



Determination of Taxonomy and Underlying Dimensions of Service Operations Strategies in Hotel Industry

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ABSTRACT: This study presents taxonomy of operations strategies and their performance in hotels. This research studies a part of soft area of hotel industry and scrutinizes the status and importance of Aranda's service operations strategies components. Based on nine components, 15 constructions have been identified and grouped into four clusters using k-means cluster analysis. Four clusters emphasize the different dimensions of service operations strategies. The effectiveness of grouping method and discriminant dimensions are shown using discriminant analysis. The results showed that there are significant differences among these clusters. By identifying the most effective variables, service operation strategies can be distinguished in the hotel industry.

Keywords: Service operations strategy, Taxonomy, Underlying Dimensions, Clustering, Discriminant analysis, Hotel industry.



1. INTRODUCTION

Increasing the complexity and intensity of competition in market have caused manufacturing companies Change their position on the axis and goods-service continuum by increasing the share of services in their products. The increasing intensity of competition along with reduction profit margin of goods point to the fact that the achieving product differentiation has reached to its maturity time at the present time. Despite falling sales of goods, services show an extra potential growth. According to Wise and Baumgartner (1999), the growth potential in services revenue sector exceeds often three or four times more than the income from production and goods sector (Gebauer, 2008). Many companies have successfully transformed their manufacturing, R&D, and other business functions in order to improve their performance while stripping out the costs (Pulkkinen et al. 2017). Yet far fewer companies have optimized their service operations, even though they can have an outsized effect on customer acquisition and retention (Hawkes et al, 2011).

Many studies have been done regarding the operational strategies in conceptual and theoretical fields (Skinner, 1969, 1974; Zhao et al, 2006) and they focused mostly on the classification of services and their impact on other different types of services and marketing strategies (Bharadwaj et al, 1993; Bowen and Ford, 2002; Matthyssens and vandenbempt, 1998; Thomas, 1978). Although very limited studies have ever conducted regarding taxonomy worldwide, most of them were in the field of manufacturing strategies (Pooya and Azar, 2012). Researchers in the field of operation management have examined the operational characteristics of service and manufacturing sectors in different aspects of operation, service, quality, response time and capabilities (Pelli, 2018). According to Harris (1995), each industry, regardless of the type, Executive practices and effective experiences must be used for hotel and service industry. The majority of researches on operational strategies are concentrated on manufacturing strategy processes. Such research in service operations strategies are one of the most important steps to develop technocratic approach in service sector.

Hotels are one of the most important sections in tourism, which can provide a basis to obtain more capital, investment, tourists and thus more income (Tolooee, 2008). According to Larsen (1997) and Lundberg (1974), a hotel is an organization providing accommodation and ancillary services on a short-term basis for people away from home (Pallesen S. et al., 2015). The studies on service operations strategies are not only provide a good description of strategic groups but also represent necessary background for more specialized studies like performance evaluation, appropriate decision of service operations in each group (Pooya and Azar, 2012; Zhao et al, 2006). On the other hand, knowledge regarding public services operational strategies helps managers design and implement appropriate strategies in order to gain maximum efficiency of production and service potential resources (Martin and Diaz, 2008). Furthermore, with recognizing the strategic clusters, competitive strategies will be able to design in order to maintain a competitive position among other competitors (Stavroulakis and Papadimitriou, 2016).

This study will present taxonomy of service operations strategies of hotels in Iran and introduce the dominant strategic groups in this industry. The results provide an appropriate description of strategic groups in this industry and will help them design and implement appropriate strategies in order to maximize their productivity. Moreover, it examines the soft area in hotel industry of Iran such as management, human resource and interaction with customers and it also investigates their strengths and weaknesses in order to coordinate with market requirements. Thus, in this study, after clustering service operations strategies using with nine dimensions of Aranda's operations strategy (2002) and after underlying these dimensions, we can distinguish different types of service operations strategies. Moreover, after defining Configuration, taxonomy, typology and service operations strategy, a brief description of the research literature and the method of study is expressed. In the next part, the statistical analysis results are explained and finally strategic clusters are identified and defined, and the dimensions of these clusters are also determined.



2. LITERATURE REVIEW

2.1. Configuration, taxonomy and typology

The identification of strategic groupings or configurations is an integral approach in strategy research (Bozarth and McDermott, 1998). "Configuration" means collecting multidimensional features different from a conceptual point of view which often appears simultaneously. Configuration models present a useful framework for describing organizations, strategies and processes that are divided into two types: taxonomy and typology. Creating and developing configuration, taxonomy and typology are the basis of the research in strategy field that are more important in determining the organizations' dominant pattern (Ketchen and Shook, 1996). The complexities of companies can be better understood, evaluated and analyzed through classification of taxonomy (Ketchen and Shook, 1996; Frohlich and Dixon, 2001). Taxonomies provide "parsimonious descriptions [of strategic groups] which are useful in discussion, research and pedagogy" and reveal insights into the underlying structures of competition from the viewpoint of operations (Miller and Roth, 1994). Typologies describe ideal types, each of them represents a unique combination of organizational attributes (Doty and Glick, 1994). It is possible that no existing organization will perfectly match a proposed ideal type, although closer alignment with an ideal type should result in increased organizational effectiveness (Venkatraman, 1989; Venkatraman and Prescott, 1990). While both taxonomy and typology offer multidimensional views of organizations, they differ markedly with regard to their underlying purpose, key characteristics, and the theoretical statements embodied within them (Bozarth and McDermott, 1998).

2.2. Service operations strategy

In a hierarchical approach, strategy exists at three levels: corporate strategy, business strategy and functional strategy. Operations strategy can be defined as a vision of the operation function that depends on the corporate management in decision-making. This vision must be integrated with the firm's strategy and it is frequently reflected in a formal plan. The output of the operations strategy should be a consistent standard for the decision making process in order to achieve a competitive advantage for the firm. Operations strategy also provides feedbacks for the firm's corporate strategy (Aranda, 2002). Operation management literature introduced service operations strategy as a development to services system in order to match customers' expectations with their perceptions (Armistead, 1992). On the other hand, service operations management is generally concerned with providing practical insight to enable firms to effectively deploy their operations (Coltman et al, 2010). However there are some models and designs to illustrate this process through various classification schemes of services (Johnston, 1994; Nayyar, 1992; Sampson, 1996), few researchers reviewed the difference between various configurations of service operations strategy. Lewis and Brown (2011) studied the operational features of some service companies. They expressed that these companies are in direct contacts with their customers regarding the designing process and service package. Also, Oltra et al. (2005) have done a configuration of operational strategies in companies with project processes. The sample consists of 130 companies in Spain. Three operational strategies have been identified; cost operational strategy, accommodators which emphasized on the quality of manufacturing and services and finally the creative cluster.

Aranda's study (2002) which investigated the relationship between operational strategy and the organizational size of engineering consulting firms in Spain is undoubtedly one of the best researches in service operations strategy. The findings of this study showed that there is a significant relationship between service operations strategy and firm size. Small firms are willing to follow customer-orientation service operations strategy; Medium size and large firms follow process-oriented and service-oriented strategies respectively. In fact, Aranda (2002) developed a model based on three basic strategies that focused on main activities of the company in service literature. The basic operations strategies followed by service industries include; process-oriented service strategies, service-oriented and customer-oriented strategies (Bowen and Youngdahi, 1998; Tersine and Harvey, 1998). Moreover, Aranda identified nine dimensions of operational strategy for the first time which led to a specific service operations strategy. Table 1 shows these components and their definitions.



After that, Aranda (2003) did a research on service operations strategies, flexibility and performance in engineering consulting firms in Spain with the same population. The results showed that service operations strategy has a direct and positive impact on service performance. He proposed a model based on three operational strategies in consistent with the firm's focus-activity, which are process-oriented service strategies, service-oriented and customer-oriented strategies, along with five operational strategies obtained from the findings. The results of this study represented several achievements in service operations strategy area. Firstly, classification of structural and infrastructural decisions that could identify the concept of service operations strategy and could also provide better opportunities to develop this context in a new different situation. Secondly, this research investigated the flexibility model in service industries by using empirical methods. And thirdly, the results of this study proved that the service operations strategy has a direct and positive impact on the company's financial performance. Finally, the most important result of this research was to understand the impact of operational strategy on the performance. Different dimensions of strategy have different effects on financial and nonfinancial performance.

Table 1. Components and definitions of service operations strategy

Main group	Constructions	Symbol	Definition
Layout	Fix moving	FL ML	Organizing service delivery as a sequential activity process Organizing service delivery according to service specific characteristics
Pull or push orientation	Pull push	PLO PSO	Considering customer needs when developing service activities Considering satisfying demands when developing service activities
Degree of service standardization	Degree of service standardization	LS	The level of standardization of procedures
Diversification of services	Diversification of services	DS	The diversity of products or services
Use of information technology	Use of information technology	IT	The reason for using IT (to reduce costs or to improve services)
The relationship between front and back office activities	Front and back office activities	BFA	The type of workforce information exchange or their physical location
Degree of workforce specialization	Degree of workforce specialization	HRS	Determining personnel versatility when accomplishing various activities
Customer participation	Customer participation	CP	Level of interaction between customer and delivery service process
Design and development of new services	Design and development of new services	NS	Intensity of the design and developing new services delivery procedures through new task organizations and investment in specific resources



Literature review revealed that although some researches have been done on operations strategy, there is hardly ever a study on determining service operations strategy. For example, Zhao et al. (2006) in their study, replicated the taxonomy of manufacturing strategies of Miller (1994), using data from one of the world's fastest growing economies—China. A taxonomy of manufacturing strategies was identified and was found to be different from the strategic clusters of Caretakers, Marketers and Innovators in Miller and Roth. Four strategic clusters were named based on the rankings of the competitive capabilities across the four clusters and the relative rankings of the capabilities within each cluster. Clusters were labelled as: Quality Customizers, Low Emphasizers, Mass Servers and Specialized Contractors. None of the US-based manufacturing strategies of Miller and Roth (1994) was found in Chinese taxonomy.

As we have seen in recent years, an increasing number of studies have examined the conceptual and theoretical development of operational strategies. However, most researches in this area have focused on investigating the relationship between a few constructs, with relatively little emphasis on the identification of strategic configurations and taxonomies (Bozarth and McDermott, 1998; Frohlich and Dixon, 2001). Therefore, based on the importance of the target sector of this study and the advantages of taxonomy researches that explained above, we are going to identify the service operations strategies and its underlying dimensions in Iran's hotel industry.

3. METHODS

The aim of this study is to present taxonomy of Iran's hotel service operations strategies. In this regard, a questionnaire was used consisting two parts. The first part contains demographic questions and the second part has the main questions. Items for measuring service operations strategy were adopted from Aranda (2002) that included nine major components or dimensions. Responses to all items were measured on a five-point Likert scale (Aranda's variables and their definitions are shown in table 1). To ensure the reliability of the questionnaire, three experts in the fields of production management and business administration and five experts in the hotel industry field have reviewed the item scales. Then six copies of the questionnaire's initial version were completed in 6 hotels. After all the six respondents had completed the questionnaire, the research team and respondents checked every single question to make sure that the questions are fully understood. Whenever there was confusion or ambiguity in the wording of the questions or the scales, modifications were made. As a result, some questions were reworded to improve the accuracy of the translation. In addition, the factor analysis with varimax rotation was used to assess the construction validity and reliability with internal consistency with Cronbach's alpha indicator. Factor analysis was applied as a data reduction or structure detection method (Assante L. M., Huffman L., Harp S. S., 2010).

Since different SBUs (Strategic Business Units) of a service or manufacturing organization can choose different strategies (Govindarajan, 1989) and distinguish themselves from overall strategy of the organization in order to achieve a competitive position (Gupta and Govindarajan, 1984), we have used SBUs for the analysis. Therefore, the population in this study includes all hotels in Mashhad with operations management that are also members of the trade union. The total number of the population was 231. The sample size was determined using Cochran formula. The level of error was assumed 1%. The sample size was 106 which was selected using stratified random sampling. From 145 distributed questionnaires, 106 questionnaires were completed (return rate 73.1%).

K-mean clustering analysis was used in order to create taxonomy and to classify the units. Cluster analysis is a technique for grouping subjects or individuals in groups while the subjects within each category are very similar to one another, nevertheless, they are significantly different from the other groups (Kalantary, 2008). Accuracy of this algorithm has been demonstrated and used by researchers in many cases (Miller and Roth, 1994; Boyer et al, 1996; Frohlich and Dixon, 2001; Kow and Chen, 2004; Aranda, 2002; Zhao et al, 2006; Pooya and Azar, 2012; Kathuria, 2000).

Cluster analysis has been used in various types of hospitality research projects. Lin (2003) used cluster analysis to develop hospitality consumer profiles; Curry, Davies, Phillips, Evans, and Moutinho (2001) segmented hotels in the United Kingdom based on Kohonen's self-organizing map; Carlson, Kinsey, and Nadav (2002) segmented consumers based on where they made the majority of their food purchases; and Rogelberg, Balzer, Ployhart, and Yonker (1999) segmented customers of restaurants based on tipping practices. Cluster analysis also has been used to segment individuals in a variety of different tourist-related activities such as hunting, adventure tourism, ecotourism, tourism



development, and lifestyle segmentation (Vaske, Timmons, Beaman, & Petchenik, 2004; Vyncke, 2002; Weaver & Lawton, 2004, in Assante L. M., Huffman L., Harp S. S., 2010). Cluster analysis is designed for determining which divergent characteristics exist in a sample that can be combined, therefore turning the sampled population into mutually exclusive subgroups (Romesburg, 1984 in Assante L. M., Huffman L., Harp S. S., 2010).

Because cluster analysis is an exploratory technique, it is often followed by another statistical method to confirm the cluster groupings (Assante L. M., Huffman L., Harp S. S., 2010). In this study after cluster analysis, the difference among the structures in hotels service operations strategy of each cluster was determined using ANOVA and F statistic. Moreover, we have used discriminant analysis (DA) to identify the underlying dimensions of service operations strategies. The type of service operations strategy of sample members is considered as grouping variables and the components of service operations strategies as independent variables.

4. RESULTS

4.1. Reliability and validity

In order to evaluate the validity of constructions and to examine the internal structure of the relationships between measures indicators of service operations strategies, we have used convergent validity. Convergent validity expresses that there is an agreement between the results and theoretical construct (Flynn et al, 1995; Aranda, 2003; Pooya, 2013; Zhao et al, 2006). For this purpose, the confirmatory factor analysis with varimax orthogonal rotation was used (Hair et al, 1998; Oltra et al, 2005).

The factor loading above 0.5 was supported. KMO criteria for each construct indicated the adequacy of sampling for the analysis. Bartlett's test of significance indicated that factor analysis can be used to identify the structures. The minimum value of KMO is 0.5 and Bartlett's maximum level was 0.05 (Thun, 2007). To determine the structural reliability, Cronbach's α coefficient is calculated. Generally, the reliability coefficient alpha values above 0.7 are considered suitable for structural validity (Nunnally, 1978). However, a margin of 0.5 to 0.6 is considered adequate for exploratory works (Nunnally, 1978; Srinivasan, 1985).

These calculations showed that there is no validation for some constructions. This problem was resolved with slight modifications and changes in grouping with the help of an expert team. The results are given in table 2.

Table 2. Reliability and validity of the sample

Construction	Abbreviation	Items	Factor loading	KMO	Bartlet	Frequenc y	Explained variance%	Chronbach 's α
Fix layout	FL	FL1	0.36	0.79	0	1	46	0.73
		FL2	0.79					
		FL3	0.75					
		FL4	0.72					
		FL5	0.61					
		FL6	0.75					
Layout moving	ML	ML1	0.84	0.73	0	2	64	0.8
		ML2	0.68					
		ML3	0.85					
		ML4	0.82					
Task diversity	V	V1	0.86	0.5	0	2	74	0.64
		V2	0.86					
Pull orientation	PLO	PLO1	0.89	0.55	0	1	61	0.68
		PLO2	0.87					
		PLO3	0.53					
Push orientation	PSO	PSO1	0.82	0.62	0	1	61	0.63
		PSO2	0.85					
		PSO3	0.67					



Construction	Abbreviation	Items	Factor loading	KMO	Bartlet	Frequency	Explained variance%	Chronbach'sa
Degree of standardization	LS	LS1	0.88	0.5	0	2	76	0.7
		LS2	0.88					
Service diversity	SD	SD1	0.8	0.67	0	2	76	0.7
		SD2	0.77					
		SD3	0.79					
Use of IT to reduce costs	ITC	ITC1	0.85	0.5	0	2	72	0.61
		ITC2	0.85					
Use of IT to improve service	ITI	ITI1	0.85	0.73	0	2	64	0.81
		ITI2	0.86					
		ITI3	0.68					
		ITI4	0.81					
Back and front activities	BFA	BFA1	0.75	0.61	0	1	57	0.61
		BFA2	0.69					
		BFA3	0.83					
Human resource specialization	HRS	HRS1	0.84	0.72	0	2	74	0.82
		HRS2	0.87					
		HRS3	0.87					
Customer participation to reduce costs	CPC	CPC1	0.88	0.66	0	2	70	0.78
		CPC2	0.87					
		CPC3	0.75					
Customer participation for adaptive service	CPA	CPA1	0.82	0.5	0	2	67	0.49
		CPA2	0.82					
Offer new services	NS	NS1	0.87	0.66	0	1	59	0.77
		NS2	0.83					
		NS3	0.69					
		NS4	0.69					

"Human resources job rotation" Variable (HRJO) is not in table 5 because it is a single item.

As the above table shows, the results of factor analysis and Cronbach's alpha tests for the preliminary data at the first iteration, have caused some changes in constructions:

- Moving layout (ML) was divided into two groups: moving layout (ML) and a variety of employee's tasks (V)
- Division, using IT (IT) into two variables: using IT to reduce costs (ITC) and using IT to improve Services (ITI),
- Human resource specialization segregation into: human resources specialization (HRS) and human resources job rotation (HRJO)
- Customer participation (CP) segregation into: customer participation to reduce costs (CPC) and customer participation for service adaptation (CPA),
- And also some changes in some questions.

Therefore, the number of baseline variables increased from 9 to 15. The results of all constructions showed reliability and validity of the questionnaire.

4.2. Strategic clusters of Hotels



Lehmann (1979) suggested that the number of clusters should be between $n/30$ and $n/60$, where n represents the sample size (Zhao et al, 2006). As in Zhao et al, (2006) which used hierarchical cluster analysis to generate a hierarchical dendrogram and an agglomeration schedule table. Using cluster analysis, we have found that the sample should be grouped into four main strategic service operations clusters. K-mean cluster analysis was conducted to generate four clusters. To ensure the stability of the results, K-mean hierarchical cluster analysis was used to generate two, three and four clusters. Since two or three clusters did not distinguish the groups in taxon, four clusters were selected for final cluster analysis.

Each group has certain characteristics in each operations strategy variable. Table 6 shows the scores for every service operations strategy in each structural and infrastructural decision and the number of units in each strategic pattern. ANOVA was conducted to test the differences between dimensions of service operations strategy among the four clusters. F-values and sig indicated that the four clusters are significantly different from each other.

4.3. Labeling the clusters

Labeling is an important step in cluster analysis. In order to label the clusters of service operations strategy, we have used the rank of research variables among clusters like other researchers; Kathuria, 2000, Miller, 1996, Zhao et al., 2006, Miller and Roth, 1994. The ranking of each variable is in accordance with table 3. Finally, four strategic clusters have been recognized as follows:

- **Cluster 1:** IT- Service diversification: this group emphasizes more on the dimensions of IT, services and diversification of tasks. The lowest emphasis is on the degree of standardization, customer participation for adaptive service and reducing costs.

- **Cluster 2:** Market orientation: The second pattern is labeled market orientation. It highly emphasizes on customer participation for adaptive service, cost reduction, having skilled human resource and using IT in order to improve services. All these cases indicate that customer demand is an important factor in the process of managerial decision-making. The lowest emphasis in this cluster is on the employees' task diversification, job orientation and standardization.

In hospitality organizations, where service delivery is the core product, service encounter and service outcome are the most important criteria of business success. Compared to service industry in general, this is especially so in the hospitality industry; hence, serious hospitality businesses aim to do business through providing high service quality for all the customers (Furunes t., 2005).

- **Cluster 3:** Cost orientation: Customer participation for cost reduction and high degrees of standardization are the most important variables in this cluster. We have named this model based on the philosophy and the purpose of standardization and low diversity of services and also lack of emphasis on the use of specialists in this group. The percentage of hotels and hotel apartments in this cluster is like the first cluster and each have accounted for 50%. The lowest emphasis in this cluster belongs to the use of IT for service improvement and the use of IT for cost reduction. As consumer behavior pricing approach suggests, when hotel managers make pricing decisions in a marketplace with diverse competitors, they should take into account consumers' choices over competitors' products and prices (Matanovich, Lilien & Rangaswamy, 1999; Danziger, Israeli & Bekerman, 2004; Steed & Gu, 2005, in Enz. et al., 2008).

- **Cluster 4:** Followers: This cluster emphasizes on new services, employees' task diversification and job rotation. Variance and standard deviation in this cluster are lower than others. This suggests that the hotels are trying to maintain a minimum balance among all variables. The lowest variables in this cluster are: the degree of human resource specialization, standardization and customer collaboration for cost reduction.

Table 3. The dominant figures in service operations strategies of hotels

Dimensions of Service operations strategies		Cluster1	Cluster2	Cluster3	Cluster4	F-value	sig
FL	average (a)	4.32	4.22	3.48	3.75	9.81	0.000
	rank (b)	4	3	6	4		
ML	average	4.63	4.18	3.88	3.8	7.13	0.000
	rank	2	4	3	3		



Dimensions of Service operations strategies		Cluster1	Cluster2	Cluster3	Cluster4	F-value	sig
V	average rank	23.83	3.13	2.5	1.87	4.07	0.000
	rank	8	14	9	7		
PLO	average rank	4.62	4.17	2.83	3.62	26.52	0.000
	rank	3	5	8	5		
PSO	average rank	4.76	4.6	3.85	4.26	10.37	0.000
	rank	1	1	4	1		
SL	average rank	2.81	2.75	3.78	2.75	5.12	0.003
	rank	15	13	5	14		
SD	average rank	4.11	3.35	2.00	2.79	33.56	0.000
	rank	6	12	12	12		
ITC	average rank	4.07	3.52	1.91	3.07	28.23	0.000
	rank	7	11	14	9		
ITI	average rank	4.27	3.83	1.8	3.06	63.49	0.000
	rank	5	9	15	10		
BFA	average rank	3.68	4.47	4.08	3.93	5.55	0.001
	rank	12	2	1	2		
HRS	average rank	3.95	3.98	2.37	2.67	35.48	0.000
	rank	9	8	10	15		
HRJO	average rank	3.9	1.65	1.94	3.11	39.10	0.000
	rank	10	15	13	8		
CPC	average rank	3.65	3.99	3.94	2.76	13.73	0.000
	rank	13	7	2	13		
CPA	average rank	3.36	4.00	3.00	3.00	7.73	0.000
	rank	14	6	7	11		
NS	average rank	3.79	3.66	2.06	3.21	21.75	0.000
	rank	11	10	11	6		
numbers		21	26	16	36		

a= average of variable in each cluster

b= rank of each variable in cluste

4.4. Underlying dimensions between clusters

To investigate the relationship between variables or taxons and clusters membership, we have used multiple discriminant analysis to identify the underlying dimensions that may be used to define the clusters (e.g.; Miller and Roth, 1994 and Frohlich and Dixon, 2001). The membership number of the hotels in each cluster which was determined by cluster analysis, is considered as grouping variable and 15 dimensions of service operations strategy are considered as independent variables. As previously mentioned, the purpose of this study was to determine the effectiveness of classification approach (cluster analysis) of service operation strategies and to recognize the most important underlying dimensions of service operation strategies in hotel industry of Iran.

The stepwise method with Wilk's Lamda values was adopted to enter independent variables into the discriminant analysis. In this method only one independent variable enters canonical function at each stage. According to Johnson and Wichern (1998), canonical correlation analysis identifies and quantifies the associations between the two sets of variables (Zhao et al, 2006). To ensure the validity of the discriminant analysis, split half method was used by SPSS 16 software. Wilk's Lamda values, Chi-square and its significant level respectively indicate the significance of the extracted discriminant function at 0.01 level and their ability to differentiate the equation. Table 4 shows these results. With regard to states of grouping variable, up to three-discriminant function can be formed. As it can be



seen, the first function with 24 degrees of freedom, the second with 14 degrees of freedom, and the third function with 6 degrees of freedom are significant at high level.

Table 4.Wilk'sLamda values

Functions	Wilk'sLamda	Chi square	df	sig
1	0.031	319.472	24	0.000
2	0.153	172.808	14	0.000
3	0.604	46.32	6	0.000

As the findings indicate, the results of cluster analysis for recognizing strategic clusters are appropriate and effective. Eigenvalues in table 5 shows the ratio of squares between the groups to total intragroup squares and canonical correlation indicates the correlation between discriminant scores and grouping levels. This table also shows that only function 1 makes 52% of distinction between the groups and functions 1 along with function 2 make 91% of the distinction. Thus, like other research, in order to make better conclusion, we have focused on these two functions while the third function was removed since its Eigenvalue was less than 1.

Table 5. Eigen values.

Discriminant function	Eigen value	Percentage of variance	Cumulative percent	Canonical correlation
1	3.924	52.1	52.1	0.893
2	2.955	39.2	91.3	0.864
3	0.654	8.7	100	0.629

Table 6 indicates the standardized and non-standardized coefficient values of the functions.

Standardized coefficients indicate the relative importance of each variable in distinguishing the groups in grouping variable and non-standardized coefficients show the values of the discriminant equation coefficient in different groups. In this study, we have used the standardized canonical coefficients to determine the most effective dimensions of service operations strategy as in studies by Miller and Roth (1994), Zhao (2006) and Pooya (2013).

The score that each unit gained in these two discriminant functions represents the peculiarities of a point on the horizontal axis of function 1 (Y1) and the vertical axis of functional 2 (Y2). The position of different clusters with regard to their gravity center is shown. Determining the score of each unit in these two functions, we can observe their positions towards different clusters. Figure 1 shows two functions and the gravity center of different clusters. Dispersal of service operations strategies is represented in this figure too.

Table 6. The coefficients of canonical discriminant functions

Independent variables Symbol	Standardized coefficients		Canonical coefficients	
	Function1	function 2	Function 1	Function 2
V X1	0.066	0.471	0.071	0.509
SD X2	0.359	-0.113	0.531	-0.166
ITC X3	0.410	0.213	0.556b	0.289
ITI X4	0.499	-0.330	0.852	-0.564
HRS X5	0.401	-0.45	0.594	-0.667
HRJO X6	0.262	0.869	0.329	1.092
CPC X7	-0.349	-0.458	-0.413	-0.542
Fix amount			-7.922	0.871

a Canonical loading more than +0.4 or less than -0.4.

b ITC dimension is used for function1 because its loading factor value is greater in function1 ,and HRS and CPC are used for function 2 because of the same reason.



If we choose the cut border ± 0.4 , the two following functions can make the maximum difference between the four strategic groups:

$$Y1 = -7.922 + 0.531X2 + 0.556X3 + 0.852X4$$

$$Y2 = 0.871 + 0.509X1 - 0.667X5 + 1.092X6 - 0.542X7$$

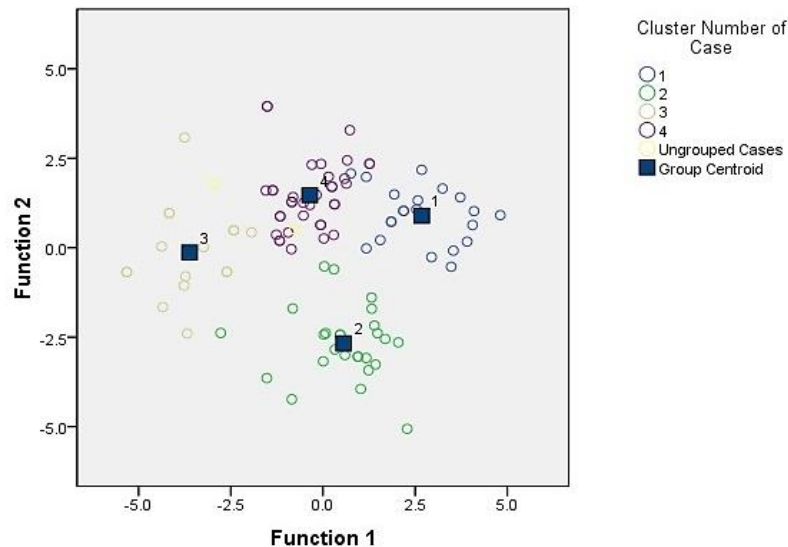


Figure 1. Gravity center of groups

5. DISCUSSION AND IMPLICATIONS

The results of this research represent four operational strategic patterns in hotel industry in Iran. K-mean cluster analysis has been implemented for two, three and four clusters. Since, two and three clusters did not provide a proper distinction among the taxons, four clusters were considered appropriate for analyzing. The clusters show the difference between hotel operational strategies in Iran.

Based on this study, four operational strategic clusters of hotel industry were found as follows; IT-service diversification, market orientation, cost orientation, and followers. The patterns that identified in this study are similar to some taxonomies in other areas. Hence, it can be concluded that the service operations strategies of this study are consistence with the research literature. For example, IT-oriented strategy with various services is in accordance with the mass workers (Zhao et al., 2006) and expert producers (Martín and Díaz, 2008). This cluster has the highest ranking in most structures. Followers strategy is similar to unemployed strategies (Flynn et al, 1995), followers (Pooya and Azar, 2012), low emphasize (Zhao et al, 2006) and cautious (Miller and Roth, 1994). This cluster has the lowest ranking in most structures and imitates other competitors. This is because of the possibility that the managers of these institutions do not consider service operations strategies as their top priority in decision making, or maybe it is because in this service sector the intensity of rivalry is very low and they are able to reach organizational goals through minimum establishment in structures. Cost-oriented strategy is similar to low- cost strategy (Stobaugh and Telesio, 1983) and cost minimizer (Richardson et al, 1985). Market-oriented strategy is similar to marketers (Stobaugh and Telesio, 1983; Miller and Roth, 1994) and external supporter (Wheelwright and Hayes, 1985). Customers and their needs have the most impacts on organizational operations in all these strategies.

According to Smith, K., Ferrier, W., Ndofor, H. (2001), firms in the same industry are highly interdependent as they engage in various actions to improve their relative position and profitability. The series of moves and countermoves among various firms create competitive dynamics within an industry (Enz, et al., 2008). As the findings show, all managers of hotels in Iran considered fix and



moving layout and pull or push orientation as the most important variables. It means that they have a comprehensive and systematic attitude towards these variables and use the combination of these variables in different operations. Diversification of delivery service has the lowest score among clusters 2, 3 and 4. It means that these managers prefer to provide fixed services for customers, based on the institution's internal and external environment. Clusters 1, 2 and 4 give the lowest importance to standardization degree. On the other hand, managers who follow fee-based pattern are trying to differentiate themselves from other competitors by standardizing their activities and paying attention to the needs of market and customers.

As discriminant analysis show, from 15 dimensions of operation service strategies, diversification of workforce tasks, services diversification, use of IT to reduce costs and to improve services, degree of workforce specialization, human resources job rotation, customer participation to reduce costs and supplement of new services are respectively the most effective variables which can distinguish service operations strategies in hotel industry in Iran. The maximum score for function1 is related to the diversification of services, use of IT to reduce costs and to improve services. Positive coefficient of all variables indicates that there is a positive correlation among these variables and function 1. Variable Service Diversity (SD) with 0.531 coefficient, use of IT to reduce costs (ITC) with 0.556 and use of IT to improve service (ITI) with 0.852 coefficients influence on function 1. Maximum score relates to the use of IT to improve services. It means that these three variables make the most differentiation between different groups. According to the greatest effect of these three dimensions on the first function, we can label this functions "IT-Service diversification". Companies with higher relative importance of ITI, ITC and SD have higher scores on the first function and are centered on the right side of this function. These companies intend to differentiate themselves from their competitors by increasing the number of services they offer to customers and greater use of information technology to improve services and reduce costs. Companies that are in cluster1 are in this situation. Conversely, companies in cluster 3, which consider structural and infrastructural decisions, the least important factor are in the left side. If investment in IT enables customers to gain more experience and hotel staff to work more efficiently, hotel profit could increase. Managers need to update managerial knowledge and IT systems in order to effectively manage hotel rooms at service international standard level. Likewise, Olsen and Connolly (2000) believe that use of IT could set knowledge and information in the center of competitive plan of organization (Law and Jogaratnam, 2005). The highest coefficients in function 2 are respectively related to the diversification of staff tasks, the level of human resource specialization, human resource job rotation and customer participation in reducing costs. The variety of employee's tasks (V) variable with a coefficient of 0.509, human resources specialization (HRS) (-0.667), human resources job rotation (HRJO) (1.092) and with customer participation to reduce the costs (CPC) (-0.542) all affect function 2. Although variety of employee's tasks (V) and human resources job rotation (HRJO) have positive correlations with this function, customer participation to reduce the costs (CPC) and human resources specialization (HRS) negatively influence function 2. This canonical difference show a balanced relationship or a trade-off between staff tasks diversity and human resource job rotation with degree of human resource specialization and customer participation to reduce costs. The findings of function 2 display that it is not possible to have both specialized workforce and multi-skilling staff in all departments simultaneously. According to Furunest. (2005), in order to provide high-quality services for customers and to improve productivity and to enhance profitability, it is important that all hospitality organizations utilize their human resources effectively. Due to the importance of the service encounter, it is therefore argued that human-resource management (HRM) is a key managerial task (Furunest, 2005).

In addition, function 1 show positive correlation between delivery service raise and increasing use of IT, as one of the most important decisions in service designing. Since these relations are consistent with the literature, validity and reliability of research methodologies have been proven. The firms who emphasize on attracting multi-skilled workforce and using job rotation and perceiving specialized workforce and customer participation to reduce costs as the least important factors, could gain higher scores in function 2 (job rotation axis),and they would also be placed in the upper part of the vertical axis such as firms in cluster 4,1 and 3. Adversely, the firms who mostly focused on specialized workforce and customer participation to reduce costs are at the bottom part of the function. These firms are generally in cluster 2. We have labeled this axis "Job rotation" because of its severe and



positive impact on function and also the positive relation between job rotation and diversification of staff tasks along with the negative coefficient of degree of the specialized workforce.

6. CONCLUSIONS AND SUGGESTIONS

Previous studies have shown there has been no research regarding determination of service operational strategic groups and their underlying dimensions. We have conducted this study in Iran's hotel industry, because of its high potential in tourism. We have used nine service operations strategy dimensions introduced by Aranda (2002). Operational strategic clusters of hotel industry that were found in this research are; IT- service diversification, market orientation, cost orientation, and followers. Customers and their needs have the highest impacts on organizational operations in all of these strategies. "IT- Service diversification" cluster has more emphasis on the dimensions of IT, services and diversification of tasks. The second cluster is "market orientation". It great emphasizes on customer participation for adaptive service and cost reduction, skilled human resources and using IT in order to improve services. The most important variables in "cost orientation" cluster -the third group- is customer participation for cost reducing and degree of standardization. According to the results of the research by Enz, et al. (2008) that provided evidence in terms of both price benefit and detriment for specific hotels that co-locate next to other hotels, lower-cost hotels such as economy and midscale hotels gain price premiums from co-locating in markets with a larger proportion of firms pursuing a higher-quality differentiation strategy such as luxury and upscale hotels. Thus, the results show that highly differentiated hotels such as luxury hotels, do not benefit from collocation with low-cost providers.

According to the results, hotel managers in Iran considered fix and moving layout and pull or push orientation as the most important variables, it suggests that they have a comprehensive and systematic attitude towards these variables of which the combinations are used in different operations. Diversification of delivery service has the lowest score among clusters 2, 3 and 4 and it indicates that these managers prefer to provide fixed services for customers, based on the institution's internal and external environment. Standardization degree is not a critical criteria for managers of clusters 1, 2 and 4, but managers who follow fee-based pattern try to differentiate themselves from other competitors by standardizing their activities and paying attention to the needs of the market and customers. However, differentiation attempts can be problematic if the source of differentiation provides benefits to competing firms without requiring them to make the associated investments (Enz, et al., 2008).

Two underlying dimensions of service operations strategy in Iran's hotel industry include "Service diversity- IT" and " Job rotation". Observing the market of hotel industry in Iran confirms the validity and accuracy of these two dimensions in making a distinction between different strategies. Iran's hotel industry is a growing industry that has recently undergone many changes; it is a growing industry with the increase in supply and demands. Thus, each unit needs to use information technology and to make diversity in its services in order to differentiate itself from other competitors. Since respondents stated that high transferring rates of staff and the need to have versatile workforce to do different activates in order to reduce the costs of resource attraction is one of the most common problems in this section, job rotation axis can effectively distinguish different activities. In other words, job rotation is used by hotels that are more successful than others, however, further studies are required here. Some similar researches showed that a competitive strategy of human resource has a direct influence on behavioral performance of a hotel ,and a competitive IT strategy has a significant and direct effect on financial performance of a hotel (Tavitiyaman, 2012),which proves the importance of these variables in managerial decision-making process.

The results of this study are shown in figure 2. Regarding the results of discriminant analysis and extracted functions, if each unit is willing to choose a specific competitive strategy, it has to consider these two dimensions. In order to determine the status of each unit, we need to consider positive and negative coefficients of service diversification. The dimensions that should be considered in "IT-service diversification" axis include; use of IT to reduce costs and to improve services and to focus on diversification of the workforce tasks, degree of specialized human resources, human resource job rotation, and customer participation to reduce costs in "job rotation" axis. Given the findings, it is suggested for hotel managers to consider layout and pull or push orientation in planning and decision making as the most important, and to have an integrated systematic view towards these variables. For investing on constructions which does not have a same score in clusters, it is better for managers to



choose their cluster at first regarding the main goals, then invest in these variables. If the selected clusters are 2, 3 and 4, it is offered to allocate the lowest score to "services diversity" and the managers should provide fixed services to customers based on their indoor and outdoor environment. If the selected clusters are 1, 2 and 4, it is offered to allocate the lowest score to "standardizing degree

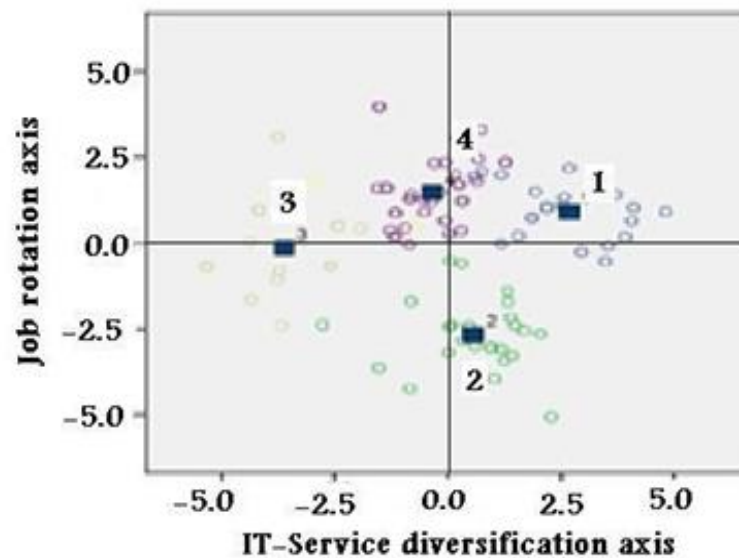


Figure 2. Underlying dimensions of service operations strategy

In order to make the managers to best select the clusters, it is suggested for further studies to evaluate the relationship between the environmental factors and clusters and the fit between organizational factors and clusters. Noted that in a particular environment, several strategies could be effective, and what is important is company organizes, plans and implements strategies according to specific criteria (Garrigós et al, 2005). One of the main functions of strategic groups is to analyze the significant differences in the performance of different groups. For example, do certain strategic actions result in a higher level of performance in comparison with others or not? (Claver-Cortés et al, 2007). Therefore, examining the relationship between strategic groups and different levels of their performance can be introduced as a new research area. Another important issue that needs to be investigated is the relationship between timing of market penetration and the service operation strategy. Theories on early and late mover advantages predicate that competitive operating advantages can occur with respect to the relative timing of market entry (Lee and Jang, 2013). The possibility of competition among potential entrants for a location implies that the timing of entry is an important parameter in making a decision whether or not to enter the market (Ghosh & Tibrewala, 1992 in Lee and Jang, 2013). The discussion of the optimal time to enter a market has been a long and persistent one, depending on the type of industry (Levesque, Minnitti, & Shepherd, 2009 in Lee and Jang, 2013). Yet, relevant research in hotel location does not provide a clear implication on the operating (dis)advantages of hotels based on order of entry into the market and the best service operation strategy in each state. Such an investigation would be valuable for researchers and industry practitioners attempting to decide whether to enter a hotel market when competition is either present or likely to follow and what kind of service operation strategy to choose.



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