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FAILURE MODE AND EFFECT ANALYSIS TO INCREASE THE SERVICE QUALITY ON FRONT OFFICES OF HOSPITALITY INDUSTRY

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Abstract

Time management can only be provided with taking precautions for all possible mistakes by all personnel from manager to staff. The managements who are unconcerned with these mistakes and required improvements will be condemned to fail in labor-intensitive tourism market. In this study, a systematic technique of failure modes and effects analysis (FMEA) is explained and applied in practice to hospitality management which is one of the important management types in tourism industry. As a result of pre-study phase, it is determined that the most of the inconveniences of the plant takes place in front office and accordingly possible mistakes are listed, sorted due to the priority and suggestions are offered for the solution. Predicting the circumstances which will cause failures in the front office service and taking precautions against them will provide a successful and satisfactory service for the customers.

Keywords: FMEA, Hospitality Industry, Service Quality.

INTRODUCTION

The method, which can be called FMEA is the most known of these failure prevention analyses. FMEA is an analytical method enabling faults to be yet identified, discussed, and prevented before emerging in the stages of developing product and processes (Chrysler LLC,2008). This method targets on eliminating lack of quality at the beginning, replying the questions "What may go wrongly?" and "If anything goes wrong, what does its results happen?" In addition, it enables design and process characteristics, main elements for production, to be defined and kept light to the areas, which are necessary to be improved in realizing controls (Sofyalıoğlu,2011:155). Service quality has been accepted as an important topic in the hospitality sector and tourism industry (Cheng et al., 2012). In the context of hospitality, ensuring that employees do their jobs properly is a critical issue (Chiang and Hsieh, 2012). Previous research has shown that job standardization has a positive effect on service quality (Hsieh et al., 2002). Chen et al. (2015) developed a green restaurant service quality scale for measuring service quality for green restaurants.

In tourism sector, consumer of today goes toward quality in products and does not show any tolerance to unqualified goods and services. This process is also valid for accommodation sector. Besides consumer demands to have the return he/she pays money, because of increase in accommodation plants, his/her alternatives have begun to proliferate. From this point of view, hotel managers have made effective efforts to retain the existing and new customers .A customer left from an hotel in satisfied with the service he/she receives will certainly come to the hotel one more time. However, it is evident that an unsatisfied customer will not definitely come to the same enterprise. Furthermore, customers directly orientate their satisfactions or dissatisfaction to that good and service. In other words, they do not search for another factor (Kızılırmak 1995: 65).

Keeping service standard in the same quality will increase the number of satisfied customers and this application will end with the formations of customers group, whose dependencies was provided in time. Thus, that occupancy rate falls below a certain level can be prevented. The thought that the probability of unsatisfied customers to affect their circles compared to satisfied customers may be higher reveals the sensitivity of creating customer satisfaction in hotels. The probability of the customers, not left from hotel with good impression and dissatisfied with services, to show negative attitudes can result in several problem in terms of image of hotel. In parallel with this case affecting the occupancy of hotel, some financial problems can occur (Çakıcı 1998: 9-10).

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In this study, FMEA method, with its general features, was tried to be reported theoretically; the features of reception section of an accommodation business were discussed and the troubles to be able to be experienced in front office department were tried to be prioritized according to risk cases.

The study is structured as follows: Section 2 details literature and theory. Section 3 explain related works and provides classification of papers in terms of applied forecasting themes. Section 4 provides material and article identification and selection methodology. Also section 4 offers a comprehensive summary of the review outcomes, graphical representations, and an overall assessment on existing themes, main challenges and open areas. Finally, Section 5 and 6 presents conclusion, limitations, and recommendations.

LITERATURE & THEORY

Accommodation Sector

According to Kasanava and Brooks (2001: 2–3), accommodation businesses are businesses, whose main functions are to meet accommodation need, which differentiate from other tourism businesses, and in addition, which incorporate all or most of the activities such as food and beverage, housekeeping, information desk, laundry, and dry cleaning.

There is an important difference between accommodation businesses, which emerged inn in West and caravansary in East, in order to meet accommodation needs of those traveling for various reasons, in terms of the aim to be opened and operated. In West, although these were opened and operated with commercial aims, in East, caravansaries presented non- profit unreturned service, depending on the principle to view the foreigner as unexpected guest in a quality of waqf institute. In time, non-profit caravansaries in East, due to unsuitable financial states of those operating these businesses, were left to be collapsed as the business that cannot fulfill their functions. Therefore, accommodation organization, whose essence consists of inns, achieved the possibility to develop to the present day (Olalı and Korzay, 1993: 8).

Accommodation businesses are the ones that meet the needs of tourists related to food and beverage, entertainment, and their other social needs Accommodation businesses, in. parallel with the development in tourism and change in the pleasures and needs of people, turned into different forms from each other in time. That people benefiting from the accommodation businesses have many needs caused the businesses meeting these needs to show diversity. Beside overnight, that the other needs of people change according to their pleasures and social status led businesses services different from each other to emerge. Therefore, accommodation businesses are classified to the different criteria (Eraslan, 2004: 1).

Front office Department

When the customer comes to hotel, the first impression he/she will acquire will be effective on his/her satisfaction in the time, when he/she will stay in hotel. Therefore, front office department has a specific importance among all departments. The employees of front office department should have ability to be able to carry the responsibility charged on them. The service perceived by the customer accommodating in hotel is seen lower than expected, it reveals that there are lack of service and dissatisfaction in this department. In order to be able to remove these negativities concerned, the actions to be able to take were determined as follows (Özturk and Seyhan 2005:133-135):

Courteous dialogue environment between employees: In talks made in front of customers' eye, it is necessary for employees to be temperate. Every kind of impolite action or word, slang words, and unsuitable body movements may affect the thoughts of customer about business in negative direction. In an environment, in which service quality is discussed, such actions can harm to business. In information exchange of staff, softness of tone of voice and mimics have importance.

Communication of staff with customer: Front office staff, first of all, should know to listen to one spoken to. He/she should give confidence while talking. In case of any problem, he/she should provide customer to be relaxed; beside this, he/she should not interrupt the words of customer while talking. However, accepting others as they are is of important factors in strengthening the relationship If the individual shows necessary understanding to one spoken to and provides a tolerance environment, trust appears. Thus, the person having self-confidence begin to talk.

Appearance of Staff: The appearance of front office staff continuously being face to face with customer affects customer. Personnel should care to his/her clothing, his /her hair and skin care, and his/her cleanness. Since all of these address to the eye of customer, they can also positively affect their view points to hotel.

Faults made while working quickly: The preliminary preparation to be made before operations will enable staff to act readily during operation and possible squeeze arising from quick action will be prevented. If there is a fault, staff has to delay tasks. Therefore, while working being careful and tidy will enable work to be finished quickly.

Being able to use of staff the area knowledge: Staff working in this department, besides his/her ability and experience, should have knowledge of occupational area.

Being prepared against the problem to occur: Due to the fact that front office department, in which there are all necessary information from acceptance of customer to his/her leaving hotel, every kind of written and verbal communication is provided, and all accounting transactions realize, it has a complex function. This case reveals the presence of problems to be faced here. The staff having enough information relevant to front office, sensing earlier the problems to be able to emerge, should take necessary actions.

Being able to conveniently act to the different behaviors of customers: Each customer cannot be satisfied in the same rate. Staff should keep its seriousness and geniality and make contribution to the solution of customer's problem.

Risk Management

Before an event realizes, predicting it and determining what will be done against it in advance is the best way to reduce the negativities, which will arises from this event, to minimum, and maximize opportunities. This case, which is directly related to the success of agency comprises the subject of risk management (Derici, Tüysüz and Sarı, 2007:153).

Risk management also includes to define processes, assessing risks, which will reduce its effect to minimum, to monitor the effectiveness of these processes and improve continuously, and to carry out these processes (Fikirkoca, 2003).

2.2.1 Failure Modes and Effects Analysis

In the activities related to Total Quality Management (TQM), a variety of instruments are utilized. For example: Value Analysis, (*FMEA),* Kanban, Just in Time Product (JTT), Audit, Quality, Diagnosis, Specification, Auto Control, Data Analysis, Control Cards, Statistical Quality Control, Zero Philosophy, Pareto Analysis, Fish Bone, Program Evaluating and Reviewing Technique (PERT) , Critical Path Method (CPM) (Efil,2006:234)

Damage is that a product or element cannot fulfill its function (expected aim or performance) along its expected life time. In other words, it is a case of not serving a purpose and it is a major reason for customer dissatisfaction. The fault, which is a cause of damage, is a performance that cannot be satisfied. Failure Mode is the way that the fault manifests itself, a case that an element cannot perform its function. Fault Effect is the result of cause; how, when a fault occurs, it will affect the system. Cause of fault is a negative case providing fault to occur. Focusing on Fault Modes in the early stages enables the cases of not serving a purpose, which can occur later, to be prevented. In summary, FMEA is an early diagnosis made systematically (Öztekin, 2006:3).

It is accepted that there are four kind of FMEA (Stamatis, 1995).:

System FMEA

Design FMEA

Process FMEA

Service FMEA

Target in System FMEA is to define and form a balance between operational factors and economic factors. For achieving this target, System FMEA should be made by considering the determined need, desires, and expectations of customer. System FMEA is used in determining the design and first concept and analyzing the system and subsystems (Stamatis, 1995: 16)

Design FMEA is applied before making production decision. It deals with product fault modes that can arise in the service or manufacturing stages due to the faults in design (Yılmaz, 1997).

Since hardware faults, employees' faults, and faults forming as a result of using unsuitable material and methods will be detected before the material enters production by means of Process FMEA, it will be easy to correct (Stamatis, 1995: 15).

Service FMEA is that service is to be analyzed before reaching customer. With application of this analysis, making prioritization between development activities and recording explanations for

change are provided. In efficiently making workflow and system and process analysis, determining the faults in work, and forming control plans, some advantages such as guiding are obtained. With the application of analysis, for following system as a process, a list is formed. Thanks to the list of critical or important work process, weighted with RÖS (Risk Order of Precedence), it is possible to provide to be eliminated the faults relevant to potential service in border (Çevik and Aran; 2009: 251).

While fault mode and effect analysis is carried out, first of all, it is necessary to determine product/service functions to be dealt with. Then, it should be studied what kind of faults can occur in these functions. After determining fault modes, three criteria for each fault will be determined. First of them is effect of faults that will form as a result of fault mode. Assigning point between 1 and 10 to the effect according to its severity, the value of severity (S) is determined. Every sort of fault may not have a single effect. The second criterion is to identify the causes of fault modes. Points between 1 and 10 are also assigned to the causes according to occurrence frequency (O). Finally, identification point (T) controlling every fault mode is assigned. After all, these points of three criteria, multiplying to each other, risk priority number of fault mode is identified. As a result of this, it will be possible to provide taking actions that will reduce the fault mode effect, occurrence probability, or will increase its determinability. After actions, again making scorings, whether or not improvement is provided can be checked (Aydın, 2004).

Table 1: Risk Priority Value

Order	Risk Priority Value	Decision
1	Between 01-50	Low risk
2	Between 50-100	Middle risk
3	Between 100-200	High risk
4	Between 200-1000	Very high risk

(Source: Potential FMEA 2008, s.57)

Determinations of severity scores

For fault effect, it is necessary to make a scoring. In this scoring, the most used approach is to assign points from 1 to 10 according to the severity of fault mode, With severity, the level of possible fault result which reflect to customer, is evaluated. Fault severity corresponds to the effect and there is a linear relationship between them. As the effect level of fault increases, weight also increases. Since severity is based on only the effect of fault, weight ordering all potential causes of fault for a certain effect of the fault becomes the same. For the fault mode determined a severity score must be determined (Aydın, 2004).

Table 2: Severity Points

Effect	Value	Criterion
Very low: Customer is not aware of fault.. There is not any effect to be considered on the service and product	1	Fault leaves an effect at the level not to be recognized
Low:. It is a fault to create very low dissatisfaction with customer. Customer is aware of that product or service is disturbed very low	2-3	There is a very low dissatisfaction. Customer possibly recognizes the fault with a small disturbance in service or product.
Middle: Fault created a slight dissatisfaction. Customer is uncomfortable from this fault. It may lead to repair or damage in equipment.	4-5-6	Customer is highly affected from the fault. There is a middle degree of dissatisfaction on him/her. There is a considerable decrease in performance.
High:. Customer has high degree of dissatisfaction. It is not possible for product to be corrected in any way. There happens disturbances in process and service.	7-8	. Customer is affected from the fault at high degree. Control of security and administration is lost.
Very High:. When fault occurs, it has a very high severity. Security and administration is out of control.	9-10	With the effect of a very high severity, it cannot be mentioned about the control of security and administration.

Determination of Probability Scores;

The probabilities of faults to emerge should be determined. While occurrence ordering is predicted, it is assumed that the probability of potential cause of fault to be concluded with the fault mode specified is checked before actualizing. The approach used in this scoring is assigning point from 1 to 10 according to the probability of fault (Yücel, 2007:131).

Table 3: Probability Scorings

Probability	Value	Criteria
Almost zero	1	Not actualized earlier
Remote possibility	2	Very rarely actualized
Very low	3	It occurs in a very few number
Low	4	It sometimes occurs
Little	5	It occurs in a few number
Middle	6	It actualizes in middle frequency
Slightly high	7	It actualizes in slightly high number
High	8	It actualizes in high number
Very high	9	It actualizes in very high number
Almost exact	10	It earlier frequently actualized in similar places

Determination of Determinability Scores

This can be expressed as discoverability of fault. It is the probability of an in-product fault not to reach to final user or, depending on control procedures applied by business, ability to be able to catch fault. Discoverability of fault, in other words, is to degree the control methods in similar case in terms of compatibility and efficiency. Even if discoverability can be sufficiently provided, the redundancy of number and frequency of control can be under consideration. This will be resulted with loss in terms of time and cost (Erginel, 2004:26).

Table 4: Determinability Points

Determinability	Probability of Determinability	Ranking
It cannot be determined	It is not possible to detect the cause of potential failure and subsequent failure	10
Remote possibility	It is very remote chance to detect the cause of potential failure and subsequent failure	9
Not worth to taking into consideration at all	It is remote chance to detect the cause of potential failure and subsequent failure	8
Not worth taking into consideration	It is very low chance to detect the cause of potential failure and subsequent failure	7
Low	It is low chance to detect the cause of potential failure and subsequent failure	6
Middle	It is middle chance to detect the cause of potential failure and subsequent failure	5
High Mean	It is very middle chance to detect the cause of potential failure and subsequent failure	4
High	It is high chance to detect the cause of potential failure and subsequent failure	3
Very high	It is very high chance to detect the cause of potential failure and subsequent failure	2
Almost exact	It is almost exact to detect the cause of potential failure and subsequent failure	1

3. RELATED WORKS

Çiçekdağı et al. 2014, in their studies, in the direction of possible risk reduction plans against accidents of High Speed Train, in order to form the policies of safe journey and safe infrastructure and superstructure; enable the lines to be made maximum safe and minimum risky against accidents, following modern technology; and minimize accidents, making every kind of preparation before accident occurs, made the necessary ordering from high risk possibility to low risk possibility by using FMEA method and discussed how they could be on the name of preventing, especially loss of life, loss of national wealth and prestige.

Kadıoğlu et al 2009 carried out their studies in a firm producing on vehicle material and with suggested corrective activities as a result of FMEA application, the probability of faults reduced their significance value,, and increased discoverabilities of faults. In risk values of significant and critical faults, they provided improvements.

Aksay et al 2012, toward increasing the safety of patient, with a FMEA study they carried out in a laboratory of a public hospital, identified 7 main potential fault associated with blood analysis process by FMEA Risk Assessment Team. After determining the potential effects and potential

causes of these risk and mistakes, they scored these risks and faults according to the criteria of severity, probability and determination coefficients, and risk calculation and assessment table and developed solution suggestions that is compatible with risk factors ordered.

Yakıt, 2010, in his work in a textile firm, determined by means of FMEA method fault modes and provided improvements, applying suitable solution suggestions

4. METHODS

4.1. Importance and Aim of the Study

The main aim of the study, in accommodation businesses, identifying the troubles to be able to be experienced in the front office department, where especially service to be given to customers is coordinated, is to prioritize these troubles and present an order of precedence or solution to decision makers

Especially, together with the developing technologies, despite information technologies, which accommodation businesses also largely utilize, the probability to be experienced the troubles associated with directing human resource in accommodation businesses, which are inherently labor and capital intensive, effectively and in planned way, is high In this direction, that accommodation businesses, surrounded by intensive competitive conditions and environmental effects, can be successful in the sector they are in active depend on several applications. Among these applications, risk management, activities regarding risk management largely play role, because accommodation businesses continuing their activities under environmental conditions can face to the various risks from time to time, which arise from either external factors or their own applications. Hotel businesses, which is a sort that requires the largest labor and capital investment, among accommodation businesses (hotel, motel, holiday village, time share property, lodging), are in the position to act against risks that arise/can arise within a certain plan, in order to be able to receive the return of these labor and capital concerned. Especially, it is possible that operational kind of risks, discussed as technological, legal, and organizational, are the sort of risks hotel bossiness faces the most predominantly in respect with their activity areas. (Pelit, 2011: 118)

4.2. Scope of Study

The study was carried out in front office department of 5 –star accommodation business being in Konya. Front office department is a section, in which all procedures of the guest are performed in the time that passes, beginning from the time before guest enters hotel to the time he/she leaves hotel. This department, whose aim, presenting the best service to guest coming to the business, is to make happy him/her, is the main relationship point between accommodation business and guest. It is a department those entering hotel first meet and the people leaving hotel see the last. Front office is beginning and coordination point of the activities in accommodation businesses. Information, desires, and documents are collected here and distributed the relevant places. 9 people of staff working in this department were asked the problem they experienced in this department; brain stores were performed; and the employees were guided through the troubles they experienced in the department. As a result, the problems in front office department are extracted in items and FMEA tables were submitted to the evaluation of department staff.

4.3. Method of Study

Fault Mode and Effects Analysis (FMEA) is the method applied in the study. In this method, as a first step,

Department belonging to accommodation business, to which FMEA will be applied, selection was made. The department selected has become front office. In terms of competitive advantage and customer satisfaction in businesses, this department is the one incorporating high degree risk factors.

In the second step, the team, on which FMEA studies will be carried out, was selected. This team was selected from among the people, who are very familiar to the problems experienced , and have ability to conduct various analyses

The third step is the stage of analysis. In this stage, with sort of fault modes listed in FMEA worksheet, FMEA team reviews every sort of fault and determines the potential effects of the faults that may occur. After sort of fault is identified, the values of severity, probability, and discoverability are given.

In fourth step, risk scores are found in the fourth step and, according to these risks, order of precedence is made. The studies to be carried out to eliminate high risk fault modes or reduce were subjected to evaluation.

5. RESULTS OF STUDY

13 main potential fault was identified by FMEA Risk Assessment team regarding the troubles experienced in the front office department. The coefficients of severity, probability, and discoverability of these risks and faults were scored according to the criteria of the table of risk calculation and assessment criteria (Reid, 2005).

During application of method, the components of the coefficients of "probability" indicating the frequency of fault, "severity" indicating the seriousness of fault, and "discoverability" indicating to be identified of fault before reaching to customer were used.

In the stage, after this scoring, for each possible cause of fault, Risk Priority Number (RPN) . By multiplying the numerical values determined of the components of severity, probability and identification to each other, Risk Priority Number was found. This value enables the priority of the problem to be identified and to be attempted preventive activities(Aydınlı, 2010: 28).

Table 5: Risk levels of the problems experienced in front office according to Risk Priority Degrees

CAUSE	PROBABILITY (P)	DISCOVERABILITY (D)	SEVERITY (S)	RISK PRIORITY VALUE (P X D X S)	ORDER	DECISION
As a result of that customer's desires are misunderstood, making wrong and being stuck of customer in difficult position (Let's say that customer wants from you to bring a rose to surprise his/her partner . Because you misunderstand and send meal to the room, some problem may arise).	2	6	8	96	10	MIDDLE RISK
Some problems, which may arise due to not transmitting messages in time	3	6	8	144	6	HIGH RISK
Some problems, which may arise as a result of confusing luggage or sending it to wrong place	3	6	9	162	5	HIGH RISK
Sone problmes that may arise due to the fact that customer loses his/her key	4	7	9	252	1	VETY HIGH RISK
Some problems, which may arise due to wrongness to be made on bills	2	6	9	108	9	HIGH RISK
Some problems, which may arise due to technical problems, which will emerge in customer's room.	3	6	9	162	5	HIGH RISK
Some problems due to misumderstanding the behavior of staff	3	8	9	216	2	VERY HIGH RISK
Some problems that may arise due to giving or customer's demanding a room other than specified during reservation	2	7	9	126	7	HIGH RISK
Not being able to transmit the information related to customer to the other units in time	2	7	9	126	7	HIGH RISK
Not being able to connect the coming phone calls to customer or not being able to communicate messages in a way that is compatible with rules	3	7	9	189	3	HIGH RISDK
Desires in some subjects and making in such a way that customer does not desire; for example, first saying "O.K" to customer, not making this change	3	7	8	168	4	HIGH RISK
Wrongly informing customer	2	7	8	112	8	HIGH RISK
During a customer's running wild, although other customers say that they are disturbed, not taking any action	2	6	7	84	11	MIDDLE RISK

In the table above, the values of probability, discoverability, and severity were written as the average of points assigned by the team of 9 people. With these points, risk priority values were calculated. Two results having a score more than 200 points were found, these results are "the

problems that can arise due to the fact that customer loses his/her key" and "the problems that can arise due to the fact that staff's behaviors is misunderstood". These two reasons are fault modes that must be settled or reduced by dealing with them as the most prioritized in the context of high risky. When the table is examined risk order of precedence, "As a result of that customer's desires are misunderstood, making wrong and being stuck of customer in difficult position Let's say that customer wants from you to bring a rose to surprise his/her partner. Because you misunderstand and send meal to the room, some problems may arise " and "During a customer's running wild, although other customers say that they are disturbed, not taking any action " were scored as having the least risky elements among the other risky elements and took place in the table as middle risk.

6. CONCLUSION AND FUTURE WORK

The difficulties in today's competitive conditions led profit increasing and cost reducing to become the main aim especially for managers of accommodation businesses. For managers that are obliged to manage every kind of risk that will prevent business from reaching these aims, risk management techniques that are effective and applicable, and do not require theoretical knowledge have a great importance. FMEA is a risk management technique having the features mentioned.

In the study carried out, in order to identify the troubles that may be experienced in front office department, in a 5-stars hotel business, a team of 9 people was established and this team established 9 faults in front office department. Later, for these fault, it was asked them to assign points between 1 and 10. As a result of points assigned, Risk Priority Numbers (RÖS) were detected and two out of these RÖS values turned satisfied the criterion of ≥ 200 and were included in the group of very high risk.9 of them received a score between 100 and 200 and took place in the group of high risk. 2 of them turned out smaller than 100 and were subjected to assessment of middle risk. Among these results, since two fault modes are very high risky, in the first stage, managers should deal with them and make corrective and preventive efforts. As a result of activities of preventive faults, it is considered that positive decreases that will occur in the fault rates will increase the belief of employees to the FMEA activities of businesses and, for sake of not emerging of the other sort of faults, will make positive effect on the activities they will carry out.

The study carried out showed that faults mode are generally personal human faults resulted from carelessness and busyness. These faults are met in all accommodation businesses. Forming environments where the staff can rest and giving the technical and personal training that are planned and comprehensive for Faults Modes and Effect Analyses concerned will make contribution to give better results.

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