

A Quality Tool box for the Hospitality Industry

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Abstract

The objective of this article is to provide a description of quality in services, methods of evaluation and the use of Ishikawa's basic quality tools for diagnosing quality related problems specifically for the hospitality sector. The methodology used to develop this article is based on a literature review on the related quality concepts and studying the application of the quality tools in manufacturing and subsequently providing recommendations for the hospitality sector. This paper is limited to quality tools such as process maps, check sheets, Pareto tables, scatter diagrams and cause and effect diagrams.

Keywords: quality tools, service quality, hospitality quality, hospitality quality improvement

Introduction

The objective of this article is to provide a description of quality in services, methods of evaluation and the use of Ishikawa's basic quality tools for diagnosing quality related problems specifically for the hospitality sector. Quality tools are generally featured strongly in the manufacturing sector; hence the significance of this paper is on the use of quality tools in a service environment. The methodology used to develop this article is based on a literature review on the related quality concepts and studying the application of the quality tools in manufacturing and subsequently providing recommendations for the hospitality sector. This paper is limited to quality tools such as process maps, check sheets, Pareto tables, scatter diagrams and cause and effect diagrams.

Ishikawa was a Japanese leader in Japan's quality movement. He believed in training and the use of statistics in quality control, by making everyone in an organisation responsible for statistical analyses and interpretation. Ishikawa was known for "democratising statistics", in other words, he tried to make statistics as simple as possible to the average worker. His technique was to use visual tools to communicate and understand statistical concepts. He invented seven basic tools known as "Ishikawa's basic tools of quality"; process maps, check sheets, histograms, scatter diagrams, cause-and-effect diagram, Pareto charts, and control charts (Foster, 2010). Most of these tools can be used graphically to diagnose poor quality performance.

Service Quality

There are many definitions of quality. Some regard it as superiority or excellence in a product or service, while others see it as the absence of defects. Others again perceive it to be related to product features or price. Evans (2008:6) reports on the results of a study conducted involving 86 companies in the USA. The basis of the study was to find a definition of quality. The results of the study indicated that there are a variety of definitions such as quality as perfection, quality as consistency, quality as eliminating waste, quality as speed of delivery, quality as compliance with policies and procedures, quality as providing an effective usable product, quality as delighting and pleasing customers and quality as total customer satisfaction. The American Society for Quality defines quality as "the totality of features and

characteristics of a product or service that bears on its ability to satisfy given needs” (Evans, 2008:6).

Various experts have defined quality on the basis of their research and philosophies (Oakland, 2003:20) for example Crosby’s definition is “Quality is conformance to requirements”; Juran’s (1951) definition is “Quality is fitness for use”, Deming’s definition is “Quality is non faulty systems” (Reilly, 1994). Writings by Summers (2005:14) report on Shewart’s definition (1931) as “Quality is no variation”, Feigenbaum’s (1961) definition as “Quality is a customer determination” and Taguchi’s definition as “Quality is when a product or service performs its intended function throughout its projected life under reasonable and harmless operating conditions.” One of the most respected collections of the definition of quality was compiled by David Garvin. This definition states that quality is transcendent, product based, manufacturing based or value based (Foster, 2010). The meanings of these terms are given below:

- **Transcendent.** Quality is something that is intuitively understood but nearly impossible to communicate, such as beauty or love.
- **Product based.** Quality is found in the components and attributes of a product.
- **User based.** The quality of something is acceptable if the user is satisfied.
- **Value based.** The quality of a product is perceived to be acceptable if offers good value for the price quoted.

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There is no one common definition of quality because it has multidimensional meanings. Perhaps the most appropriate definition of quality of shared services is the one formulated by Feigenbaum (1961). This definition is as follows (Summers, 2005): “Quality is a customer determination which is based on the customer’s actual experience with the product or service, measured against agreed requirements – these requirements are moving targets in a competitive market.”

Quality Service Dimensions

The tourism and hospitality sector is highly characterised with service related processes. According to Render and Heizer (2014), unlike manufacturing service processes are profiled with a set of different quality dimensions based on the distinct differences between physical goods and services. Generally goods are the physical and tangible (can be touched, smelt, tasted, and/or heard) whilst services are amenities, benefits or facilities provided by other persons and are intangible. The quality dimensions are also different for goods and services. The dimensions of a good are based on its performance, its features, the reliability, the conformance to standards and specification, the durability, its serviceability aspects, the aesthetics and its perceived quality to the customer (Foster, 2010). Service dimensions include tangibles, reliability, responsiveness, assurance and empathy (Foster, 2010).

Foster (2010) and Evans (2008:16) suggests that it is more difficult to manage service quality than product quality and provides the following reasons for this:

- The production of services typically requires a higher degree of customisation than manufacturing. Doctors, lawyers, insurance salespeople and other service providers must tailor their services to individual customers, while in manufacturing, the goal is uniformity.
- Because services are intangible, it is sometimes difficult to obtain hard data relating to services, while in manufacturing it is easy to obtain physical dimensions such as height,

width, weight and conformance to the required measurements. Service quality can only be assessed against customers' subjective, nebulous expectations and past experiences.

- The outputs of services are heterogeneous because no two services are exactly the same. It is difficult to produce a service consistently and exactly. A number of factors can affect the extent of the heterogeneity of service delivery. Firstly, delivery of service involves a relationship between the customer and the service provider. The customer's perception of this relationship is highly influenced by the service provider's behaviour. Since behaviour cannot be guaranteed to be consistent and uniform, the customer's perceptions of the relationship cannot be consistent and uniform. Secondly, service quality will depend on the customer expressing needs and providing relevant information. The accuracy of the interpretation of these needs and information by the service provider has a direct bearing on the customer's perceptions. Thirdly, the priorities and expectations of the customer may change each time the service is consumed. In service design, warranty and repair processes are not that important as recovery and reimbursement processes, and the design has to cater for the variability of the customer's moods, feelings and perceptions. Failure issues in services mainly result from deviations from the professionalism of the service.
- The simultaneous production and consumption of a service means that one has only one opportunity to get it right, that is, the first time. There is no such thing as storage and rework of services. This means that much more effort should be put into training and building quality into the service as a means of quality assurance.
- High customer involvement leads to greater process variability.
- Manufactured goods can be recalled or replaced, but poor service can only be followed by apologies and reparations.
- Services are much more labour intensive, while manufacturing is much more capital intensive. Services have a higher human interaction factor hence more variability.

A report on a study conducted by Kapiki (2012) concludes that quality in the hospitality sector is deemed as value for money and that despite the fact that many facilities in the hospitality sector offer excellent services there is always room for improvement.

Measuring service quality

The first step to quality improvement is to measure the current quality. The following tools to measure this quality are suggested by Kapiki (2012).

Perceived quality service model

This model was developed by Gronroos in 1990. The quality factors are influenced by the methods of marketing the total tourism product within the organisation, the image created for the tourism product, the results of "word of mouth" advertising and customer requirements and needs.

The five-gap SERVQUAL model

This model was developed by Parasuraman, Zeithaml and Berry in 1994, and evaluates the gap between expected quality and received quality based on the five service quality dimensions. Organisations concentrate on minimising this gap by continuous improvement techniques.

The critical incident technique (CRIT)

This technique is used to understand what is happening in the various “moments of truth” and results are collected from small samples that are studied over time. These can include written or oral complaints and compliments.

Customer Satisfaction surveys

These are questionnaires developed for customers to use to evaluate their experiences.
Mystery Guests

There are guests who secretly visit the facilities to check the quality of services received and to provide a detailed report to the management.

Market evaluations

This requires the analyses of market reports on factors such as competition, pricing, use of technology, and benchmarking opportunities.

Audit Reports

These are reports provided by professional auditors relating to nonconformities to the organisation’s policy and procedures to deliver quality to customers.

Self-Assessments

These are results of an internal examination of quality problems.

Another method of evaluating quality is to **monitor the costs of quality**. The costs of quality include prevention costs, appraisal costs, internal failure costs and external failure costs (Heizer and Render, 2014). In the hospital sector prevention costs relate to the costs used to prevent poor service delivery, appraisal costs relate to costs such as auditing and self assessments to evaluating the quality of services, internal failure costs include the cost of scraping and dumping of products (stale foods, unaccepted meals, cancellations) rejected by customers and external costs can relate to those costs of delivery, reputational damage cost and loss of potential customers.

Quality Tools

Having defined quality discussion will follow on the use of quality tools for continual improvement in the hospitality industry.

Process Maps

Process maps (normally called blueprints for service related maps) are used to show graphically the flow and sequence of activities to perform a function. A process map should be a prerequisite to understand a process before conducting any improvements (Dale, Wiele and van Lwaarden, 2009). It is an ideal way of highlighting problems and identify bottlenecks, duplication, delays, or quality gaps. It can also be used to identify critical quality points where effectiveness measures quality standards have to be put into place. The following symbols are used to draw process maps.

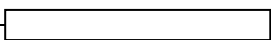
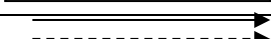

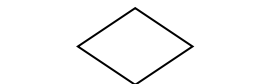
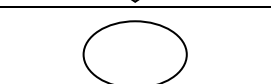


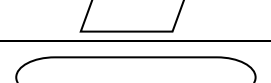
Process		Process, action step, operation
Flow		Direction of flow or movement
Alternative Flow		Alternative direction of flow or movement
Decision		Represents a decision making point and the respective choices
Critical Point		Point at which there is an inspection or assessment regarding quality
Documents		Shows applicable documents or instructions
Data		Applicable data
terminals		Start and finish points

Table 1: Standard symbols for process maps (adapted from Foster 2010)

An example of a process map used for guest accommodation enquiries and bookings is shown in figure 1.

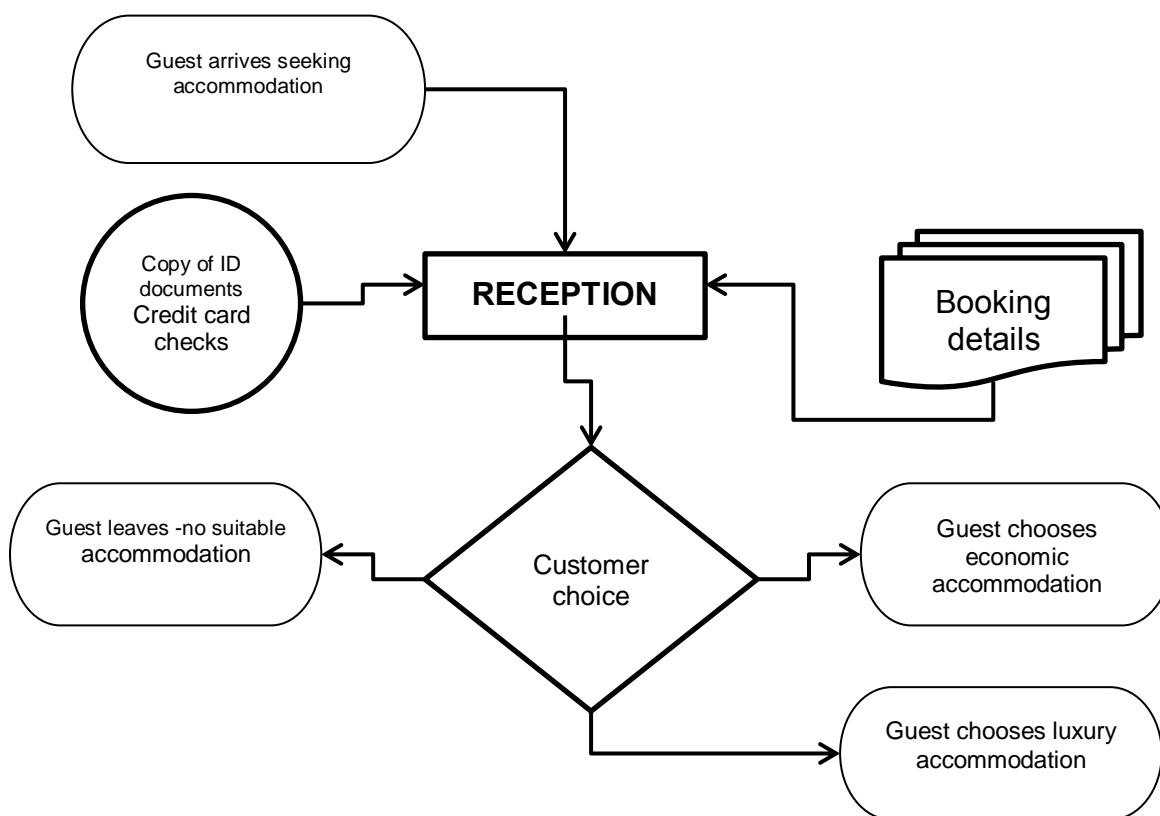


Figure 1: A typical process map (developed by author)

The following steps are recommended when developing a process map.

Step 1: Identify the boundaries

Define where the process will start and ends.

Identify a set of team members who will have the technical knowledge and experience on the process.

Agree on the level of detail required.

Step 2: Identify the activities and functions within the process

Brainstorm a list of all the major activities, inputs, outputs and decisions from the beginning to the end of the process on chart paper.

Step 3: Sequence

Arrange the activities in the order they are conducted so that the outputs of the process can be achieved.

Insert arrows in the connecting lines

Step 4: Process map

Draw the process using the standard symbols

Indicate where there are other requirements such as documents and critical quality checks

Step 5: Validation

Ensure that the symbols are used correctly

Ensure all inputs have outputs

Request non-members of the team to validate the process map

Step 6: Finalisation

Ensure the amendments after step 5

Distribute the process to those that require it

Label and file the process map as required.

Check Sheets

According to ASQ (American Society for Quality) a check sheet is a structured prepared form for collecting and analysing data. This is a generic tool that can be adapted for a wide variety of purposes (Stevenson, 2012). These are sheets used to record data. According to (Dale, Wiele and van Lwaarden, 2009), check sheets can be found in table formats, process formats, diagrammatic formats and picture formats and provides the following steps to construct one:

- Decide on the data to be collected, for example daily income
- Decide on which features or characteristics and items are to be checked.
- Determine the type of check sheet
- Design the sheet
- Specify the format, instructions and sampling method for recording the data
 - Decide on the time period to collect the data

A defining characteristic of a check sheet is that data is recorded by making marks ("checks") on it. A typical check sheet is divided into areas and marks made in different areas have different significance. Data is read by observing the location and number of marks on the sheet. Three different types of check sheets are discussed.

Type 1 - Classification check sheet

This check sheet requires classifications of defects, for example in the example below, rejected apples are classified as green, small, rotten or dirty. This sheet has the advantage of showing the frequency and occurrence of specific categories of non-conformance.

Apples	Monday	Tuesday	Wednesday	Thursday	Friday	Week Total
Green						22
Small						17
Rotten						15
Dirty						11
Total per day	26	8	10	10	11	65

Type 2: Defect location check sheet. The physical location of a fault is indicated on a picture, or illustration. Instead of just keeping track of the number of defects, the defect location check sheet can sometimes reveal an area of the service delivery that tends to experience most of the defects and hence requires quality improvement. Figure 2 shows an example of a hotel room using a defect location check sheet. The guest puts an “X” on areas of dissatisfaction. In the example the guest had a problem of a pillow, a light and the television set.

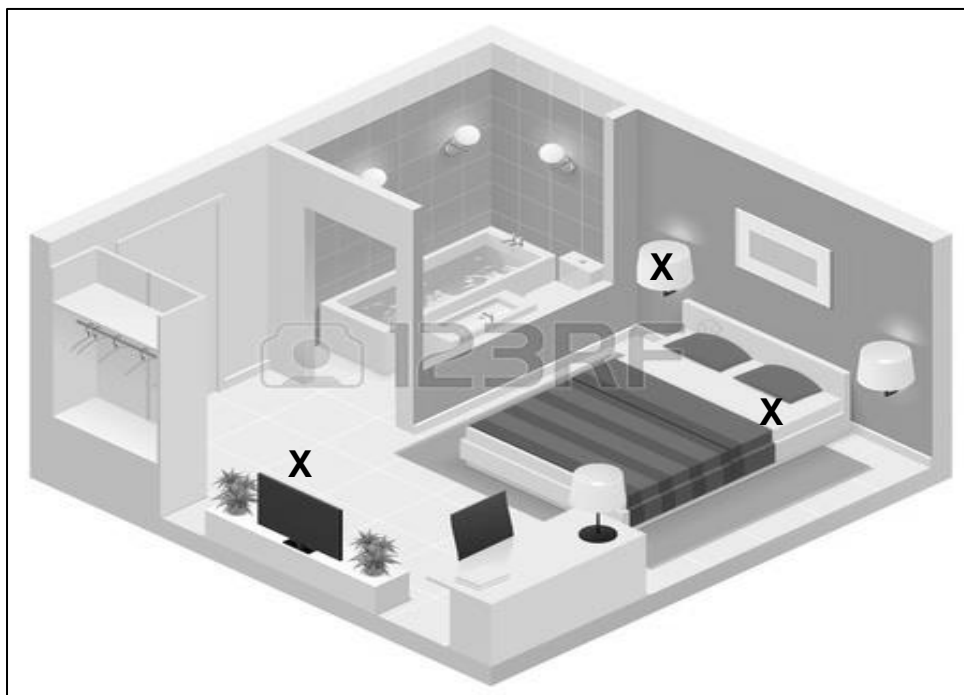


Figure 2: Defect location check sheet (image from internet)

Type 3: Measurement scale check sheet

A measurement is divided into scales and measurements are indicated by checking an appropriate scale. In figure 3, an example is provided that is used to check the weights of chickens delivered to a restaurant. This shows the distribution of the weights and it will be noticed that the restaurant is receiving a number of underweight chickens if the restaurant specifies that the Ideal chicken weight should be around 2.6 kilograms.

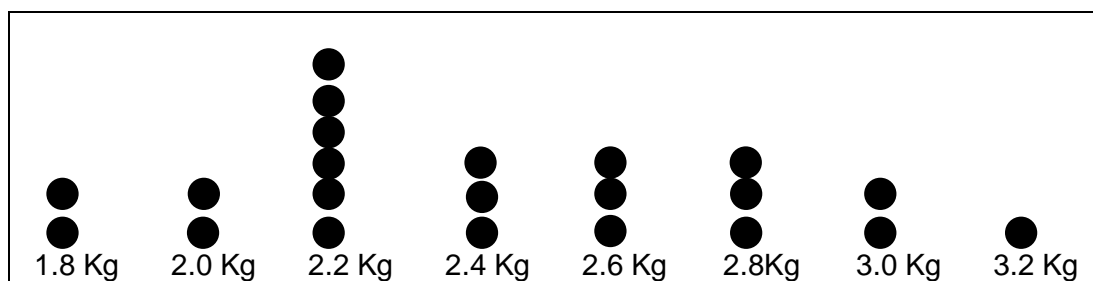


Figure 3: Measurement scale check sheet

Type 3: Check List: People sometimes confuse a check sheet with a check list. Table 2 discusses the differences between a check sheet and check list.

Check Sheet	Check List
A tally sheet to collect data on frequency of occurrence	A tool used to ensure all important steps or actions have been taken
Custom designed by user	Often a standard form is used
One of seven quality tools	Not one of the seven quality tools
E.g. Check sheet to document reasons for interruptions in production	E.g.: All items in case cart are present before surgery in OR

Table 2. Differences between a check sheet and check list. Adapted from Process excellence Work (Source: Kollengode 2010)

The items to be performed for a task are listed so that as each is accomplished it can be marked as having been completed or not completed.

An example of a housekeeping checklist for a guest room is shown below:

Date:			Room	
Item no.	Description	Yes	No	Comment
1	Beddings are neat			
2	Pillow covers have been replaced			
3	New bottled water			
4	Fresh towels			
5	New blocks of soap			
6	New pen			
7	Bins empty			
8	Television working			
9	Air conditioner in order			
10	Telephone working			
11	All lights in order			

Pareto Charts (Table)

According to Foster (2010) Pareto charts are used to identify and prioritise problems to be solved based on the 80/20 principle. The Pareto principle is a principle, named after economist Vilfredo Pareto that specifies an unequal relationship between inputs and outputs. The principle states that, for many phenomena, 20% of invested input is responsible for 80% of the results obtained. In terms of quality it is translated as 80% of quality issues are created by 20% causes, meaning that a small number of factors have a huge negative impact on quality. The Pareto Principle helps you realise that the majority of results come from a minority of inputs (Slack, Brandon-Jones and Johnston, 2013). De Feo (2015) comments that the Pareto principle applies to several levels of diagnosis; finding the vital few defects, finding the vital few symptoms of the defects and finding the vital few causes of the symptom.

Foster (2010) provides the following rules for constructing Pareto charts as:

- Information must be selected based on types and classifications of defects that occur as a result of a process
- Data must be collected and classified into categories
- A frequency chart (table) is constructed showing the number of occurrences in descending order.
- Concentrate on the greatest frequencies first.

The author recommends the use of a table rather than bar graphs. An example of a is provided below;

Suppose a hotel wants to improve its guest experience process by analysing the problems shown below:

Type of problem	Frequency (times reported by guests)
Air conditioner downtimes	105
Power outages	35
Room cleanliness	85
Poor room service	55
Meal issues	45
Language issues	25

The first step will be to construct a frequency table, compute percentages of problems and arrange them in descending order as shown below;

Type of problem	Frequency (times reported by guests)	Frequency Percentages	Cumulative percentages
Air conditioner downtimes	105	30.00	30.00
Room cleanliness	85	24.29	54.29
Poor room service	55	15.71	70.00
Meal issues	45	12.86	82.86
Power outages	35	10.00	92.86
Language issues	25	7.14	100.00
	350		

This table shows that by resolving the first four complaints almost 82% of total complaints will be resolved.

Cause and Effect diagrams

This diagram is used to break down the causes of a problem, finally identifying the root causes. It is a visual tool for categorising the potential causes of a problem in order to identify its root causes. Structurally it appears as a fish bone with the specific problem is considered to be the head and causes or sub problems as the bones (Dale, Wiele and van Lwaarden, 2009). Hence it is sometimes called a fishbone diagram and sometimes by its inventor as Isikawa diagram. Evans and Lindsay (2014) indicate that it requires team work and a good facilitator in a brainstorming type of atmosphere to develop this diagram. Common questions relate to what, when, where, how and why (Slack, Brandon-Jones and Johnston 2013).

Foster (2010) provides the following steps to construct a cause and effect diagram.

- State the problem clearly in the head of the fish
- Draw the backbone and the ribs. Ask the brain storming team to identify the major causes of the problem identified. Use this to label each rib.
- Next ask the brain storming team to identify the causes of the sub problems and use this to label the smaller bones of each rib bone.

An example of poor patronage at a restaurant is shown on the next page...

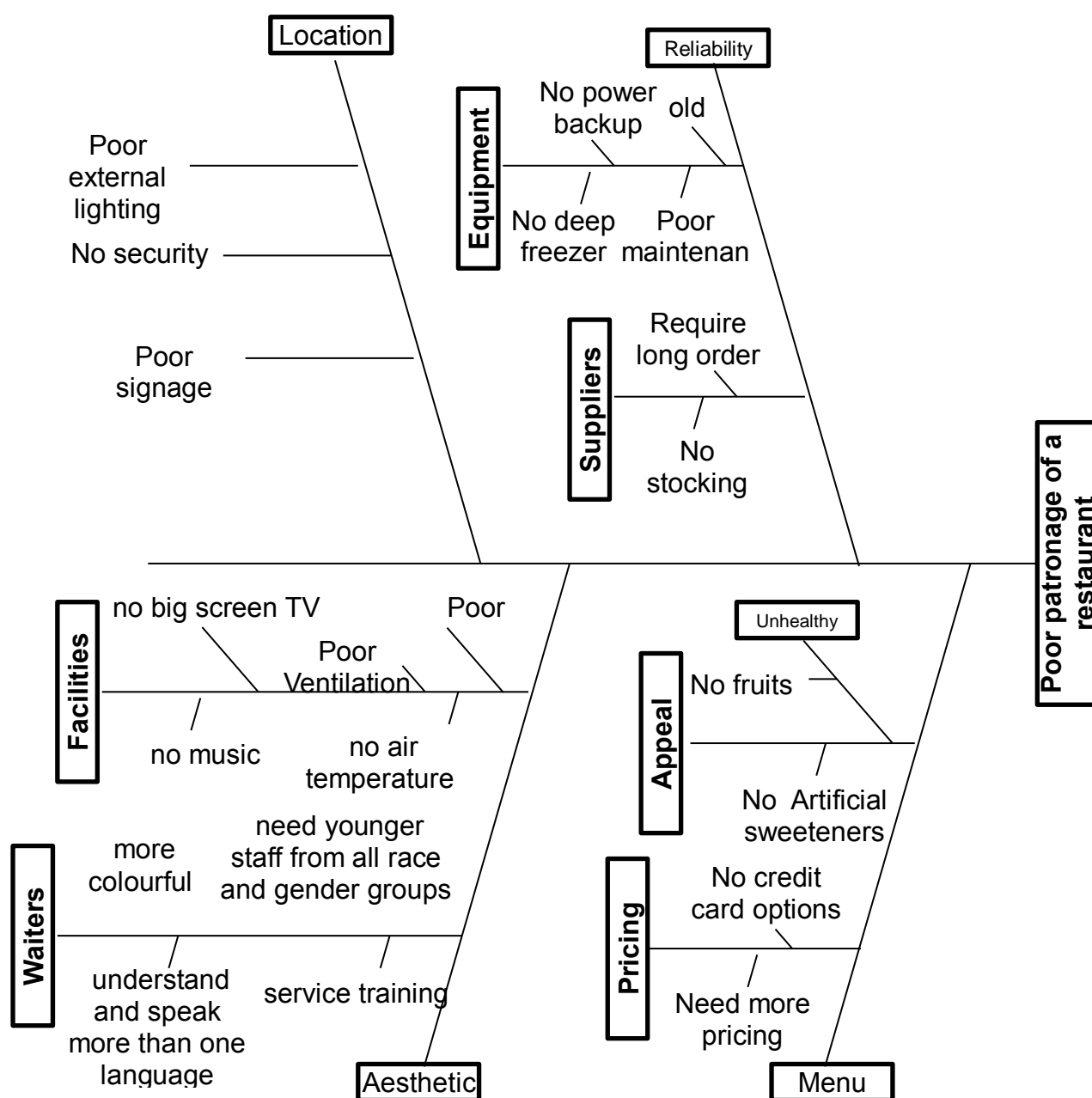


Figure 5: Example of cause and effect diagram (developed by author)

Scatter diagram

According to Dale, Wiele and van Lwaarden (2009), scatter diagrams (also called a scatter graph, scatter chart, scattergram, or scatter diagram) are used to explore the possible relations between two variables (cause and effect), characteristics, or factors. The variables are plotted on a graph and inspected for possible relationships. The data is displayed as a collection of points, each having the value of one variable determining the position on the horizontal axis and the value of the other variable determining the position on the vertical axis. In simple terms, variables that have a relationship will show a linear relation (Stevenson 2012; Foster, 2010) provides the following steps to setup a scatter diagram.

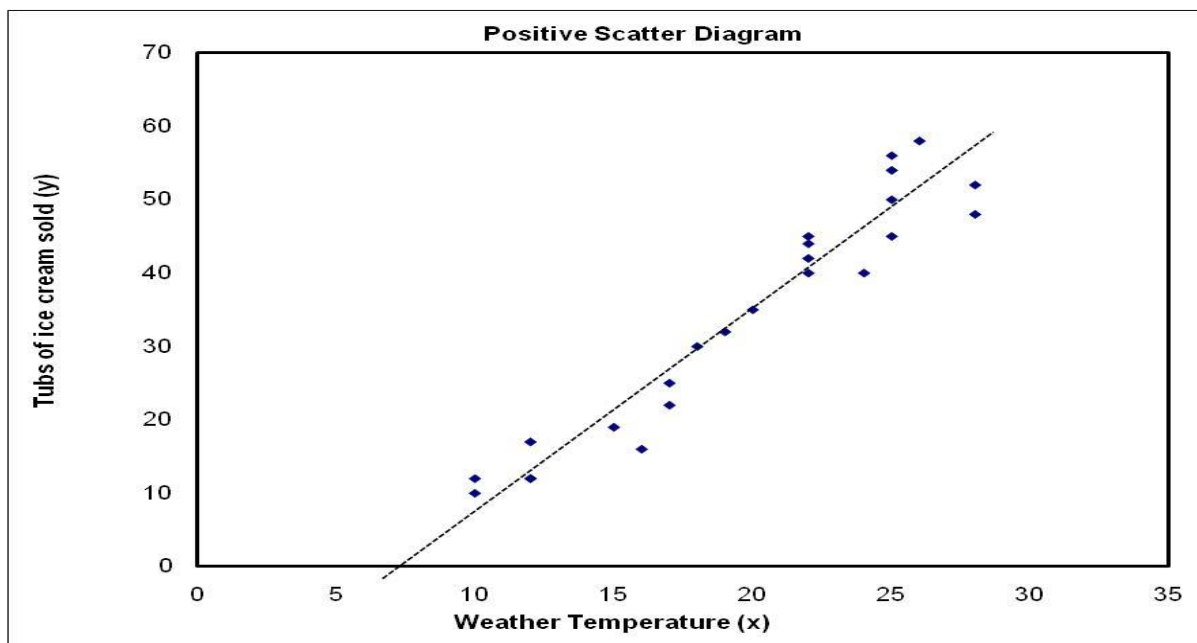
- Determine the X (independent) and Y (dependent) variables
- Gather process data relating to the variables identified in (1)
- Plot the data using a two axis graph

- Observe the data to see if there is any relationship

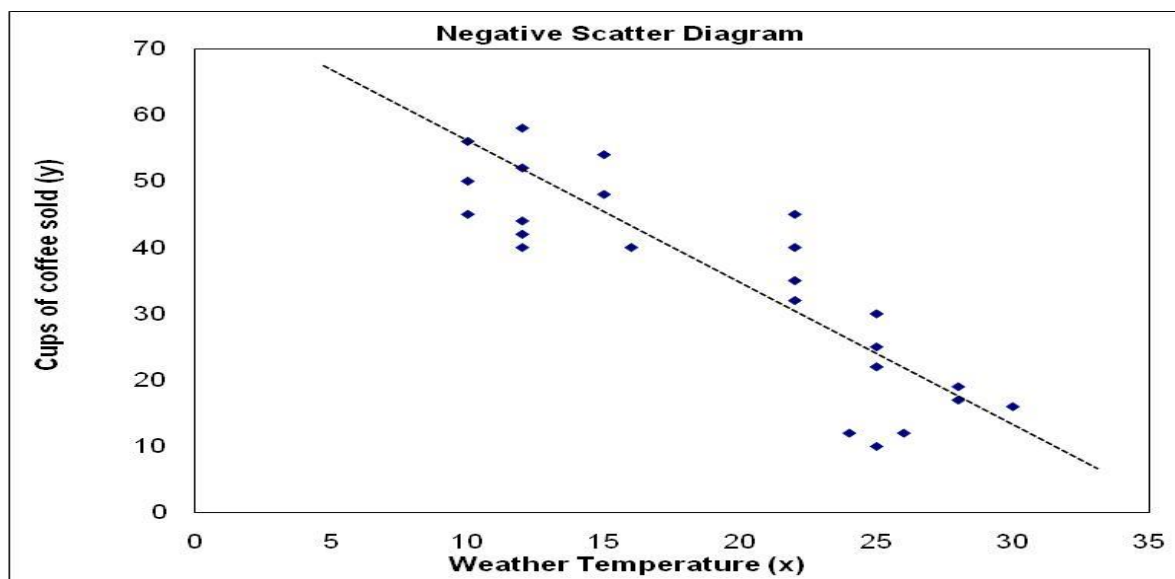
There are three types of relationships: positive where as one variable increases so does the other, negative where as one variable increases the other one decreases and where there is no relationship.

These are shown by the examples below:

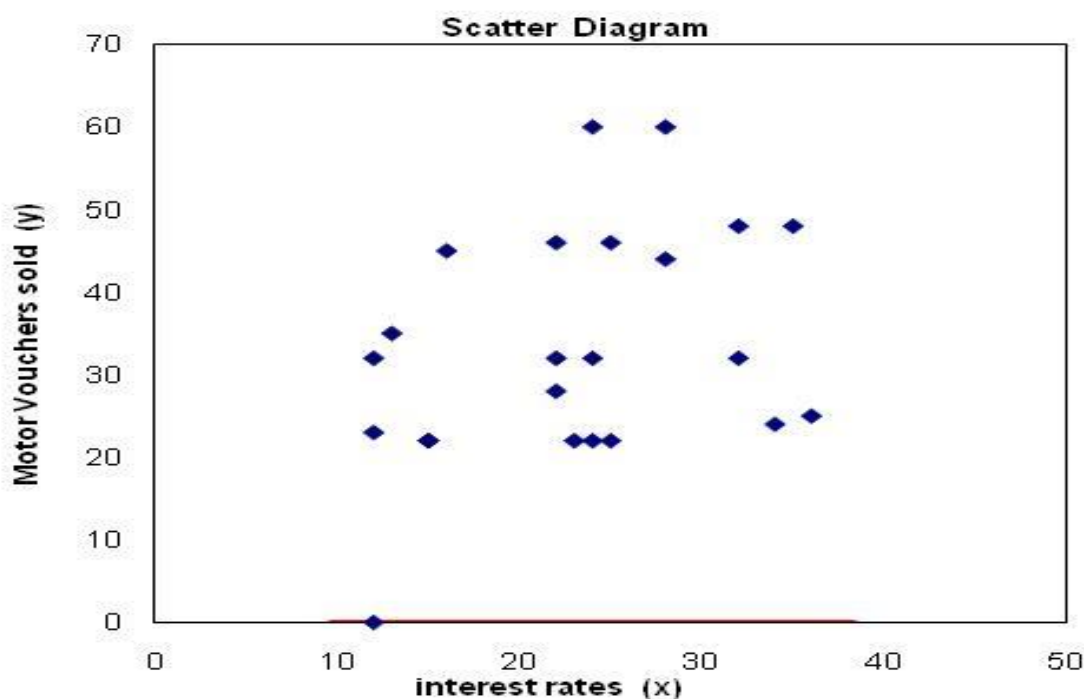
Example 1: shows the positive relationship between weather temperature and ice-cream sales. (notice that as X increases Y also increases)



Example 2: shows the negative relationship between weather temperature and cups of coffee sold. (notice that as X increases Y also decreases)



Example 3: shows no relationship between interest rates and vouchers sold.



Conclusion

Continuous improvement programs and problem reporting, analyses and resolutions are fundamental to quality performance (Jayaram, Handfield and Ghosh, 1997). This article outlined recommendations to understand quality, monitor it and diagnose causes with various quality tools to be used in the hospitality sector. The tools explained were process maps, check-sheets, Pareto table, cause and effect diagram and scatter-sheets. These tools provide visual analyses of quality problems and they can be used in any order sequentially or individually or in any number simultaneously. The researcher tried to keep the discussions as simple as possible for any practitioner to use even though they do not have a rigorous statistical background. However it is important that for the use of these tools to be effective the team approach and leadership aspects are critical (Foster, Howard and Shannon, 2002). This paper should seed a number of research projects to monitor performance in the service industry using various statistical techniques as the use of quality tools in the hospitality industry poses a huge gap as seen similarly by authors in health care (Janamain, Upham, Crossland and Jackson, 2016).

Acknowledgement

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