

Quality Awareness as a Competitive Edge: Implementation and Analysis

Michelle Hofstetter*

ABSTRACT

In international competition quality is now, more than ever, one of the most important differentiating factors. Despite the economic importance of quality, the understanding and definition of the term quality tend to differ. This is the case not only in different cultural circles, but sometimes also within companies at different hierarchical levels, which makes the implementation of quality management and its methods considerably more difficult [1, 2]. In increasing numbers, even well-known manufacturers have to withdraw their products from the market due to qualitative deficiencies [3, 4]. Although companies take a variety of measures such as quality meetings, workshops, work instructions and shop floor meetings, the desired quality goal is not achieved sustainably. Thus, the question arises: how can corporate quality be improved? An essential element in achieving this goal is the creation of quality awareness and its anchoring in the minds of all employees – a task for each individual, regardless of which hierarchy he or she belongs to. This report sets out to define the concept of quality awareness and makes recommendations for establishing and strengthening it in companies.

Im internationalen Wettbewerb gehört die Qualität mehr denn je zu den wichtigsten Differenzierungsmerkmalen. Trotz der wirtschaftlichen Bedeutung von Qualität unterscheiden sich das Verständnis und die Definition des Begriffs Qualität nicht nur in verschiedenen Kulturkreisen, sondern teilweise auch innerhalb von Unternehmen auf unterschiedlichen Hierarchieebenen, was die Umsetzung des Qualitätsmanagements und seiner Methoden erheblich erschwert [1, 2]. Immer häufiger müssen selbst namhafte Hersteller ihre Produkte aufgrund von qualitativen Mängeln vom Markt nehmen [3, 4]. Obwohl Unternehmen eine Vielzahl an Maßnahmen wie Qualitätsmeetings, Workshops, Arbeitsanweisungen und Management Shopfloors ergreifen, wird das angestrebte Qualitätsziel nicht nachhaltig erreicht. Es stellt sich also die Frage: Wie lässt sich die Unternehmensqualität steigern? Ein wesentliches Element zur Erreichung dieses Ziels ist die Schaffung eines Qualitätsbewusstseins und dessen Verankerung in den Köpfen aller Mitarbeitenden – eine Aufgabe jedes Einzelnen, egal welcher Hierarchie er oder sie angehört. Der vorliegende Bericht definiert zunächst den Begriff Qualitätsbewusstsein und zeigt Handlungsempfehlungen zur Etablierung und Stärkung dieses Bewusstseins in Unternehmen auf.

KEYWORDS

Excellence, leadership, IATF 16949, ISO 9001, EFQM model

Exzellenz, Führung, IATF 16949, ISO 9001, EFQM-Modell

* Student in the part-time Master's program Risk and Compliance Management at the Center for Academic Further Education of the DIT
Studentin im berufsbegleitenden Master-Studiengang Risiko- und Compliancemanagement am Zentrum für Akademische Weiterbildung der THD

Quality awareness – What it is and what it depends on

The lack of a common definition of quality means that everyone has a different understanding of quality awareness. An analytical comparison of the management systems ISO 9001:2015, IATF 16949:2016 and the holistic EFQM model (European Foundation for Quality Management) was conducted to standardize the term quality awareness. As a result of this research, the following definition of the term was created.

Quality awareness describes an individual's state of knowing what their responsibility is, as well as what impact and contribution their actions have on the environment. At the same time, it is the attitude of a person to do all their tasks correctly the first time. Consequently, quality awareness is the conscious perception and knowledge of requirements, their importance and, in particular, the consequences of non-compliance with these and other required standards [3]. In order to establish quality awareness two factors must be taken into account. One is an individual's quality awareness and the other being a corporate framework which supports and encourages quality awareness.

The quality awareness of a person can be divided into two levels: the individual and the collective. On the individual level, quality awareness depends on the values, attitudes and experiences of the person under consideration. It also depends on the knowledge, willfulness, ability, empowerment and motivation of the person concerned. On the collective level it depends on the corporate culture, the co-workers and superior's behavior regarding quality awareness that is adopted by an individual [3].

The organizational framework consists of additional components such as

- a corporate culture and corporate values that are perceived as credible by all employees,
- corporate goals that are defined for each individual department and employee,
- an effective corporate policy,
- company-wide communication that ensures open and honest communication within all levels of the company,
- employee awareness of their contribution to the achievement of goals, as well as of the vision and mission,
- familiarizing employees with the requirements and expectations placed on them, so that their actions are aligned with the company's objective,
- establishing and implementing effective standard operating procedures (SOP) that provide employees with information on who, when and what needs to be done, as well as the general workflow, the interfaces involved, the output generated and what resources are available,
- the promotion of an understanding of what quality, non-quality and risks are, in order to create a uniform awareness throughout the company,
- tracking quality measures, continuously prioritizing quality on every task,
- capturing customer and shareholder requirements and expectations, communicating them to all employees, and making them aware that their performance or manufactured product is available not only to external – end customer – but also to internal – business unit, affiliated department, supervisor, manager, colleague, or company-owned business – customers,
- leadership behavior [3].

The challenges of implementing quality awareness

One of the challenges is that most people show quality awareness in their private lives such as when buying a car, clothes or food, but it is not applied in corporate practice. This statement is supported by the findings of a study conducted in

2017 by the Change Management and Innovation Institute after surveying more than 200 German small to large companies revealing that 45 % of undertaken quality initiatives are not perceived as effective [4].

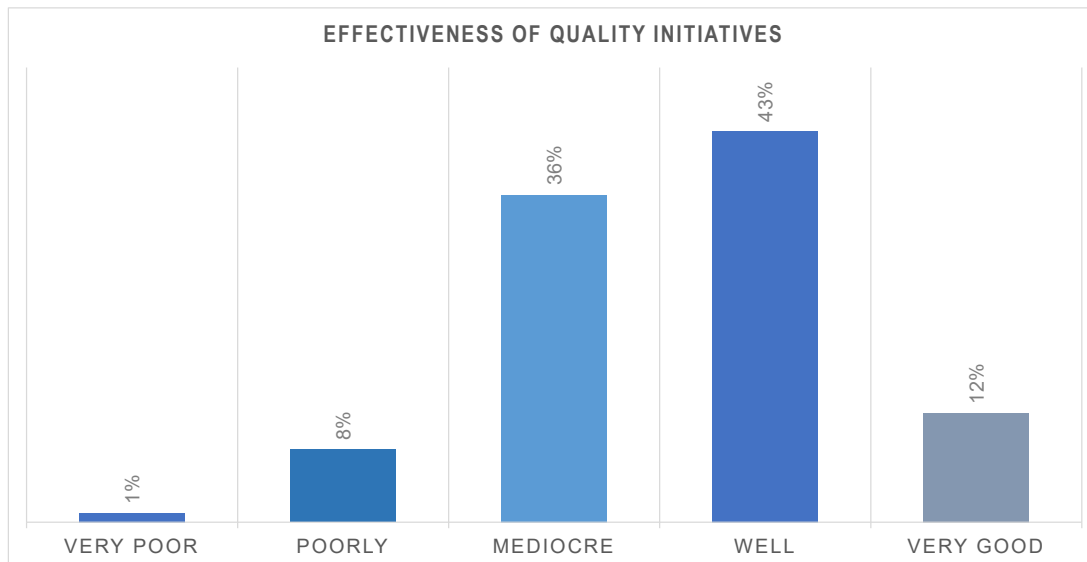


Figure 1 Effectiveness of Quality Initiatives; [5] – 45% of the surveyed companies stated that their quality initiatives are perceived as ineffective. (The 45% consists of 1% very poorly, 8% poorly and 36% mediocre)

Another challenge arises in the issue of contention related to the differential prioritization of cost, quality, and delivery. In a survey of over 200 small to large German companies, 60 % of the participants stated that conflicts of interests occurred at a high frequency. The surveyed organizations were asked to rate their priorities regarding the previously stated topics. Initially in a standard case, i.e. regular everyday business, and on the contrary in an occurring special case, such as an unexpected increase in customer demand. As a result, the study researchers concluded that the delivery capability is generally favored over quality [4].

The inconsistent behavior in prioritizing quality as mostly stated in the company objectives or values, will result in the non-adherence of corporate values and the orientation of the employees towards simply delivering the product regardless of their quality.

Another obstacle to overcome is low motivation and low involvement of management in the respective company causing measures to fail.

Numerous researchers have found in their studies that the motivation and involvement of management is crucial for the successful implementation of measures and the achievement of corporate goals [4, 6, 7]. The same applies to quality awareness. Unless management is involved, a high level of quality awareness and a quality culture that is lived by all employees will not prevail. The challenge, therefore, is to integrate standards and quality awareness into daily work practices in such a way that they are not seen as additional work. Inertia and resistance to change are additional roadblocks.

Therefore, measures must be identified that the company can implement to generate commitment on the management level as well. This requires the measures to be effective; doing the right things. Efficient, doing things right, with a minimum use of resources and appropriate for the company.

Mirror

As a part of this measure, one will need mirrors, which are positioned in places that are frequently visited by employees. One suitable solution is to place the mirrors above the time clocks. This placement is considered particularly suitable since most employees log in to work via the time clock. The desired goal of generating attention regarding the issue of quality is thus achieved.

Select a mirror so employees can see their reflection when they are standing in front of the time clock. Label the mirror with the following phrase: "Here you see the person who is most important for the quality of our company". The measure is intended to create awareness and generate acknowledgement of employee performance, showing the staff members that they all contribute to the quality of the company. The measure further aims to make the staff aware that every action depends on quality and thus that everyone is responsible for quality. Without every team leader and manager having to take the time to honor work well done it can be expressed through the writing on the mirror. I want to stress that this does not mean that the leaders do not have to communicate appreciation to their subordinates. The measure represents solely an additional type of intrinsic reward. Personal acknowledgement should still frequently be practiced by all staff members.

The effectiveness of this initiative is achieved even if the unintended reaction of a negative attitude among the workforce occurs. As per the saying "bad publicity is better than no publicity". This statement was verified by a scientific study by Harvard Business Manager magazine, finding that bad publicity can also have positive effects [8].

A specific follow-up questioning is required to find out whether the measure was noticed by the employees as well as their assessment of and attitude towards the measure. If a negative reaction results from the measure, it enables the company to find the cause of the dissatisfaction by asking specific questions. By purposefully addressing the measure and asking what the company could improve from the point of view of its employees, employee involvement takes place. Based on the inquired statements, a strategy for improving the understanding of quality and the contribution of every employee to it can be developed.

To increase the impact of the measure, it is advisable to display posters throughout the company in advance. These should arouse employees' curiosity about the upcoming measure. For example, use the following sentence: "Who is the most important person in the company when it comes to quality?". These posters can be designed either in a universal or a company-specific way.

Visualization through posters and banners

According to McKinsey [7] one of their assessed companies uses large posters to remind each employee of the needs of the follow-up job. The posters contain the following statement "Anyone without an internal customer is redundant here."

Another way of creating awareness for quality-related topics is the visualization of customer returns. In order to visualize the error rate on the one hand as well as their effects on the customer, i.e. the returns, the company can make use of two solutions. For the first version, a banner may be designed, which counts the days without any customer rejection. The banner may state "x days without customer complaints". Displaying this digitally can be done via monitors located throughout the company. This method not only creates awareness, but it also further tracks the daily progress and instills pride in the employees, which will increase with each passing day without any complaints. A display of the record for the number of days without complaints can have an additional impact. It conveys to the employees that it is possible to maintain high quality standards while also spurring them on in a positive competition to try and break the record.

Another recommendation of the McKinsey study is to set and uphold high standards within the company. "You think 99.9 % is good enough? Even 0.1 % error means one hour per month no fresh water or one improper landing per day at Frankfurt Airport." This graphic comparison was used by one of the surveyed companies to promote the objective of zero defect. Creating awareness that every error is still one too much keeps the resolve for continuous improvement sharp [7].

Creation of cost awareness

To increase awareness of quality and costs, it is advisable to show the production workers very clearly what additional costs arise as a result of quality problems, e.g. scrap.

For the visualization of the additional costs, in order parts can be exhibited in a display, which are marked with the manufacturing or selling value. Along with this, the company should indicate the scrap value of the same part. The intention is to make people aware that each defective part causes a certain amount of monetary damage to the company.

Cost awareness can be enhanced not only regarding the manufacturing components, but also with consumables, such as gloves or cleaning rags as well as smaller tools such as hammers or screwdrivers with their purchase prices. This measure is a purposeful reminder to all employees to avoid waste. Quality for those companies refers not only to the quality of the end product, but also to the quality of the production process [7].

Customer Feedback

In the long-term study conducted by McKinsey they found out that several of the observed suppliers confront their employees with customer reactions to quality deficiencies [7]. This measure increases the quality awareness regarding the external customer. Customer feedback is essential to align the processes and products based on customer needs. In addition, this method is applied to the production, with the worker who processes, creates and handles the parts. Once the company receives the customer feedback it starts a root-cause analysis, identifying where the deficiency occurred. In a further step, the organization can set up notice boards on each station of the production process. These boards display letters from customers containing praise or complaints regarding the corresponding workstation. Another approach is to display parts returned by the customers due to deficiencies, next to the production machines, where the fault occurred, describing the fault in detail.

This measure has the additional effect of generating employee affectedness. In general, an employee from the production department has no interaction with customer complaints. In other words, the employee who manufactures the products on the production line is not aware of occurring complaints. To establish an understanding between failure consequences and customer requirements, the employees must be provided with more information, such as the number of complaints, where they originated and customer satisfaction in general.

Customer awareness

As stated before, an awareness of customers, their requirements and one's own contribution to customer satisfaction as well as the quality of products and processes is essential. In order to raise the employee's awareness of customer needs some companies send out production employees to the customer in response to complaints. This method is less about having the claimed parts repaired on site; it is more about the production employee becoming familiar with the manufacturing process of "their" customer and getting to understand their problems from personal experience [7]. The same applies to the "internal customer" – the better an employee understands the requirements of the next workstation, the more he or she can contribute to improving the entire process.

To better understand the requirements of internal customers, it is possible to apply the concept of job rotation. An employee can thus be taught the interrelationship between the preceding and subsequent work steps. While this creates additional expenses for the company in the form of longer training sessions for employees to perform several work steps, it also results in significant monetary and strategic advantages. As already mentioned, job rotation enables employees to get a holistic view. Not only do they understand their own work, but they also understand how their work is processed and how important it is to get the job right the first time. In case of an employee's absence due to illness, for example, it is easier to find a replacement with the required skills. In some cases, the absence of a particular employee means that the company lacks a specific skill and is unable to carry out certain work operations. Consequently, the company suffers monetary damage in the form of lost profits or longer-lasting projects.

Considering management level positions, the approach of learning by doing should be considered. It is common for employees to feel misunderstood by their supervisors because the latter lack the specific expertise related to the work performed. Only after the supervisors have performed the job themselves, they are able to experience the workload, scope of work, and potential problems for themselves.

I believe that the awareness and knowledge about the interrelation of one's work with another colleague creates a dependency and a sense of responsibility leading to better performance.

A manager who is familiar with the way of working and the standard operating procedures of his employees can better empathize with them, identify challenges of the work and thus potential for improvement.

That empathy is an important aspect of a leader is shown by a study of a global consulting firm [9]. “The study found that 57 percent of people have left a job specifically because of their manager”, while 32 % seriously considered it [10]. A previous study from 2017, conducted by Gallup, even stated that 75 % of the surveyed people left their job voluntarily because of a “bad boss or immediate supervisor” [11]. Further reasons for quitting their job were identified, such as unprofessional, disrespectful behavior of managers as well as dismissing employee concern.

Promoting pride in the product

Identification with the product is easier to generate in companies that assemble the end product. It is common for employees of one of the world-renowned Bavarian car brands to display such pride. Nevertheless, it is also possible for component manufacturers to show a connection between the end product and their product as well as recognize everyone's contribution to that achievement. Displaying the function of one's components in an exhibition vehicle, for instance, helps create awareness for the product. A wire harness manufacturer, for example, had a car chassis cut open to show progression and the technical interfaces of the manufactured wire harnesses [7]. Manufacturers of components can display the final product to communicate and illustrate the effect and the importance of the components regarding the end product to all employees.

In this context it is essential that all employees are made aware of their contribution to the success of the product, the process, and the company. In order to identify and formulate the contribution of each profession the Human Resource department should conduct personal interviews with the company's employees. You could start by asking your employees the following question: How does your work contribute to the quality of the product or workflow?, documenting the answers and drawing conclusions. Once the contribution for each profession has been formulated, it should be included in the job descriptions and work instructions. By doing so, employees will be made aware of the contribution prior to joining the company and

the existing workforce is regularly reminded of their contribution through the work instructions. The contribution should also be addressed in the employee appraisal interviews to determine the employee's perception of it and if necessary, to explain and discuss it.

Training

“Training is the formal process by which a person acquires knowledge, skills and competencies” [12]. Studies by Tsai et al. [13] and Harrison [14] concluded that learning which is triggered by training positively impacts employee performance that is an essential element for the achievement of organizational objectives. This is supported by the research of Rowden and Conine [15] who “claim that employees who get training will ultimately better satisfy the needs and demands of their customers” [12].

Each employee should be trained and enabled to identify potential problems and find appropriate solutions, by establishing an error manual as well as step-by-step work instructions.

Though the implementation of new work practices is commonly seen as costly, it certainly has its benefits. “Investments in training activate the norm of reciprocity. If an employer has invested in an employee, that employee will feel some obligation to reciprocate that investment with greater effort and commitment” [16]. For the efficiency of training measures employees should be provided with training related to their daily tasks. Therefore, the organization must identify the relevant training sessions for each employee.

For the training of new employees, step-by-step work instructions should be prepared that are comprehensible to everyone – a control of its efficiency should be conducted frequently. The new employee should be trained on hand by an experienced employee in addition to the work instruction. The author anticipates that the use of such step-by-step work instructions at each workstation will reduce the amount of training required as they have a document to refer to in case of questions. This reduces the downtime caused by uncertainties in many workplaces, where previously a colleague or supervisor had to help.

Employees should be trained for both awareness of error consequences and how to identify their causes. While most companies already conduct failure cause analyses, this information should be collected along with the failure consequences

and compiled into a failure manual. The faults that occurred, their cause and consequences should then be illustrated. The structure for an error manual could be structured as follows

- General information about the product (requirements, tolerances, measurements)
- Function and purpose of the product
- Afterwards, the errors are to be addressed as follows:
 - 1) Error
 - 2) Cause of error
 - 3) Error consequence

Based on the error manual, the existing staff as well as all new employees should be trained.

Training employees on the error manual should also become a requirement of the annual training measures.

Hiring

People who work in a job that aligns with their college major are no longer the rule but the exception. A study found that only a quarter of college graduates work in a field that relates to their degree [17, 18]. The hiring systems applied as of right now are failing the companies and causing them to miss out on people with incredible potential. “A meta-analysis published in *Psychological Bulletin* concluded that a typical employment interview leads to the right hire only 57 % of the time. In other words, it’s only slightly more effective than flipping a coin” [19, 20]. Companies therefore need to embrace new ways of identifying and cultivating talent; expand the search.

If companies only look for talent in the same places they always do – gifted child programs, prestigious colleges, and organizations – they will always get the same results as they always have. Equating experience with ability or credentials for competence is no longer suitable in the hiring process [21].

Hire for performance

Just as teams have tryouts and plays have auditions, candidates should be asked to demonstrate their skills before they are hired [21]. Employment research shows that work samples are one of the best predictors of success on the job [22]. For example, if the company is hiring a data analyst, the candidates should be given a spreadsheet of historical data and be asked for their key insights. A good performance on the test is a prerequisite for an invitation to the personal interview.

Don’t leave the interviewing to the bosses

Filling a position with managerial responsibility is commonly decided by the potential boss and several peers. But it should be more important to give people who will work for the candidate the chance to meet and talk to them. Their assessments should be more important than anyone else’s – after all, they are going to have to work with the new hire. Doing so “helps prevent cronyism, where managers hire their old buddies for their new teams” [22]. The right candidate will leave its subordinates feeling inspired or excited to learn from them.

Have an unbiased group of people make the actual hiring decision

Google adds cross-functional interviews in its hiring process, with “little or no connection at all to the group for which the candidate is interviewing” [22]. An employee from another function “is unlikely to have any interest in a particular job being filled but has a strong interest in keeping the quality of hiring high. They are also less susceptible to the thin-slices error, having less in common with the candidate than other interviewers” [22].

Hire for cultural fit

Basing hiring decisions on cultural fit – to what extent the applicant shares basic values with others and the company – than on skills is as important or even more important than hiring based on skills [16].

Performance, acknowledgment & promotion

According to the EFQM model [23] an excellent company should “align appraisal, recognition and reward system with its values to steer it towards the organization's desired culture.” Shahzadi et al. [12] concluded that rewards are essential to transform employee dissatisfaction into satisfaction. Employees who are satisfied have been found to perform their tasks with more interest, work harder, and are able to cope with stress, which leads to good performance and higher job satisfaction [24]. Research found that employees' performance is directly influenced by intrinsic rewards. For when they receive intrinsic rewards, they become aware of their performance and work harder to receive appreciation [12, 25]. Intrinsic motivation is defined by Ryan and Deci [26] as the doing of an activity for its inherent satisfactions rather than for some separable consequence.

“Expressing employee appreciation increases job satisfaction. [The latter] “leads to increased employee retention” [24, 27]. As a result, the company will save on costs. According to researchers, the average cost of losing one employee amounts to over \$5,500. Just the expression of gratitude and “praising employees can save a company thousands of dollars in the long run” [27].

The recognition of good work should be handled by the management. On the one hand it shows that the management is committed, on the other hand it becomes apparent that adhering to the quality requirements is beneficial. One measure to show that quality and quality awareness is a priority within the company is to establish a promotion system based on quality performance and awareness. During the employee appraisals, the performance should also be assessed on the quality of the work. Based on this evaluation and additional topics, a point system should be established. The higher the quality of work and, for example, the number of proposed improvements, the more points an employee can achieve. Accordingly, these points will provide the manager with a guide as to which employees display potential for further training or promotion.

The performance reviews therefore should assess both the employees and the managers level of quality awareness. It is important that employees feel comfortable giving honest feedback to their direct supervisor about their leadership behaviors without having to fear that the manager will take offense resulting in negative consequences. Leaders should ask themselves a set of question:

- How do employees perceive my leadership when it comes to quality?
- Does my attitude regarding quality issues change under certain circumstances?
- How do I make my commitment towards quality clear to my subordinates?
- Are the reasons and motives behind my decisions clear to my employees and do I communicate these in a transparent and unambiguous manner?

The supervisors have to answer these by themselves and then check their perception with the answers given by their subordinates, whether they match or not. If discrepancies arise, it is the leader's duty to work on them.

Communication

As stated before, delivery capability is often prioritized over quality [4]. In this context, the problem often arises that employees are not told why this prioritization takes place. This creates a conflict between what is communicated by the company, namely that top quality is required, but at the same time making decisions in favor of the ability to deliver the products.

The right and effective communication is very crucial. Even if managers believe that they do not have to inform and explain their decisions to their employees, employees draw negative conclusions from a behavior that does not adhere to quality standards lacking communication measures. An explanation of the reason why a deviation from the quality guidelines took part is therefore required. The leaders have to further convey to their employees that the decision states an exception and not a future rule.

Make it a habit to ask questions. The principle ought to be "If you want answers, you must ask questions" [28]. Michael Dell, founder of Dell Inc., stated that “Asking lots of questions opens new doors to new ideas, which ultimately contributes to your competitive edge” [29].

In organizations that discourage questions, information tends to be hoarded, people generally keep their heads down and stick to their own matters, with few willing to take risks. Such organizations typically suffer from low morale, poor teamwork, and poor leadership.

Even though everyone must be encouraged and enabled to ask questions, leaders need to be the ones who in fact ask the most and greater questions. Through making asking questions a standard an organization can generate a culture of accountability. “When an organization develops a questioning culture, it also creates a culture of we, rather than a culture of you versus me, or management versus employees” [30]. Responsibility, alongside ideas, problems and ownership of results are shared. Further organizational benefits of a questioning culture according to Marquardt [30] are improved decision-making and problem-solving, greater adaptability and acceptance of organizational change, motivating and empowering employees, stronger teamwork as well as enhanced innovation.

Establishment of a holistic view of quality awareness

Quality action must be always perceived by everyone and on every occasion. The quality claim must be communicated regularly, and actions must also be aligned with quality. In addition, it must be conveyed to everyone that they have a contribution to quality, either in terms of process or product quality.

Quality action and consciousness begins with the punctual appearance in meetings, the timely feedback promised to a coworker or a consistent demand for a required work performance. Quality action does not only take place when a problem must be solved at the customer; it is omnipresent.

Leadership

Leaders have a daily influence and responsibility towards the people around them. They are accountable for the employee's performance

and the working atmosphere. Leaders have the task of promoting quality and supporting their subordinates.

Though commonly used interchangeably, management and leadership have different meanings. Having a title does not make someone a leader. "True leadership cannot be awarded, appointed, or assigned. It comes only from influence, and that cannot be mandated. It must be earned" [31]. Everyone can be a leader despite their position. Therefore, everyone can lead anyone. It is essential that managers and leaders act as role models and take responsibility for quality, because "People do what people see" [31], employees will imitate their supervisor's behavior. More than anything else, employees want leaders whose beliefs align with their own. According to a study by Opinion Research Corporation, the number one trait people look for in leaders is leading by example [32]:

Rank	Characteristics	Percentage
1	Leading by example	26 %
2	Strong ethics and morals	19%
3	Knowledge of the business	17%
4	Fairness	14%
5	Overall intelligence and competence	13%
6	Recognition of employees	10%

Table 1 Most important leadership attribute [31]

Being a role model requires a permanent, conscious commitment, which is not always easy. Sometimes it is unavoidable to disregard agreed or even self-imposed rules. However, leaders must be aware that any deviation from the required standard or the quality target is immediately perceived and interpreted by their employees. "Our boss doesn't always take it so seriously either. So why should I?" This provides one with

the excuse for one's own misconduct. Exceptions can, of course, occur; hopefully solely for a good reason. Immediately after the decision is made, or even better, before it is implemented, the leader should thoroughly explain the reason why a deviation from the quality guidelines took place and that the decision states an exception and not a future rule.

A study conducted by the Esslingen University of Applied Sciences in 2017 found that almost 2/3 of managers lack the technical and method-

ological skills to drive forward topics such as quality. Only about 35 % fulfill their quality responsibility [33].

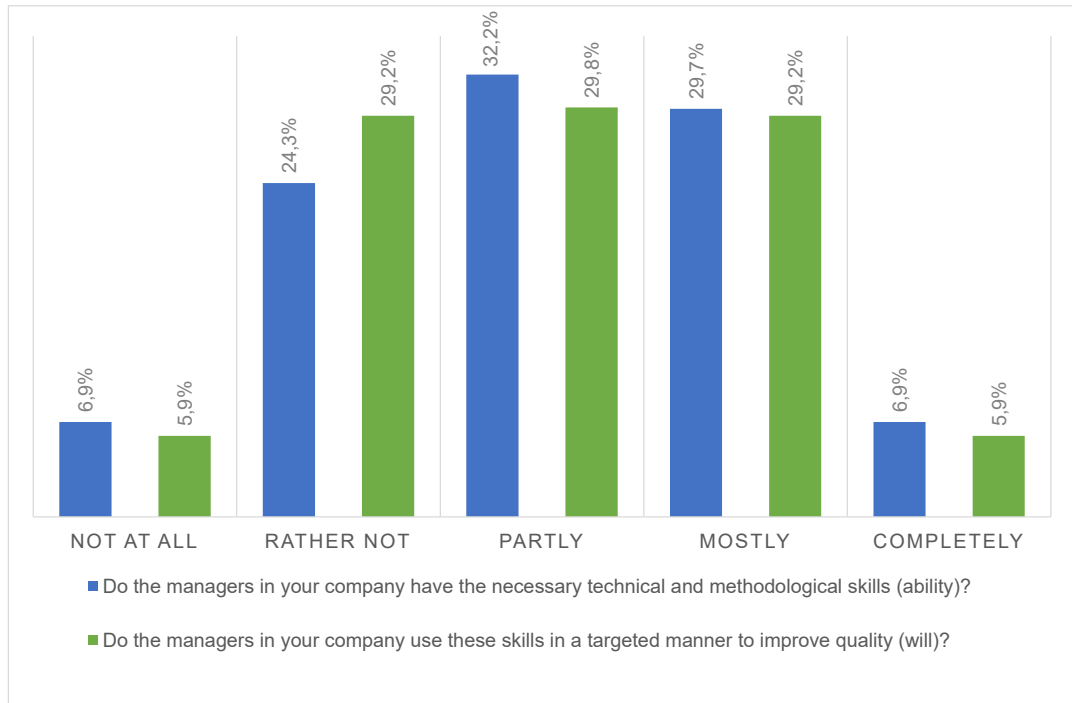


Figure 2 Ability and willingness of managers [32]

Vahs and colleagues [33] concluded that “what managers cannot do; they will not exemplify in practice.” This statement confirms the author's recommendation to expand the skills of managers, both through special management training and by gaining an insight into the work of subordinates – learning by doing. It also supports measures to make managers accountable for the quality performance of their team. It is common that manufacturing companies grant their managers a monetary reward based on achieved quantity. The objective continues to be that the quantity ordered and requested by the customer is produced. However, the focus must shift towards the quality of the products. Therefore, the bonus granted for achieving a high quantity should be reduced. Managers should be offered a slightly higher bonus than before, but with the additional condition of achieving and maintaining quality requirements. Only when the parts are in sufficient quantity and in the required quality will managers receive a bonus. This is intended to motivate managers to pay more attention to the issue of quality and to promote it among their employees.

If a company does not apply incentives, a different measure must be found, promising to achieve the same effect. The company could make use of an internal competition. In the production area, the quality indicators of each section could be displayed. A weekly analysis could be posted on the information boards and monitors throughout the facility. This allows the company to perform a trend analysis, identifying strengths and weaknesses, as well as future trends. Displaying the varying performance of the individual production sections can also create an internal competition. Comparable to playing a team sport, this can lead to friendly competition or rivalry. Rivalry should be avoided whenever possible. The top management and the human resources department are responsible for correctly interpreting the mood of the workforce, surveying the employee perception by means of questioning, and deciding whether these measures will produce the desired friendly competition.

Transparency

In order to establish and maintain high levels of trust at all times, a company must make itself transparent and accountable to its Key Stakeholder group [23]. The EFQM model further

states that an outstanding company “recognizes, celebrates and shares with Key Shareholders every moment of success to help reinforce the desired behaviors” [23].

One of the most important stakeholders the company should consider are its employees. Awareness can only be created and increased once you enable people to see the whole picture. Therefore, it is essential that employees are provided with general information about their company and the market. The amount of information is crucial – too much can be counterproductive – but the right selection and the appropriate visualization can create awareness. Information about the company's market share or about major orders won / lost, displayed graphically on information boards throughout the company can make employees aware that money is not “printed in the cellar”. It must be earned in fierce competition for the customer – the customer ultimately pays the salary [7].

A company therefore could display KPIs (Key Performance Indicators) regarding delivery reliability, customer satisfaction, customer orders, lost orders, defect repetition, number of complaints, cost of poor quality (CoPQ), evaluations of idea management, the benefits from submitted ideas and so on.

The aim of transparency is to ensure that employees are always aware of the company's situation. In addition, it should trigger motivation in the employees wanting to improve the company.

It could also help to set the calculated cost of poor quality in relation to something your employees relate to, i.e. the cost of a new car. The calculated performance index is intended to illustrate that quality costs arise for the company, for which the company could give each employee a new car for free every x years. By using the example of a car, the costs of poor quality become more tangible for all employees. On the one hand, the costs are made more tangible and, on the other hand, the association makes the value more memorable.

Another creative implementation of this measure was carried out by a German tire manufacturer. Using the back of their pay and salary slips, the company regularly informed its employees about current quality issues and company data [7].

Fact-based decision-making principles

No matter what size a company is, data should be at the heart of strategic decision-making in businesses. Data leads to insights; business owners and managers can turn these insights into decisions and actions that improve the business [34]. It is, however, common for workplaces to repeatedly fail to consider sound evidence which, as a result, inflicts unnecessary damage on employee well-being and group performance [35].

In their article, Pfeffer and Sutton [35] state various cases of well-known organizations spending money and time on researching data that has been documented and accumulated for decades. From this it can be seen that most companies still rely on their bias and instincts, which result in damage to the company. These damages can range from decreasing motivation, financial damages, but far-reaching misjudgments, leading to the ruin of a company.

As there is an overwhelming amount of data accessible it is crucial to determine the company's objectives. Narrow down the suitable data by identifying the company's strategy and direction [34]. In a second step the organization needs to decide on prioritizing the business area most important in achieving the overall strategy. After the identification of the strategic objectives, one must determine what data is needed to achieve these goals, further narrowing the total number of sufficient data. The next step is to identify the relevant data while keeping in mind that the data has to be relevant in regard to achieving the strategic objectives. Accordingly, it is important to determine whether the required data already exists. The required information may be accessible within the internal data as information that the company has been recording for years. Or it may be data that has been collected by other institutions, through studies, best practices, lessons learned, and so on.

In order to extract meaningful and useful business insights, one must analyze the data and make use of it. The insights must be “presented to the right people at the right time in a meaningful way” [34], otherwise previous work steps would be in vain. The data must be converted into information and knowledge that is accessible by the company and its members. The insights are to be used to identify potential opportunities for creating further value [23].

The most essential and crucial part of evidence-based decision making is therefore turning the data into action. Every staff member with decision-making power and authority must ask him/herself the following question when making a decision:

Based on what data have I reached this decision? Is my data valid? In addition, all employees must critically question decisions. Employees should be trained to critically question their actions and those of their supervisors. At the end of each decision phase, the question should be asked: *How did I reach this decision? What data am I referring to?* This should be discussed among all participants in the decision circles.

Critical questioning along with the condition and requirement of sound consultation of data must become a standard within the company. That is why it is important to walk the talk. This measure will be sufficient and more efficient when the company has established a culture of questioning.

In order to provide an individual or a company with guidance as to which measures should be implemented in a prioritized manner, an effort-benefit analysis has been conducted. Based on estimated costs and benefits the measures are divided into four categories: Quick Win, Major Projects, Peanuts and Consideration necessary.

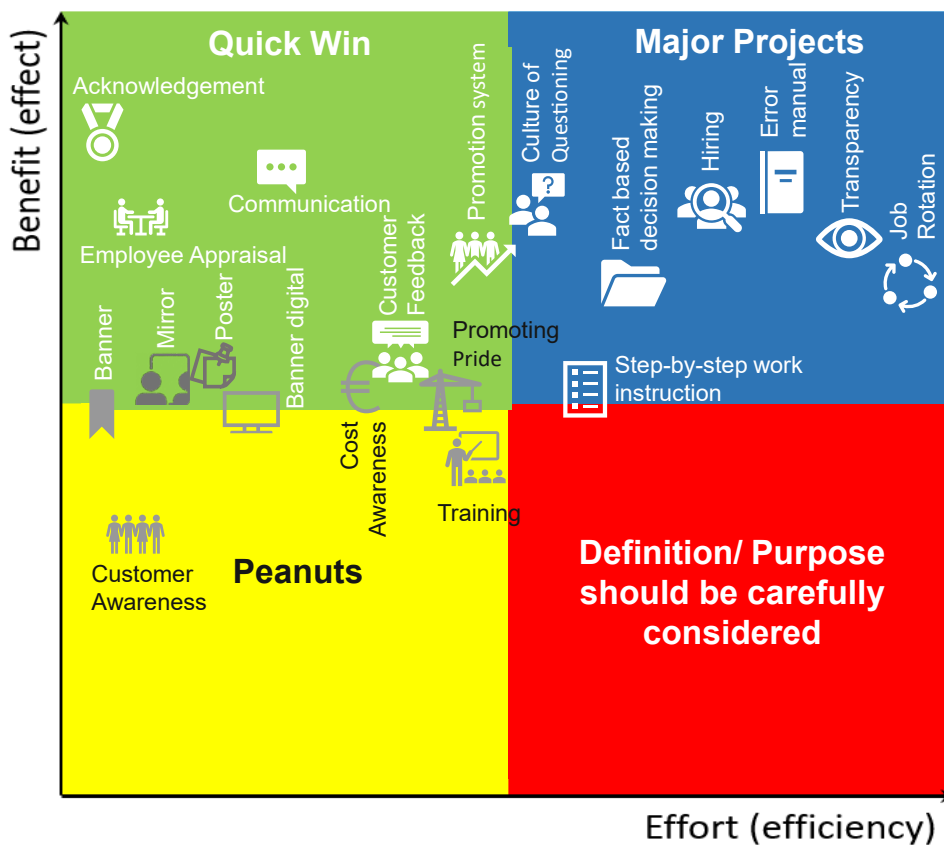


Figure 3 Effort-benefit Analysis of quality awareness measures

Conclusion

Quality awareness is essential to achieve operational and organizational excellence within a company. Academics tend to agree that the implementation and the establishment of quality awareness is and will continue to be one of the largest competitive advantages on the market. Due to the enormous pressure of competition,

quality awareness is becoming more and more important for companies to be able to keep up with their competitors. Despite the importance of quality awareness for the company in its operational and organizational excellence, the topic is not commonly prioritized by managers and business leaders nor is it seen as their responsi-

bility. In order to generate the commitment and dedication at the management level, there are numerous recommendations that can be proposed for action to establish and improve the quality awareness within a company. By assessing a company in terms of its strengths and weaknesses, regarding quality awareness, appropriate actions can be determined. Including employees in decisions and establishing an effective corporate framework that promotes quality awareness will help in the implementation of the selected quality awareness measures. The implementation of quality awareness is not limited to the measures given previously. Depending on the company, its current situation and the industry, measures should be adapted to individual conditions and needs. The estimated cost-benefit analysis can provide a company with a basis for a fact and data-based decision on which measures should be implemented.

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Michelle Hofstetter (B.A.)

Michelle Hofstetter graduated from the Deggendorf Institute of Technology with a degree in business economics in 2021. Under the supervision of Prof. Dr. Scherer and Liebherr Group, she wrote her final thesis on the topic of developing and defining an objective-analytical quantifiable assessment of quality awareness under industry-specific management system models and standards to achieve operational and organizational excellence. Since graduation, she has been working at Schock GmbH where her focus is on sustainability, compliance and quality management. Moreover, she has been pursuing a master's degree in risk and compliance management at the DIT since September 2021.

Michelle Hofstetter schloss ihr Studium der Betriebswirtschaftslehre an der Technischen Hochschule Deggendorf im Jahr 2021 ab. Ihre Abschlussarbeit schrieb sie zum Thema "Entwicklung und Definition einer objektiv analytisch quantifizierbaren Bewertung von Qualitätsbewusstsein unter Betrachtung branchenspezifischer Managementsystem-Modelle und Normen zur Erreichung operativer und organisatorischer Excellence" unter der Betreuung von Prof. Dr. Scherer und der Firma Liebherr. Seit ihrem Abschluss ist sie bei der SCHOCK GmbH im Bereich Nachhaltigkeits-, Compliance- und Qualitätsmanagement tätig und studiert seit September 2021 an der THD den berufs begleitenden Masterstudiengang Risiko- und Compliancemanagement.

Contact / Kontakt

✉ michelle@hofstetter.tel