Case Study

Factors Affecting Growth of Medical Tourism in India: An Exploratory Factor Analysis

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Abstract

Medical tourism is on high growth path in the Indian subcontinent. Recent trends in the medical sector strongly indicates that there is an increase in tourist's arrivals year after year coming for medical treatment. In this context, it has become imperative to explore the factors contributing to the growth of medical tourism in India. The current study collected perceptual data from patients and accompanies from several premier hospitals. The concerned data were subjected to exploratory factor analysis (principal component analysis) for delineating the underlying factors. A total of 17 variables were gathered from experiences and literature that were subjected to principal component analysis leading to four factors: cost, suitable infrastructure, ambience quality and treatment availability.

Keywords

Medical tourism, factor analysis, cost, infrastructure, ambience, treatment availability

Introduction

XMP[1] Consultants, a Chennai based consultancy firm provides market research and data analysis services concerning medical and healthcare. Many of the new hospitals management were worried as they were not able to get required patient visits (both domestic and foreign). So, few such hospitals delegated appointed XMP Consultants with the task of identifying the significant factors contributing to the development India as an attractive destination for medical tourism. Shubhanshu Agarwal (Head, XMP Consultants) called his team and discussed the criticality and urgency of the situation. The team discussed and agreed upon for executing an exploratory survey of foreign patients in the city's leading hospitals for understanding the factors promoting growth of India as an attractive tourist destination.

Medical tourism is a form of variant of healthcare tourism that generally connotes the tour of people to a foreign country with the objective of getting effective medical treatment in that foreign country. Historically, people arrange long distance trip from less-developed countries to highly developed countries containing

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major medical centers for obtaining medical treatment which was unavailable locally. However, in recent times people travel from developed countries to countries that can provide cheap and effective medical treatment facilities. So, cost of medical services and advanced treatment are the key issues that are driving people for medical destinations. Another crucial thing is that some issues may not be legal in home country for e.g. fertility processes.

While people make abroad trips mainly to avail medical surgeries or equivalent treatments; some other prefer foreign destinations for dental and fertility tourism. Some travel to obtain medical surgeries or other treatments. Some people go abroad for dental tourism or fertility tourism. Patients with scarce cases of rare genetic disorders may migrate to other destinations where there are cheaper and greater availability of such treatments are in vogue. However, different types of healthcare starting from virtually every type of health care, from psychiatry and alternative to convalescent care facilities are available. Medical tourists are subject to a variety of risks, which may include deep vein thrombosis, tuberculosis, amoebic dysentery, paratyphoid, poor post-operative care, and others.

Trends in Indian Medical Tourism

The recent developments in medical tourism has marketed India as one of the preferred destinations for medical care. It is expected that India will become the 2nd medical tourism destination after Thailand. The country's medical tourism area is projected to encounter a yearly growth rate of 30%, culminating it a $2 billion industry by 2015 .

With a steep increase in medical treatment expenses in the developed nations (e.g. United States topping the medical expenses chart) a greater number of Westerners are opting for international travel for availing offshore medical facilities. Approximately, 150,000 of these population travel to India for availing reasonably priced medical treatments annually. Among the leading hospitals in the country; Apollo Hospitals, Global Hospitals, Bombay Hospital, Hinduja Hospital, Hiranandani Hospital, Akruti Institute of Plastic and Cosmetic Surgery, Columbia Asia, and Fortis Health Care are some of the preferred ones.

The chief reasons for leading India in the medical tourism forefront mainly includes semi costly skilled labor force, advanced medical facilities, high quality medical services and opportunity of dominant use of English language. While infrastructure may put the above positives a bit back; Indian Government is determined to resolve this at a highest priority. A recent report by ASSOCHAM depicts while 850,000 tourists came to India in 2011; the figure was expected to rise to 3,200,000 by 2015. The most attractive treatments the country provides are, bone-marrow transplant, alternative medicine, cardiac bypass, hip replacement, and eye surgery. Chennai is the most famous city of India for medical tourism.

Healthcare services is a crucial service sector amongst others in the country. There are two major components in the Indian healthcare delivery system: viz. public and private. The public healthcare system (i.e. owned by Government) comprises limited secondary and tertiary care institutions in key cities and focuses on providing basic healthcare facilities in the form of primary healthcare centers (PHCs) in rural areas. The private sector provides majority of secondary, tertiary and quaternary care institutions with a major concentration in metros, tier I and tier II cities.

The overall Indian healthcare market today is worth US$ 100 billion and is expected to grow to US$ 280 billion by 2020, a compound annual growth rate (CAGR) of 22.9 per cent .Healthcare delivery, which includes hospitals, nursing homes and diagnostics centers, and pharmaceuticals, constitutes 65 per cent of the overall market. The main advantage of India resides in its huge chunk of well-trained medical professionals. Further, in

terms of cost, India provides significant savings to its tourists coming from other Asian and Western countries. The cost of surgery in India is about one-tenth of that in the US or Western Europe

The hospital and diagnostic centers attracted Foreign Direct Investment (FDI) worth US$ 3.21 billion between April 2000 and September 2015, according to data released by the Department of Industrial Policy and Promotion (DIPP). Apart from these, a no of private hospitals has planned for massive expansion adding over beds and other facilities in their hospitals in the upcoming years. To add to this, Government has considered significant investments for promoting Indian Healthcare industry and increasing the attractiveness of the country as a premier medical tourism destination. Apollo Hospitals Enterprise (AHEL) plans to add another 2,000 beds over the next two financial years, at a cost of around Rs1,500 crore (US$ 225.28 million) Sanofi-Synthelabo (India) Limited invested Rs 90 crore (US$ 13.52 million) in Apollo Sugar Clinics Limited (ASCL), a unit of its subsidiary Apollo Health and Lifestyle Limited. Carlyle Group acquired a stake in Metropolis Healthcare Limited, an operator of pathology laboratories in India, for an undisclosed sum [9] . Malaysia-based IHH Healthcare Berhad has agreed to buy 73.4 per cent stake in Global Hospitals Group, India's fourth-largest healthcare network, for Rs 1,284 crore US$ 192.84 million.

The Indian medical tourism sector is estimated to be US$ 3 billion per annum, with tourist arrivals approximating 230,000. The Indian medical tourism industry is expected to reach US$ 6 billion by 2018, with the number of people arriving in the country for medical treatment set to double over the next four years. With greater number of hospitals getting accredited and receiving recognition, and greater awareness on the need to develop their quality to meet international standards, Kerala aims to become India's healthcare hub in five years.

Exploratory Survey by XMP consultants

Many consultancy firms are exploring on the key issues that is fueling the growth of the country as an attractive tourist destination. The management at XMP consultants also decided to undertake an exploratory survey to understand the dominant factors or indicators that contributing for the expansion of medical tourism in the country. Mr. Agarwal pointed out, "We have decided to undertake an exploratory survey of perception of foreign patients in the country to undersign the significant factors contributing to medical tourism growth". He added that this would further help the newly opened hospitals to focus more on the factors deemed important by the foreign patients; thereby contributing to the growth of medical tourism in the country. Abhinav, the field expert was delegated the responsibility of executing the survey and completion of allied procedures.

To identify the aspects that are deemed important by the foreign patients when they make a selection of a foreign destination for treatment. Every foreign patient chosen were accompanied by his or her family member. Initially, Abhinav did an extensive literature survey and search and generated an initial pool of items that went further pre-testing with a group of patients and doctors and hospital authorities. Further, Abhinav conducted an initial interview of 20 such family members (there belonging to 20 different foreign patients) that came with their respective patients for medical treatment at a leading hospital in Chennai, which is well known for its advanced yet well priced medical facilities. All this resulted in a list of 17 items which govern foreign patient's choice of destination for obtaining medical treatment (Exhibit-I). These items were based on literature search and review, discussion with few patients and their relatives and finally set in accordance with s discussion with a group of doctors and hospital authorities. These were questions on awareness about destinations for medical treatment, expenses of medical facilities and ease of adaptability to a foreign culture.

The final sample units, as earlier, were family members of foreign patients that accompanied that came for treatment and were in the age group of 25-45. A structured questionnaire was prepared and distributed to 220 respondents in premier hospitals in Chennai.175 questionnaires were valid and could be used. Data were collected on a 7 point Likert scale (7=Extremely Important to 1=Not at All Important) on how far the foreign patients feel that the items are important when they make selection of a foreign destination for availing medical facilities. The selection of a 7 point likert scale was made for capturing more accurate perceptual responses. For the awareness regarding leading hospitals in the country; the respondents were given a set of hospital names (Apollo Specialty Hospitals, All India Institute of Medical Sciences, Fortis Hospital, NIMHANS, Tata Memorial Hospital, Apollo Cancer Hospital, Lilavati Hospital and Sankara Nethralaya) asked whether they were aware of them in a binary scale (Yes/ No). The aggregate of responses were tabulated (Exhibit-II).

Using SPSS 16, Abhinav and his team analyzed the data and obtained the results. From the research results, Abhinav found that awareness of Indian Hospitals were very much among the foreign patients. It was also found that quality medical care, low treatment costs, well equipped infrastructure and hospitable environment are the factors that influence foreign patients to choose India as preferred destination for medical tourism. He finally presented his findings to the management of XMP Consultants and suggested, "We should suggest these new coming hospitals to invest more improving hospital infrastructure while providing advanced medical care at the optimal cost".

Assignment Questions

- Why XMP Consultants decide to go for a marketing research? How Abhinav and his team did execute the task delegated to them? Comment on the sampling used, data collection method, types of scales used in the questionnaire.
- How Abhinav did determined the factors that influence medical tourism destination choice? What type of technique used? Explain.
- In your opinion, is the interpretation of research findings by Abhinav correct and useful?

Exhibit I

Most important Aspects that Foreign Patients Consider for Availing Medical Treatment

Sl. No	***Aspect***	***Variable Name Used in the Analysis***
1	Availability of advanced medical facilities	Advanced_Medical
2	Availability of cheap medical care	Cheap_Medical
3	Availability of complicated and complex treatments	Adequate_Facilities
4	Advanced infrastructure for medical care	Infrastructure
5	Great variety of routine medical treatment being available	Variety_Routine
6	Huge no of advanced treatments is available	Variety_Advanced
7	Large no of competent doctors	Doctors
8	Large no of competent surgeons	Surgeons
9	Huge pool of well trained nurses	Nurses
10	Low cost of complex and advanced treatments	Cheap_Surgery
11	Local people can communicate in English	Language
12	Doctors, surgeons and nurses can speak English well	English
13	less waiting time in queue for getting treatment	Rapid_Service
14	Availability of caring and homely environment in hospitals	Environment
15	Cooperative hospital staff	Staff
16	Hospital accommodation reasonably priced	Cheap_Hospitals
17	Cheap lodging and food are available around the leading hospitals	Cheap_Lodging

Prepared by the Author

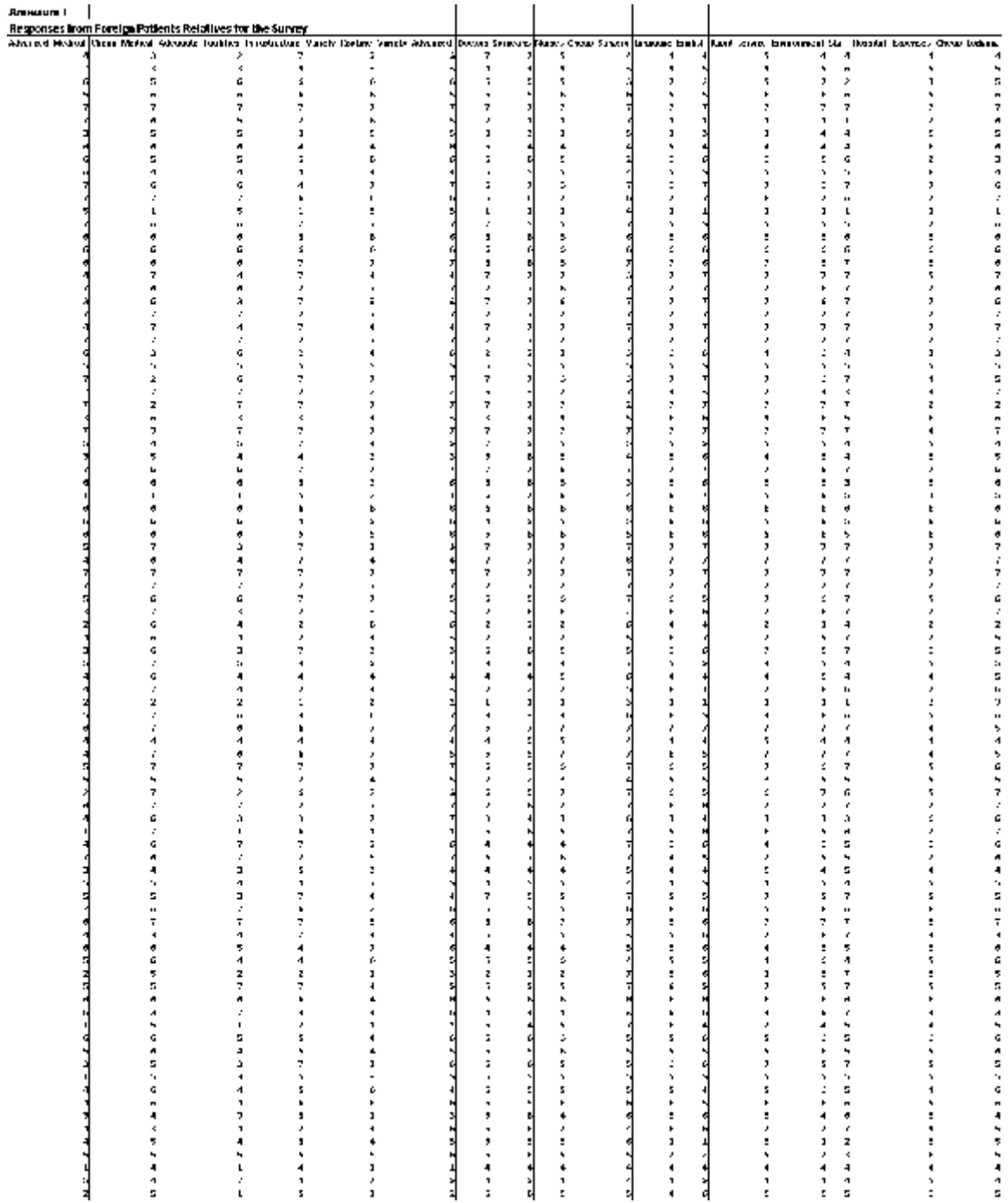
Exhibit-II

Descriptive Statistics About Awareness

Sl. No	***Hospital Name***	***Awareness***
1	All India Institute of Medical Sciences (AIIMS)	100
2	Apollo Specialty Hospitals	95
3	Fortis Hospital	85
4	NIMHANS	78
5	Apollo Cancer Hospital	72
6	Leevati Hospital	69
7	Tata Memorial Hospital	60
8	Sankara Nethralaya	53

Prepared by the author

No in the table represent percentages.



Annexure I

Responses from Foreign Patients Relatives for the Survey

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SPSS (originally, Statistical Package for the Social Sciences) is a computer program used for statistical analysis.

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Teaching Note

Factors Affecting Growth of Medical Tourism in India

Prerequisite Conceptual Understanding

- To understand Factor Analysis and its implications

Synopsis of the Case Study

XMP Consultants, a Chennai based consultancy firm provides market research and data analysis services concerning medical and healthcare. Many of the new hospitals management were worried as they were not able to get required patient visits (both domestic and foreign). So few such hospitals delegated appointed XMP Consultants with the task of identifying the significant factors contributing to the development India as an attractive destination for medical tourism. Shubhanshu Agarwal (Head, XMP Consultants) called his team and discussed the criticality and urgency of the situation. The team discussed and agreed upon for executing an exploratory survey of foreign patients in the city's leading hospitals for understanding the factors promoting growth of India as an attractive tourist destination. The objective of the project was aimed to determine the factors influencing choice of foreign patients for selecting India as a preferred medical destination. The company wanted to know the common factors using Factor Analysis. The result shows that there are four important common factors chosen in the study.

Pedagogical Objectives

- To understand the need for analysing perceptions and behavior of foreign patients selecting India as a preferred medical destination.
- To discuss how through Factor Analysis, important dimensions that affect the selection of a medical destination can be determined.

Assignment Questions

I. What analysis is to be used for such marketing research problem and why?
II. What is Factor analysis and why is it used?
III. Explain the process and methods used in Factor analysis.
IV. What are the various problems in interpreting the results derived from Factor Analysis?
V. Solve the problem presented in the case study using Factor Analysis.

Case Analysis

The faculty can begin the discussion by explaining about the Medical Tourism in India. The discussion can be extended to the problem faced by the emerging hospitals. From the case facts and generalized experience, the faculty can emphasize on the need for analysing perceptions and behavior of foreign patients in selecting India as a preferred medical destination.

The faculty can start discussing the research work taken up by Mr. Agarwal and his team along with Field Expert Mr. Abhinav. As the sampling techniques, data collection methods and types of scales used in the questionnaire are known to students, a brief discussion can be carried out on each of them. Then the discussion

can be continued on the analysis part of research. Descriptive analysis was performed on the questions to judge awareness of Indian Hospitals. The awareness about the Indian Hospitals were very high (Exhibit II of the case study).

Factors Influencing Consumers' Jeans Purchase Decisions

Foreign Patients and their relatives, who participated in this survey, were given a list of characteristics of Hospitals and treatment and then they were asked to show how important these aspects were for them while making selecting India as a medical destination. Respondents who found a particular aspect 'very important' gave '7' while others who found it 'unimportant' gave '1' (Annexure I of the case study).

A list of seventeen characteristics/attributes were presented to the respondents and a no of them were rated to be quite important by the respondents. The faculty can discuss the importance of each of these attributes in real world.

Descriptive Statistics	***Exhibit-TN-(I)***		
	Mean	Std. Deviation	Analysis N
Advanced_Medical	4.66	1.767	175
Cheap_Medical	5.13	1.654	175
Adequate_Facilities	5.17	1.642	175
Infrastructure	5.18	1.78	175
Variety_Routine	5.01	1.767	175
Variety_Advanced	5.12	1.591	175
Doctors	4.94	1.643	175
Surgeons	4.95	1.698	175
Nurses	5.07	1.666	175
Cheap_Surgery	5.18	1.668	175
Language	5.03	1.564	175
English	4.74	1.625	175
Rapid_service	5.14	1.766	175
Environment	4.96	1.599	175
Staff	5.1	1.759	175
Cheap_Hospitals	4.97	1.636	175
Cheap_Lodging	5.11	1.553	175

Next, the faculty can discuss how the team under the guidance of Abhinav executed the grouping of characteristics/ attributes under some factors by employing Factor Analysis through SPSS 20.0. However, prior to Factor Analysis, in order to find out whether the data fits Factor Analysis, KMO and Bartlett's test was done. Bartlett's test of sphericity indicates whether the correlation matrix is an identity matrix, which would indicate that the variables are unrelated. The significance level of this test is also very important. Very small values (less than 0.05) indicate that there are probably significant relationships among the variables. A value higher than about .10 or so may indicate that the data is not suitable for Factor Analysis. Since the significance level of our data was 0.00, it can be concluded that the data of this study is suitable for Factor Analysis. The KMO value was a 0.807, which was >0.5 and since the Bartlett's test was also significant, the values can be accepted

KMO and Bartlett's Test[Exhibit-TN(II)]		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.807
Bartlett's Test of Sphericity	Approx. Chi-Square	3493.44
	Df	136
	Sig.	0

The 17 items used to identify the dimensions of consumer choice were subjected to Factor Analysis. In Factor analysis, the extraction method was Principal Components and rotation method was Varimax1. The Factor Analysis solution shows that reasonable levels of communality were obtained for each variable and the four factor solution explained 85.21 % of the total variance [Exhibit-(TN)-III].

Total Variance Explained [Exhibit -TN-(III)]

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.993	41.133	41.133	6.993	41.133	41.133	4.473	26.311	26.311
2	2.922	17.191	58.324	2.922	17.191	58.324	3.537	20.807	47.118
3	2.395	14.086	72.41	2.395	14.086	72.41	3.325	19.557	66.675
4	2.177	12.805	85.214	2.177	12.805	85.214	3.152	18.539	85.214
5	0.525	3.089	88.304						
6	0.373	2.193	90.496						
7	0.315	1.855	92.351						
8	0.278	1.634	93.985						
9	0.227	1.334	95.319						
10	0.194	1.139	96.458						
11	0.164	0.962	97.42						
12	0.124	0.728	98.148						
13	0.1	0.587	98.735						
14	0.088	0.519	99.254						
15	0.061	0.358	99.612						
16	0.042	0.247	99.859						
17	0.024	0.141	100						

Interpretations and Managerial Implications from Research Results

From the Factor Analysis, four factors were found [Exhibits (TN)-III and IV].

The first factor accounted for explaining 26.31 percent of the variance and had an eigen value of 6.99. It consisted of appropriate infrastructure, availability of skilled doctors, availability of skilled nurses, availability of skilled surgeons and ability to provide rapid service. Hence this factor concentrated and discusses mostly on infrastructure quality required for effective medical treatment and hence it was labeled as "Suitable Infrastructure".

The second factor accounted for explaining 20.8 percent of the variance and had an eigen value of 2.92. It consisted of availability of cheap medical facilities, availability of cheap surgeries, availability of cheap

hospitals and availability of cheap lodging facilities around hospitals. Hence this factor was suitably labeled as "Cost".

The third factor accounted for explaining 19.55 percent of variance and had an eigen value of 2.39. It consisted of language, English, environment and staff. Hence this factor covered mainly items focusing on the ambience quality of medical treatment provided by the Indian Hospitals. Hence this factor was suitably labeled as "Ambience Quality".

The fourth factor was composed of availability of advanced medical facilities, availability of adequate medical facilities, and variety of routine treatments and variety of advanced treatment facilities and hence was labeled as "Treatment Availability". It had an eigen value of 2.17 and this factor had the power to explain 18.53% of the variance.

Exhibit-TN(IV)	Component			
	1	2	3	4
Advanced_Medical				0.818
Cheap_Medical		0.926		
Adequate_Facilities				0.917
Infrastructure	0.924			
Variety_Routine				0.861
Variety_Advanced				0.845
Doctors	0.921			
Surgeons	0.887			
Nurses	0.919			
Cheap_Surgery		0.886		
Language			0.766	
English			0.932	
Rapid_service	0.918			
Environment			0.945	
Staff			0.899	
Cheap_Hospitals		0.885		
Cheap_Lodging		0.912		
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations.				

In addition, the faculty can discuss the concepts and calculations of communality and eigen value through the above case study.

1. XMP Consultants, Chennai along with other character names are all fictitious, and are used for developing the theme and situation in the case. Any resemblance with real life and reality is purely coincidental.The case is developed mainly for demonstrating how exploratory factor analysis can be used in a given situation.

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