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The main objective of the study is to examine dimensions of service failures in the hospital industry. The primary study was conducted in four cities in Bengkulu province, Southwest Sumatra, Indonesia. Self-administered questionnaires were distributed in the survey to collect the dataset. The number of questionnaires distributed in the survey was 300 and 300 questionnaires were returned and analyzed. Factor analysis and cluster analysis were employed to the dataset. The result of the analysis reveals that service failure constructs can be categorized into six underlying dimensions such as Medical reliability errors, Physical evidences errors, Poor information, Medical treatment errors, Costly service, and Complaint handling failures. The study also indicates that hospital patients can be clustered into three segments, namely demanding segment, complainer segment, and salient patient segment. Service failure dimensions and the clusters found can be used by hospitals in Indonesia to improve their service process and delivery.

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Service Failure in the Hospital Industry: The Indonesian Experience

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Introduction

The quality of services of hospitals in Indonesia is relatively poor. Malpractices and adverse events are serious issues facing Indonesian hospitals. The minister of health of Indonesia admitted that the overall quality of hospital services in Indonesia is poor (www.detiknews.com/index.php/detik.read/tahun/2005/bulan/08/tgl/21/time/162107/idnews/426110/idkanal/10). The quality of services provided by a hospital could be considered as a primary reason for patients when they choose service providers in the hospital industry. Customers or patients are reluctant to take a risky decision. Some are willing to pay premium prices to get a quality service of hospitals. It was reported that the number of Indonesians going abroad for medical check up and treatment is growing significantly. About 72,000 Indonesians travel to Singapore annually for medical reasons (<http://64.203.71.11/ver1/Kesehatan/0701/12/222443.htm>).

Service failure or adverse events in hospital industry occur not only in Indonesia, but also in developed countries where law enforcement in medical industry is strictly employed. Institute of Medicine USA reported that adverse events have killed about 100,000 American every year. In England, each major adverse event is accompanied by 25 minor adverse events and 300 near misses (Cahyono, 2004).

Lewis and Spyropoulos (2004) stated that service failure could happen in any company even when the company has focuses on quality issues. For some patients, service failures could be understood when the service provider conducts a service recovery strategy. Unfortunately, recovery effort by hospitals is relatively slow. Therefore, most patients have negative response toward such a slow recovery strategy.

In more developed countries, studies of service failures and consumer behaviour in hospital industry have been well documented. Hospitals have employed marketing strategies to reduce customer defection and increase customer retention. However, the same may not be said about hospital industry in Indonesia where research on patient perceptions of service failure is rare. It is therefore the purpose of the study to examine the dimensions of service failures in hospital industry and to identify clusters of patients based on their perceptions of service failure dimensions.

Service Failure

Service quality has become a key strategic variable in organisational efforts to satisfy and retain customers or to attract new customers (Lewis and Clacher, 2001). However, for many service providers, service failure is inevitable since some aspects of services such as customer attitudes and employee behaviour cannot be totally controlled by management. All service organisations, however quality driven, will have some kind of service failures with respect to one or more dimensions of service quality. The idea of zero defects widely implemented in manufacturing industry is extremely difficult to apply in service industry. A company cannot avoid service failures due to human errors in service delivery (Fisk, Brown, and Bitner, 1993).

Service failure is defined as service performances that fall below customer expectations (Hoffman and Bateson, 1997). Maxham (2001) defined service failures as any service related mishaps (real or perceived) that transpire during a customer's experience with a firm. Some researchers believed that service failure that is not immediately handled by a service provider could be costly and could lead to customer defection (Kotler, 2000; Liu, Sudharshan, and Hamer, 2000; Maxham, 2001; Roos, 1999).

Service failure could be due to unique characteristics of services and psychographic factor of individuals getting involved in service delivery (Lewis and Spyropoulos, 2001). Bitner, Booms, and Tetreault (1990) concluded that employee responses toward service failure directly relate to customer satisfaction and dissatisfaction. Other researchers revealed that service failures could also due to customer behaviour in the delivery process of the services (Armistead, Clarke, Stanley, 1995; Denham, 1998; Johnston, 1994).

Service failures could be grouped into four categories: service delivery system failures, gap between needs and requests, unprompted/unsolicited employee actions, and problematic customers (Bitner, Booms, and Tetreault, 1990). In a similar fashion, Lewis and Spyropoulos (2001) classified service failures into five categories, namely organization procedures, mistakes, employee behaviour, functional/technical failures, and actions/omissions of the organization that are against the sense of fair trade.

Research Method

In the first stage of the study, comprehensive review of the literature relating to service failures was undertaken. A series of personal interviews was conducted to determine the extent to which the initial list of service failure variables was appropriate to the Indonesian context. Three doctors and paramedics were also consulted to ascertain their views in respect of the categories of service failures identified by patients. The origin of the 20 service failure

variables was adopted from the works of Bitner, Booms, and Tetreault (1990), Sargeant and Kaehler (1997), and Lewis and Spyropoulos (2001).

The primary study was conducted in four cities in Bengkulu province, Southwest Sumatra, Indonesia. The province has a population of 1.9 millions and can be considered representative of the social strata existing in the wider Indonesian society. A technique of convenient sampling was employed since a sampling frame of hospital patients could not be accessed by researchers. Three hundreds self-administrated questionnaires were distributed to hospital patients and 300 questionnaires were returned and analyzed for the study. Patients or patient families were approached in the state hospitals in Bengkulu province.

The researchers were interested to see whether patient perceptions of hospital service failures could be reduced and grouped into a smaller number of underlying factors. Factor analysis was employed to the dataset of the 20 service failure variables. Principal component was applied to the dataset to extract from the series of 20 service failure variables a set of factors capable of capturing the main features of responses. Prior to the extraction of factors, Bartlett test of Sphericity and the KMO measure of sampling adequacy confirmed that there was sufficient correlation among the variables to warrant the application of factor analysis. In order to simplify the factor pattern, a Varimax rotation was conducted.

The next step in a factor analysis was to determine the number of factors to extract from the dataset. It was decided to follow the convention in selecting factors that account for variances (eigenvalue) greater than one. Factors with a variance less than one are no better than a single variable, since each variable has a variance of one (Hair *et al.*, 1995). The eigenvalues are displayed in the penultimate row of Table 1. The eigenvalue suggests a six-factor solution. The last row of Table 1 shows the percentage of variance in the full set of the 20 service failure variables that can be attributed to the six factors. The cumulative value of total variance explained by the six-factor solution was 63.26%. Thus, a model with six factors was considered to be adequate to represent the data. The significant correlations between factors and statement variables are displayed in Table 1. A cut-off value of .50 (for correlation coefficients to be regarded as significant and to be included in the table) was applied. The cut-off value of .50 was considered to be sufficient since the sample size of the survey is bigger than 300 (Hair *et al.*, 1995). Of the 20 service failure variables employed, one variable was excluded from the table because of its low correlation coefficient. The variable excluded was unfriendliness of doctors and paramedics in dealing with patients.

Table 1: Rotated Component Matrix for Service Failure Variables

Hospital service failure indicators	F1	F2	F3	F4	F5	F6
1. Inadequate skills of doctors in dealing with patients	.84					
2. Doctor mistakes in medical treatment	.73					
3. Doctors don't provide enough time to deal with patient	.65					
4. Hospital does not have late hours	.64					
5. Doctors are slow in providing medical treatment	.61					
6. Inadequate number of doctors and paramedics		.75				
7. Lack of medical facilities		.73				
8. Lack of cleanliness		.72				
9. Doctors are unfair in providing medical treatment		.55				
10. It is difficult to get information			.87			
11. Prescribed drugs are not always available in the hospital drugstore			.79			
12. Mistake in diagnose				.68		

13. No improvement after medical treatment in the hospital				.62		
14. Medical services is slow				.60		
15. Additional cost in medication					-.67	
16. Hospital location is inconvenient					.63	
17. Poor administrative procedure					.54	
18. Hospital does nothing about patient complaints						.82
19. Hospital rate is expensive						.69
Eigenvalue	4.8	2.5	1.9	1.3	1.1	1.0
Variance Explained in %	15.6	12.4	11.5	8.6	8.0	7.1

In the light of the factor loadings depicted in Table 1, the following interpretations are offered.

Factor 1: Medical reliability failure

This factor exhibits the largest number of significant correlation coefficients. Factor 1 has heavy loadings for five variables mainly relating to incompetence of doctors and paramedics in dealing with patients. Four of the five variables in the factor reflect service failure in hospital related to doctor's failures in dealing with patients. Inadequate skills of doctors, doctor mistake in medical treatment, doctor is in a rush in dealing with patients, and doctor is slow are service failure variable that count for this dimension. The result of the study suggests that hospitals in the country fail to maintain reliability aspect in providing services to patients.

Factor 2: Physical evidence failure

Factor 2 has heavy loadings for four variables pertaining to the physical evidences of services in hospital industry. The service failure variables that have a high correlation with this factor are limited number of doctors and paramedics, lack of medical facilities, and untidiness of the hospital. Therefore, the factor was name accordingly.

Factor 3: Poor information

Factor 3 is characterised by two variables that reflect patient difficulties in finding information regarding medical treatment and patient difficulties in getting prescribed medication in the hospital drugstore.

Factor 4: Medical treatment errors

Factor 4 has heavy loadings on three variables that reflect medical treatment errors in the hospital service delivery. Individual scoring highly on this factor would tend to be concerned with diagnose errors conducted by doctors. They would also be concerned with the slow serviced provided by the medical staff. They felt that they did not have significant improvement after treatment and medication. The factor has thus been labelled "medical treatment errors". All variables pertinent to this factor reflect service process failures. It is quite understandable since technical outcome of hospital services is difficult to be evaluated in a short period. Therefore, patients tend to judge the process of services provided by doctors and paramedics.

Factor 5: Costly services

The factor has been named accordingly since the three variables were related to extra cost associated with the services provided and the non-monetary cost related to the service. Patients perceived that administrative process is time consuming and they did not appreciate extra cost associated with the services provided by the hospital.

Factor 6: Complaint handling failure

Factor six relates to the hospital failure in handling patient complaints. Most patients perceived that hospitals are slow in handling their complaints. Patients also believed that hospital do not provide a value-for money service. They believed that cost of hospital is to expensive relative to the service provided.

Cluster Analysis of service failure dimensions

Having applied factor analysis, it was then possible to determine whether distinct segments of hospital patients, based on the underlying factors of service failures, might exist. The technique of cluster analysis was applied to the factor scores created in factor analysis. Cluster analysis classifies respondents in such a way that each respondent is similar to others in the same cluster with respect to their service failure-related criteria they used in patronising hospitals. As a classification technique, the primary purpose of cluster analysis is to group hospital patients on the basis of the similarity of their responses to service failure-related variables.

Hierarchical cluster analysis was applied to the dataset of the 6 factor scores created in the previous factor analysis. The number of segments was decided on the basis of a visual inspection of the agglomeration schedule produced by the application of hierarchical cluster analysis. A visual inspection of the agglomeration schedule revealed a sudden jump in error variability measures between two and three clusters. K means cluster analysis with iterative procedure was applied to determine the solution for three clusters. The analysis also revealed that the population was better balanced at this point and each cluster had a better descriptive appeal compared with other potential solutions.

Table 2: Cluster Analysis of Service Failure Dimensions

Service failure dimensions:	Cluster MS (DF 2)	Error MS (DF 297)	F	Prob.
1. Medical reliability (F1)	6.62	.96	6.88	.00
2. Physical evidence (F2)	37.22	.75	49.56	.00
3. Information (F3)	10.25	.94	10.92	.00
4. Medical treatment (F4)	57.65	.61	94.42	.00
5. Costly services (F5)	64.00	.57	112.88	.00
6. Complaint handling (F6)	19.80	.87	22.74	.00

Table 3: Final Cluster Centres of Service Failures

Dimensions of service failure	Cluster 1	Cluster 2	Cluster 3
1. Medical reliability (F1)	-.19	-.10	.29
2. Physical evidence (F2)	.49	-.78	-.01
3. Information (F3)	-.13	-.28	.36
4. Medical treatment (F4)	.73	-.20	-.70
5. Costly services (F5)	-.14	-.88	.82
6. Complaint handling (F6)	-.39	.53	.06

Cluster 1: Demanding Segment (40.14% of the sample)

Members of this cluster perceived that hospitals fail to deliver quality services for medical reliability, access to medical information, costly service, and the way the hospital handle patient complaints. Patients have negative opinions about the quality of services related to the four dimensions of hospital service quality. On the other hand, members of this cluster perceived that physical evidence and medical treatment were relatively fine.

Cluster 2: Complainer (25.51% of the sample)

Members of the segment have negative opinions on almost all dimensions of service quality delivered by the hospital. Of the six dimensions of the hospital services provided, only the dimensions of complaint handling was perceived positively by members of the segment. In other words, members of the segment perceived the quality of services provided by hospitals was below their expectations.

Cluster 3: Salient patient (34.35% of sample)

Patients in this group have positive opinions on four dimensions of hospital service delivery of medical reliability, information, costly service, and complaint handling approach. However, individuals who belong to the segment have negative perceptions of the quality of medical treatment conducted by doctors or paramedics.

Conclusion

The result of the study clearly indicates that there are the underlying dimensions of service failures in the hospital industry in Indonesia. The analysis also suggests that hospital patients in the study can indeed be segmented into three segments. Whilst the result of the study might be appealing in an attempt to improve service process and service delivery in the hospital industry, it is also important for the hospital to study patient complaint behaviour and tailor its recovery strategy to match the need of patients. Whilst the study could be important in segmenting and targeting hospital markets, further analysis should be conducted to profile segments found based on other variables such as demographics and patient behaviour.

It is also worth noting that the sample was relatively small and hospitals sampled were public hospitals in one province in Indonesia. A further study examining the behaviour of a small fraction of Indonesians (high end market) who defected and instead visited a Singaporean hospital could be useful.

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