.001	-0.124	0.044	-0.125	0.092	0.015	0.005	-0.047
VAR103	0.255	0.213	0.011	0.552	0.169	0.100	0.074	0.106	0.657	0.041	0.232	0.073
VAR104	0.485	0.122	0.378	-0.080	0.199	0.467	-0.010	0.278	0.132	0.033	0.192	0.167
VAR105	0.248	-0.401	-0.034	0.317	0.195	0.370	-0.017	0.486	-0.018	0.092	-0.202	-0.008
VAR106	0.253	-0.367	-0.009	0.342	0.186	0.203	-0.020	0.608	0.053	0.058	0.027	0.009
VAR107	0.533	0.147	-0.385	0.114	0.315	0.601	0.028	0.189	-0.045	-0.101	0.092	-0.016
VAR108	0.897	0.315	-0.129	0.058	0.026	0.231	0.089	0.072	0.013	0.047	-0.045	-0.009
VAR109	0.657	0.226	0.299	0.176	0.062	0.229	0.033	0.026	-0.013	0.032	-0.111	0.042
VAR110	0.824	-0.231	0.101	0.175	0.039	-0.128	0.045	-0.032	-0.012	0.058	0.060	0.108
VAR111	-0.145	0.024	0.369	-0.196	0.033	0.040	0.296	-0.059	-0.107	-0.323	0.203	0.058

Extraction Method: Principal Component Analysis Rotation Method: Normal Varimax

**TABLE XVII**  
**SIGNIFICANT ROTATED FACTOR LOADINGS**

**FACTOR I –EXEMPLARY CONTRIBUTION IN PHYSICAL EDUCATION AND SPORTS**

VAR. NO	VARIABLE NAME	LOADINGS
54	He had good staff – head relationship	0.909
108	He provides opportunities to his colleagues to show their talents	0.897
82	He gives respects to colleagues of other departments.	0.830
110	He knows how to distribute the work	0.824
28	As head of the department he contributed to physical education and sports	0.822
5	He made the student trainees attentive.	0.752
29	He leads and guides in decision making in this department	0.714
55	He stood as a model for the head of the department	0.712
88	His association with different academic bodies made him contributes for the development and physical education in the country.	0.694
93	He is not only a physical educationist but also the best coach.	0.666
57	He has guided a number of Ph.D scholars of different areas in physical education and sports	0.655
95	His sportsman approach made him sustain the ups and downs in his career	0.644
48	As head of the department of physical education, he is always sympathetic towards the cause of teacher trainees.	0.628
65	He is stubborn and kept his cool dealing with any problem in the department.	0.615
84	He is an able administrator.	0.577
107	He consults others while formulating his plans.	0.533
80	He is fond of research in physical education and sports.	0.527
81	He gives respect to junior staff members.	0.482
86	Though he is a physical educationist, he has contributed to the development of sports and games by organizing different levels of Sports Competitions	0.458
75	He is very hard working in nature	0.455



It is seen that twenty one items, which have significant factor loadings, are clustered under Factor I. This factor has the highest projection of 0.909 (Variable 54) and the lowest projection of 0.455 (Variable 75) among the significant factor loadings. The findings showed that there seemed to be one common factor running through all the twenty one items, which may be termed as “Contribution as an exemplary leader in physical education and sports” as these items indicate the excellent manner in which he discharged his duties as director and head department of physical education and sports. In contributing for the development of physical education and sports, he maintained good staff relationship, gave opportunities to his colleagues with due respect by encouraging them. He also involved his colleagues in planning, distribution of responsibilities, and decision making. The findings also proved that he has abundant interest in research and promoting research in physical education and sports and guided a number of Ph.D scholars and M.Phil Students and served as a model Professor, Director and Head of the Department of Physical Education and Sports, thereby becoming an exemplary leader in promoting Physical Education and Sports.

**TABLE XVIII****SIGNIFICANT ROTATED FACTOR LOADINGS****FACTOR II – CONTRIBUTED AS SPORTS SCIENTIST**

VARNO	VARIABLE NAME	LOADINGS
109	He entrusts great responsibilities to men who display great capabilities.	0.964
59	He has undertaken major projects in sports sciences which were accepted by UGC for grants.	0.955
34	He is instrumental in suggesting and incorporating sports sciences syllabuses for teacher education in physical education teacher trainees	0.839
27	He has a vision to upgrade the name of the profession with more contribution to the society.	0.824
22	He showed more interest in introducing the latest findings in sports sciences.	0.772
6	As an athlete, he was punctual for training and coaching sessions	0.684
13	He has produced a number of state and national level sportspersons.	0.672
23	He is tolerant and ready to forget the difficulties	0.621
8	Befriending him is not easy	0.616
96	He is very stable minded	0.608
21	He is intelligent and scientific in sports coaching	0.601
94	He is one of the best sportspersons in Tamil Nadu	0.550
33	He is instrumental in suggesting physical education and the sports sciences department in Annamalai University	0.511

It is seen that thirteen items, which have significant factor loadings, are clustered under Factor II. This factor has the highest projection of 0.964 (Variable 109) and the lowest projection of 0.511 (Variable 33) among the significant factor loadings. It was found that K.Vaithianathan is the best sports persons, instrumental in suggesting the incorporation of sports sciences syllabus, introducing and implementing the latest findings in coaching. He is intelligent and scientific in coaching sports and games. He is stable minded and ready to face difficulties. Which arise from different corners. The findings proved that there seemed to be one common factor running through all the eleven items, which may be termed as “Contribution as Sports Scientist” .

**TABLE XIX**  
**SIGNIFICANT ROTATED FACTOR LOADINGS**  
**FACTOR III – SERVING AS A ROLE MODEL**

VARNO	VARIABLE NAME	LOADINGS
44	He has contributed to sports and games by introducing new training methodologies.	0.860
70	He has a good sense of humour.	0.858
72	He is health conscious and maintains good health.	0.832
43	He has contributed different sports and games by organising sports and games in the Annamalai University	0.767
53	He had good student – teacher relationship.	0.757
45	He is instrumental in creating new posts of Lecturers and Readers and professors in the department of physical education and sports sciences in Annamalai University	0.702
11	He is a good conversationalist.	0.656
52	He regularly attended supervision of physical education and games hours.	0.525

20	He is aggressive.	0.523
76	He always tries to be a good example to others.	0.509
12	He usually tells new things and ideas through which physical educationists can contribute to the students	0.476
9	He always highlights the need of physical educationists for the upliftment of society.	0.409

It is seen that twelve variables, which have significant factor loadings, are clustered under Factor III. This factor has the highest projection of 0.86 (Variable 44) and the lowest projection of 0.409 (variable 9) among the significant factor loadings. The findings showed that the subject has contributed to sports and games through introducing new training methodologies, contributed by organizing sports and games at different levels, maintained good student – teacher relations, good conservationist, regularly attended teaching and insight about supervision, and tried to be a good example to others. He was innovative and shared latest trends and technologies with physical education teachers in order to enlighten and encourage them to become effective and efficient. Thus, there seemed to be one common factor running through all the twelve items, which may be termed as “Serving as a Role Model” as these items indicate the behavior of the subject’s contribution to sports as a role model to others.

**TABLE XX****SIGNIFICANT ROTATED FACTOR LOADINGS****FACTOR IV – LEADER IN PHYSICAL EDUCATION AND SPORTS**

VAR. NO	VARIABLE NAME	LOADINGS
89	Under his leadership, Department of Physical Education, Annamalai University became number one in India.	0.945
56	He has guided a number of M.Phil scholars of different areas in physical education and sports.	0.787
85	He is a good teacher.	0.7816
24	He likes all games and sports.	0.778
106	His very presence ensures success in any event.	0.726
47	He is instrumental in suggesting the idea of incorporating sports sciences syllabuses for teacher education in physical education teacher trainees.	0.716
42	He has contributed in different sports and games through coaching different sportsmen of eminence.	0.668
35	He is instrumental in training about 50% of the physical education teachers in Tamil Nadu through Annamalai University.	0.662
61	He is afraid of criticism.	0.638
14	He does not attach value to money.	0.634
64	He is religious.	0.621
10	He is fond of organizing competitions and meetings.	0.575
30	He prepares well to handle classes.	0.522
1	Even during school days, he showed indications of becoming a good athlete.	0.458

It is seen that fourteen variables, which have significant factor loadings, are clustered under Factor IV. This factor has the highest projection of 0.945 (Variable 89) and the lowest projection of 0.458 (Variable 1) among the significant factor loadings. The analysis of the opinions of personalities from different areas of physical education and

sports proved that K.Vaithianathan's leadership made the department of physical education and sports, Annamalai University, to lead the rest of the Universities and Physical Education teacher training Institutions in India in promoting research interest among physical education and sports personalities by introducing M.Phil course (Distance Education mode). The significant loadings on similar other statements, such as 'guided a number of M.Phil scholars of different areas in physical education and sports', as a good teacher likes all the games and sports and his very presence ensures success in any event. He is 'instrumental in training about 50% of the physical education teachers in Tamil Nadu and he supported as a good leader in promoting physical education and sports. Thus, there seemed to be one common factor running through all the fourteen items, which may be termed as "Leader in physical education and sports" as these items are indicated.

**TABLE XXI**

**SIGNIFICANT ROTATED FACTOR LOADINGS**

**FACTOR V –UNPARALLEL CONTRIBUTION MADE**

VAR. NO	VARIABLE NAME	LOADINGS
104	His contribution for physical education, sports and games are unparallel.	0.806
31	He always maintains an air of superiority over the others.	0.59

It is seen that two variables, which have significant factor loadings, are clustered under Factor V. This factor has the highest projection of 0.806 (Variable 104) and the lowest projection of 0.59 (variable 31 among the significant factor loadings. There seemed to be one common factor running through all the two items, which may be termed as “made unique contribution to physical education and sports” as these items are indicated.

**TABLE XXII**

**SIGNIFICANT ROTATED FACTOR LOADINGS**

**FACTOR VI – DEVELOPING RESEARCH**

<b>VAR. NO</b>	<b>VARIABLE NAME</b>	<b>LOADINGS</b>
39	His efforts in starting M.Phil in Physical Education through Distance Education made the physical education teachers, throughout the country, to pursue Ph.D in physical education.	0.751
18	In his department, he took a lot of efforts in doing interdisciplinary researches at pre-doctoral and doctoral programmes.	0.727
74	He is punctual in all his duties.	0.601
83	He gives respects to physical educationists and sports scientists.	0.467

It is seen that four variables, which have significant factor loadings, are clustered under Factor VI. This factor has the highest projection of 0.751 (Variable 39) and the lowest projection of 0.467 (variable 83) among the significant factor loadings. The findings proved significant loadings for the item “his efforts in starting M.Phil in Physical Education through Distance Education mode made the physical education teachers

throughout the country to pursue Ph.D. in Physical Education” and “in his department he made a lot of efforts in doing interdisciplinary researches at pre doctoral and doctoral programmes” etcetera. There seemed to be one common factor running through all the four items, which may be termed as “Developing Research” as these items are indicated.

**TABLE XXIII**

**SIGNIFICANT ROTATED FACTOR LOADINGS**

**FACTOR VII – SPORTS ORGANISER**

VAR. NO	VARIABLE NAME	LOADINGS
39	He has served as Organizing Secretary for a number of Inter University Tournaments tournaments.	0.734
18	In his department, he organized different State level Tournaments.	0.519

It is seen that two variables, which have significant factor loadings, are clustered under Factor VII. This factor has the highest projection of 0.734 (Variable 39) and the lowest projection of 0.519 (variable 18) among the significant factor loadings. There seemed to be one common factor running through all the six items, which may be termed as “Sports Organizer” as these items indicate the behavior of the subject’s contribution as a sports organizer.



**TABLE XXIV****SIGNIFICANT ROTATED FACTOR LOADINGS****FACTOR VIII – SPORTS ADMINISTRATOR**

VAR. NO	VARIABLE NAME	LOADINGS
37	He has played a vital role in administering many athletic / sports competitions in Tamil Nadu.	0.608
101	He is a good physical educationist and an administrator.	0.486
17	He has the perseverance and an urge to overcome obstacles.	0.472
103	He stood up for his bold approaches in suggesting new ideas in the field.	0.414

It is seen that the four variables, which have significant factor loadings, are clustered under Factor VIII. This factor has the highest projection of 0.608 (Variable 37) and the lowest projection of 0.414 (variable 103) among the significant factor loadings. There seemed to be one common factor running through all the four items, which may be termed as “Sports Administrator” as these items indicate the behavior of the subject’s contribution as sports administrator.

**TABLE XXV**  
**SIGNIFICANT ROTATED FACTOR LOADINGS**  
**FACTOR IX – SOCIABILITY**

VAR. NO	VARIABLE NAME	LOADINGS
38	The impact of his efforts in starting M.Phil in physical education through distance education is well received by academicians of different discipline.	0.666
92	His association with various sports clubs helped most of the deserving young talents to be encouraged	0.657
58	He has undertaken different minor projects which are prestigious ones for the benefit of society.	0.585
25	His contribution by participating in different academic bodies are more beneficial to all concerned.	0.512

It is seen that four variables, which have significant factor loadings, are clustered under Factor IX. This factor has the highest projection of 0.666 (Variable 38) and the lowest projection of 0.512 (variable 25) among the significant factor loadings. The results proved that all his efforts for the promotion of physical education and sports have been fruitful, by and large and beneficial to the society. There seemed to be one common factor running through all the four items, which may be termed as “Sociability” as these items indicate the behavior of the subject’s contribution for the larger interests of the society.

**TABLE XXVI****SIGNIFICANT ROTATED FACTOR LOADINGS****FACTOR X – AN ATHLETE**

VAR. NO	VARIABLE NAME	LOADINGS
2	He has contributed as an athlete in the field of sports.	0.906

It is seen that one variable, which has significant factor loading, is clustered under Factor X. This factor has the highest projection of 906 (Variable 2). There seemed to be the factor running through this item, which may be termed as “Athlete” during his school and college days when he won several medals at the state and national level meets in athletics and throughout his career he had contributed for the same.

**TABLE XXVII****SIGNIFICANT ROTATED FACTOR LOADINGS****FACTOR XI – KNOWLEDGEABLE**

VAR. NO	VARIABLE NAME	LOADINGS
99	He possesses in-depth knowledge in physical education and sports as well as allied subjects.	0.602

It is seen that one variable, which has significant factor loading, is clustered under Factor XI. This factor has the highest projection of 0.602 (Variable 99). There seemed to be the factor running through this item, which may be termed as “knowledgeable” as is evidenced by academicians of different discipline, thereby, inviting him to be the resource person for national and international level seminars and conferences, workshops, seminars, refresher courses.

**TABLE XXVIII****SIGNIFICANT ROTATED FACTOR LOADINGS****FACTOR XII – THRIVING FOR EXCELLENCE**

VAR. NO	VARIABLE NAME	LOADINGS
90	His leadership in Department of Physical Education and Sports Sciences in Annamalai University made the department excel in teaching, training and coaching and researches in the field of physical education and sports sciences.	0.424

It is seen that one variable, which has significant factor loading, is clustered under Factor XII. This factor has the projection of 0.424 (Variable 90). There seemed to be the factor running through this item, which may be termed as “thriving for excellence” as is evidenced by the growth of the department of physical education and sports in teaching, coaching, and research activities.

#### **4.16. DISCUSSION ON FINDINGS**

##### **Contribution to Physical Education and Sports**

1. The results of this study proved that Karuppudayar Vaithianathan is from a remote rural area. His parents did not have any sports background. The environment in which he was brought up during school days did not deter him from participating in sports and games. He showed interest in sports and games and participated and won at the district and divisional level competitions only because of his own effort and personal interest, which shows his determination to achieve the best in sports and games right from his school years. Thus, the formulated hypothesis that Karuppudaiar Vaithianathan's early age may not have been conducive to get himself involved in sports activities is accepted.
2. The results of the study showed that during college days, he was actively involved in different sports meets. He has created new records in the college. He competed in High Jump, Long Jump, 110 M Hurdles, Triple Jump and 4 x 100 M Relay. Thus, the formulated hypothesis that K.Vaithianathan's contribution to sports at his early age would be significant is accepted.
3. He came first in the All India Open Meet in 4 x 100 M relay. He secured the first place in Inter University in 110 M Hurdles, high jump, and 4 x 100 M relay and came second in long jump. He thus, contributed and secured places at inter collegiate level, inter zonal level, state level and national level and thus

contributed for the physical education and sports. The formulated hypothesis that the environment in which he was brought up would have been a base for him to choose physical education and sports as his career, is not accepted by K.Vaithianathan. Only because of his personal interest he took the decision to choose physical education and sports as his career.

#### **4.16.1 Career**

1. The results showed that after graduation, he chose physical education as a profession, trained Masters in physical education and served as an Assistant professor, director and head department of physical education and sports Sciences, in the Annamalai University for more than 37 years until he took up the post of Vice Chancellor, Tamil Nadu Physical Education and Sports Sciences, Chennai. Thus during his career, as a professor in physical education he held several key positions and was elevated to the top position of the Vice Chancellor, Tamil Nadu Physical Education and Sports University. Due to his contribution in physical education and sports and the formulated hypothesis he would have contributed for physical education and sports as Assistant Professor, Professor and Director and Head of the Department of Physical Education and Sports is accepted.

2. The results of the study proved that he has contributed to the field of physical education and sports through his abundant knowledge and interest in doing research in physical education and sports sciences and in the interdisciplinary researches. He has guided more than 52 M.Phil scholars and 25 Ph.D. scholars.

- 3 The results of the study showed that due to avowed personal interest of K.Vaithianathan in research for common cause, he also contributed to physical education and sports by undertaking minor projects and major projects with financial assistance of the UGC.
- 4 He has done researches in diversified fields, such as, physical fitness, physiological, psychological, construction of norms, prediction of playing abilities, influence of yogic practices etcetera and thereby contributed for the basic as well as the advanced research findings, some of which have shown renewed knowledge in the academic domain of respective disciplines. The formulated hypothesis that he would have contributed for physical education and sports by serving as resource person and presented research papers in national, international level seminars, workshops and refresher courses is accepted.
- 5 The results of the study showed the avowed personal interest of K.Vaithianathan in research for common cause, contributed to physical education and sports by undertaking minor projects and major projects with financial assistance of UGC.

#### **4.16.2 Personality**

1. Karuppudayar Vaithianathan's personality behaviour, as assessed through Cattell's Sixteen Personality Factor analysis, presented in Table XII and graphically presented in Figure IV, shows positive personality behaviours as outgoing, more intelligence, being



emotionally stable, venturesome, experimenting, imaginative, shrewd and controlled with sten scores of 6 to 8.

2. The results presented on the personality of the subject proved that he is submissive, serious, trusting, self-assured and relaxed with sten scores of 3 to 4. Thus, it was found that K. Vaithianathan's personality qualities are positive and these qualities enabled him to rise to the top level of Vice Chancellor of University. The hypothesis formulated that Vaithianathan's personality behaviour would be on the positive side as far as his intelligence, hard working, personality, leadership, and administrative qualities are concerned.

#### **4.16.3 Discussions on Opinnionaire**

1. Karuppudayar Vaithianathan's contribution towards physical education and sports in relation to career and personality traits is further researched through a questionnaire. Eighty personalities consisting of athletes, coaches, students, players, physical directors, principals of physical education colleges, assistant professors, professors in physical education, heads of the department of physical education in Universities, friends and sports journalists, who may have associated with the subject in different ways were responded to a well planned questionnaire consisting of 111 statements and they scored each statement for five points scale (Like scale). The obtained responses were scored and subjected to statistical treatment using statistical tool Factorial Analysis.

2. The opinion ratings, subjected to Factor Analysis, extracted twelve distinct factors, which were grouped and found that the subject was showing “Exemplary Contribution in Physical Education and Sports” (Table XVIII), “Contribution as Sports Scientist” (Table XIX), “Serving as a Role Model (Table XX), “Leader in Physical Education and Sports” (Table XXI), “Made unparallel Contribution” (XXII), “Developing Research” (Table XXIII), “Sports Organizer” (Table XXIV), “Sports Administrator” (Table XXV), “Sociability” (Table XXVI), “An Athlete”,(Table XXVII), “Knowledgeable” (Table XXVIII), “Thriving for Excellence” (Table XXIX). These findings proved that the subject possesses good leadership qualities and is always thriving for excellence with interest for research work. He is serving as a role model to be a leader in physical education and sports, making unparallel contribution towards physical education and sports. He is also a good sports organizer, untiring researcher, sports administrator, highly sociable and knowledgeable athlete.
3. Thus, K.Vaithianathan has served in different positions for the cause of physical education and sports, such as, director in physical education, assistant professor, reader, professor, director and head of department of physical education, sports organizer, sports administrator, coach, and an athlete. He has also served as a researcher, guide, supervisor, independent researcher, resource person, expert commission member, planning commission member, member of expert committees for physical education and sports, member of board of student, member of

academic council, member of board of examiners, and in so many other capacities. He never missed any single opportunity which came by his way to serve the cause of physical education and all these responsibilities were discharged by him to the best possible manner towards the promotion of physical education and sports throughout the length and breadth of the country.

4. These contributions he made to the cause of physical education and sports did not go unnoticed. He was appointed as the Vice Chancellor of the Tamil Nadu Physical Education and Sports University, Chennai, the unique University in the whole of the country. The contributions he is making in his capacity as Vice Chancellor of the University have been excluded from the ambit of this study.