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THE MOTIVATING SUGGESTION SYSTEM

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ABSTRACT

This case study investigates the suggestion system of a manufacturing plant with the purpose of getting insight about how a suggestion system should be designed to support the continuous improvement discipline Kaizen in the best way possible. The cooperating company has recently introduced Kaizen to the organization as part of a transaction toward lean production. The study was conducted using semi-structured interviews along with observations. The problem was approached from a motivational perspective, and a motivational framework has been created for this situation by combining research from the four motivation theories; Attribution theory, Social cognitive theory, Self-determination theory and Expectancy theory. The result from the study shows positive as well as negative aspects of the suggestion system at the factory that should be considered when designing a suggestion system that enhance the effect of Kaizen.

SAMMANFATTNING

Denna fallstudie undersöker förbättringsförslagssystemet på en fabrik med målet att få en uppfattning om hur ett förbättringsförslagssystem borde se ut för att stödja Kaizen på bästa sätt. Det undersökta företaget har introducerat Kaizen som en del i en större omställning till Lean-produktion. I studien har semistrukturerade intervjuer använts tillsammans med observationer för att dra slutsatser om förbättringsförslagssystemet. Problemet har angripits från ett motivationsperspektiv, och referensram för motivation har skapats genom att kombinera fyra olika motivationsteorier; ; Attribution theory, Social cognitive theory, Self-determination theory och Expectancy theory. Resultatet från studien visa positiva såväl som negativa aspekter av fabriken förbättringsförslagssystem, som man bör ta hänsyn till då man designar ett förbättringsförslagssystem som ska stödja Kaizen.

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INTRODUCTION

Problem

“To stay competitive, manufacturers have to operate under fundamental policies that enhance change and promote a sense of continuous improvement. Otherwise, the competition will run past them” (Ortiz, 2006 p. 31).

These two sentences summarize quite well why it is important to incorporate continuous improvement into the organizational culture. This report will investigate how it is possible to increase the effect of continuous improvement, and thereby increase the competitive advantage.

There are several concepts that can be used to integrate the values of continuous improvement into a company's organizational culture. These concepts all have their own set of tools that can be used to create an evolving company that not only changes because of external threats on the market, but also because of the creativity of the employees. Some of these concepts are Kaizen, Total Quality Management, Activity Based Management, Time Based Management and Business Process Reengineering. These methods all have different perspectives and approaches, but they have one thing in common, they all strive for continuous improvement of the organization.

This report will investigate a factory where Kaizen has been implemented just recently before this study. The introduction of Kaizen went smooth, but according to the change coordinator at the factory the employees could come with far more suggestions than today. This problem will be addressed in this report; that is, how to get more employees to contribute to Kaizen and submit more suggestion.

According to Berger (1997), transferring management innovations such as kaizen is more problematic than transferring generic techniques since organizational aspects are highly contextual in terms of e.g. labor markets, incentive structures, working-life traditions, etc. There are several factors that has to be taken into account when introducing a continuous improvement program, like what rewarding system should be used, how the decision process should look like and what kind of suggestions are desirable. These factors, as well as other, need to be taken into consideration when designing a suggestion process and a suggestion support system.

The problem addressed in this report is how the suggestion process and suggestion support system should look like to serve kaizen in the best way possible.

Purpose

The purpose of this report is to answer the question of how the suggestion process and the suggestion support system should be designed to support and enhance the continuous improvement in an organization in the best way possible. Since this study is a case study it will show how a suggestion process and suggestion system, in practice, supports employee motivation to give suggestions.

Background

This study is conducted in collaboration with a Swedish manufacturing plant that is part of a larger production company. This factory, from now on called Factory A, is currently introducing kaizen as a part of a larger transition toward lean production. The goal is to create a simple system via improvement groups where all of the employees' ideas are seized and reported, and by this using the employees' creativity to evolve the organization. The employees have however not contributed to the continuous improvement to the extent that they have the possibility of doing according to the improvement coordinator at the factory. This problem will be addressed in this report; the current process and support system for suggestions will be evaluated and theoretical research will be combined with observations to identify possible improvements.

METHOD

The question formulated in the problem statement is how the suggestion system should look like to support Kaizen in the best way possible. There are a number of approaches that can be used to solve this problem, I have chosen to address it from a motivational perspective. This perspective has been chosen because it is a good way to investigate how to make someone perform an activity that is desirable but additional in his/her task description. With this approach I will be able to cover most of the aspects of both the suggestion process as well as the suggestion support system in the investigating.

Approach

To be able to investigate motivation in the context of suggestion submitting, a framework for motivation first had to be established. For the study a model was created using the expectancy theory together with the attribution theory, self-determination theory and Social cognitive theory. These theories are explained together with the new model in the theory section of this report.

The expectancy theory is suitable to use in the context of submitting suggestions since it is possible to relate the concept to different aspects of the suggestion process and the suggestion support system in a meaningful way. It is also applicable in the process of creativity and is suitable in a work environment. Fairbank and Williams (2001) came to a similar conclusion in their research paper where they considered it the best suited motivation theory to fit the requirements imposed by the complex interrelationship between creativity and intrinsic motivators, extrinsic motivators and the social context of work. They also favored it because it can be used in a multitude of organizational climates, organizations that already foster creativity as well as those that are striving to do so. (Fairbank and Williams; 2001). In their report they have used the expectancy theory as a framework as they wrote about motivation in the context of suggestion systems.

The other theories that were used in the model; attribution theory and social cognitive theory and self-determination theory, were used to broaden the view of motivation defined in the expectancy theory by taking past and future into consideration. Both these theories focus on intrinsic motivation in the same way as expectancy theory, but they have other focuses, models and terminology.

The Job Characteristics Model has become the primary approach in many job design efforts (Cheser, 1998), but it has however not been included into the framework model presented in this report, this because the task of submitting a suggestion differs from a fulltime job in both size and structure and can therefore not be generalized.

Research method

The expectancy theory is built on the subjective perceptions on the person who is to perform the task and not the objective truth. E.g. an employee does not become more motivated to submit a suggestion if the suggestion decision-process is less biased. The employee does however become more motivated if he/she perceives this process as being less biased, the difference is the employees' perception.

The subjective nature of the expectancy theory makes a qualitative approach more suitable than a quantitative since it generates subjective statements and experiences instead of objective data. This is one of two reasons why a qualitative approach has been chosen to address the problem of this report. Also, the unquantifiable nature of creativity and motivation makes it difficult to draw any reliable conclusions from a quantitative analysis. The Expectancy theory does provide a model for calculating and comparing motivation force but for this model to work you have to quantify and measure expectancy, instrumentality and valance in a valid and reliable way which is not possible in the situation faced here. The expectancy theory is still useful since it defines different factors that affect motivation and describes their relationship, but the investigation has to be a qualitative analysis.

During a four month period I have been able to conduct my study from an office located at the production facility. This has given me a better understanding of the organizational culture and I feel that I have gotten a better insight into the situation at Factory A than I would have had otherwise. I have been in close contact with the change coordinator at the company and have also been attending some of the meetings concerning the suggestion process. Additionally, I have also performed some tasks for the factory outside of this study that has given me the opportunity to get a better insight into the organizational culture. I have also been given the possibility to interview the employees at the factory.

Further understanding has also come from reading submitted suggestions in the current suggestion support system and an investigation about the administrative process has been made but not in the form of interviews.

Interviews concerning the suggestion process and the suggestion support system have been held with employees from different parts of the company. The interviews have been conducted in a semi-structured way, structured to some extent since it is important to keep the conversation to the topic of suggestion submitting, but they have not been fully structured since semi-structured interviews can lead to more comprehensive and interesting conclusions. These kinds of interviews also greatly increase the chance of finding aspects or relationships that were not anticipated in the first place.

Process

This section will describe the process of the interviews. Much of the interviewing strategy has been inspired by Kvaales book *The qualitative research interview* (Kvale, 1997). In this book Kvaales has defined seven stages of the research interview and they will now be used to describe the interviewing strategy. These phases are; Thematising, Designing, conducting interviews, Transcribing interviews, Analyzing, Verification and Reporting.

Thematising

In the thematising phase the content and the purpose of the study is formulated. The questions *what* will be investigated, *why* and *how* it should be investigated should be answered in this phase. It is important to be able to answer these questions before continuing into the design phase.

It is necessary to have a clear picture about *what* the goal is. Having a clear view of what you are after is required for answering the other two questions, *why* and *how*. The *what* in this case is motivation in the context of suggestion submitting. The reason for investigating this is to increase the efficiency of kaizen through enhancement of the suggestion support system and suggestion process in means of motivation.

Why is the next question, you need to have the reason for the interview in mind when determining how the interview should be executed. The answer to this question serves as a basis for selecting the method for the analysis as well as the interview strategy.

The question *how* is about learning different techniques for interviewing and analyzing and decide which ones to use. The sections *New Model* and *How to motivate suggestions*, which can be found under the theory section, are used as a baseline for how the interview is supposed to look like; The *New model* provides a basic framework for motivation and the section about *How to motivate suggestions* serves as baseline for the question formulation of the interview. Read more about how the analysis is done in the *analyzing* section.

Designing

The design of the interviewing process is specified according to what knowledge is required. It is in this phase the plan is formulated and preparations are made for the interview activities. The planning done in this phase includes all the following phases; *interviewing, transcribing interviews, analyzing, verification and reporting*.

Four roles can be identified in the suggestion process; the *Suggestion submitter*, the *Suggestion handler*, the *Suggestion implementer* and the *System administrator*. Interviews have been used to examine all of these roles except for the administrator, and the reason for this is that improving the administration is more a question of process design and effectiveness (not to be confused with efficiency) than motivation. The administrators have been asked about the system but it will take a less formal approach.

The three main clusters for the interviews have thereby consisted of the three roles; the *Suggestion submitter*, the *Suggestion handler* and the *Suggestion implementer*. Minor clusters have then been identified in the form of different departments.

The first step was to interview the suggestion submitters about their thoughts about the suggestion system at Factory A and ask them about the factors that, according to the theories, motivate giving suggestions. The interviews have covered some specific areas, but the interviewed has also been given the opportunity to talk freely as much as possible so that hidden factors could be found and further investigated. The interviews have been conducted in as many of the departments and factory lines as possible to give a comprehensive picture of the situation.

When a sufficient number of interviews had been made in the cluster of suggestion submitters the interviews of the second main cluster, the suggestion handlers, began. The information obtained from the earlier interviews has been used when constructing these interviews. The main purpose of the interviews has been to find factors and improvement possibilities associated with the role of suggestion handler. The suggestion handler interviews have also been conducted on several departments and production lines for a broader view as well as comparison possibilities.

The third step in the interview strategy was to interview the suggestion implementers. This group is not connected to the suggestion submitters in the same way as suggestion handlers are and the focus of these interviews were different. The interviews with the suggestion implementers were more focused on improving the suggestion process instead of the issue of motivation but the purpose was the same, to improve the suggestion support system and the suggestion process.

In the selection process an organizational chart was investigated and interview persons was chosen from every cluster, both the main (role) and the minor ones (department). All submitted suggestions to the department at hand were read and persons were found that, if interviewed, could contribute to the understanding of the motivating aspects of the suggestion system at Factory A.

Conducting interviews

Since the interviews were semi structured, containing open questions where the interviewed person got to describe something, e.g. “*Can you tell me about how the suggestion process works here at Factory A?*”. This question was used to get information about how much the interviewed person knows about the suggestion process at Factory A, and thereby indicates the transparency of the suggestion process. When the interviewed person answered the question other factors did in cases also become visible, things that the interviewed maybe would not have thought about when being asked a more closed question. It is important for the interviewer to detect words or phrases that could be of interest for the purpose of the interview and ask the interviewed to clarify or describe these words or phrases. This is what makes semi structured interviews exploratory.

Even if the interviews were open and even exploratory to some extent there were still some areas that were brought up in every interview. These areas have been taken from literature part of this report, *how to motivate suggestion*. The following points was brought up on the interviews:

- Simplicity
- Success story
- Perceived biased evaluation
- Ability to monitor progress
- Rapid evaluation
- Safe environment
- Encouragement

More information about these factors can be found in the theory section.

Transcribing interviews

The interviews in this study were recorded on tape and after each interview a summary of the interview was written down together with conclusions. Some significant quotes from the interview were also written down. The reason why the interviews were not written down in whole is that it would require too much effort in comparison to the outcome, especially if the interviews were to be translated from Swedish to English in the process.

Analyzing

In this phase the material from the interviews are analyzed. Kvale (1997) differentiates five main approaches to qualitative analysis; *Condensation, Categorization, Narrative, Interpretation* and *Ad hoc*.

When using *condensation* the interview is shortened down to a more concentrated text with more concise formulations. Longer statements are transformed into smaller ones where the essence of the statement is formulated in a few words. In other words, Long interviews are reduced to smaller and more concise formulations.

Categorization is also a way of shortening down an interview, this by encoding the interview and putting it into different categories. Long statements are reduced to a few categories that are given different values.

The Narrative analysis is focused on the stories that are told under the interview and tries to evolve their structures and intrigues. If there are not any spontaneous stories in the interview, the narrative analysis can try to create a coherent story out of the many events that are told in the interview. The narrative analysis can shorten a text but it can sometimes also make it larger by developing the potential meaning of a short interview to a refined story.

Interpretation analysis recontextualizes the story instead of making the statements less contextualized like the condensation analysis. In addition to structuring, this approach tries to find the essence of the statement and interpret it in a more or less speculative way. The context for the interpretation of a statement can be the whole interview or a theory.

It is also possible to make the analysis *ad hoc* by combining the different analysis approaches in the way that serves the purpose of the survey the best.

Since the interviews were semi-structured the analyzing of the interviews had an incremental approach where an analysis was made after each interview. The lessons learned at the interviews were used to change the outline of the next interview. The interviews continued this way like an exploration until an adequate picture of the subject at hand was obtained. The analysis has been a mixture of interpretation and condensation depending on what information is analyzed. Condensation in general because of the large quantity of information from the interviews but interpretation was needed in almost all questions since the answers could be seen as information from a subjective perception. Some categorization was also needed in some situations when comparing different opinions.

The material from all of the interviews were then put together and analyzed as a whole with the motivation theories as a reference point and conclusions were drawn.

Verification

There are according to Kvale (1997) three concept that are closely related to verification and these are; generalizability, validity and reliability. The study will now be related to these three concepts.

To be able to discuss the generalizability of this case study, the three forms of generalizability must first be shortly described. The first type, *naturalistic generalizability*, relies on personal experience. It is derived from knowledge about how things are which then leads to certain expectations. The second form of generalizability is *statistical generalizability*. This form of generalizing is formal and explicit, and is built on random selection from population at large. Using inferential statistics, the information gathered from a sample can be generalized to a population at large with a certain confidence level. In the third form of generalizability, *analytic generalizability*, an assessment is made about to what extent the result from one study can be used in another. The similarities and differences in the different situations has to be analyzed do determine what can be generalized and what can not.

It is the third form of generalizability, analytic generalizability, that is used in this study. This means that it is up to the reader to analyze and determine the generalizability between this situation and another, not the author.

Reliability is a term that is used to indicate how reliable research result is. One of the main requirements for reliability is that the study should be repeatable with the same result. This requirement is not, and should not, be possible to reach in the qualitative research that has been done in this study. Since the interviews are semi-structured the information from them would probably be different if they were performed by another person.

Validity is a measure of how well you measure what you want to measure. It can not be guaranteed in quantitative research, it is up to the researcher to make the right analysis of the interview answers. By making an extensive literature study and spending a lot of time on the site, the validity of this study have been increased.

Reporting

The result of the interviews is presented along with related research articles and other conclusions in the result and discussion section in this report.

Interview clusters

During this study, 22 interviews were conducted. Five of these persons interviewed had the role of suggestion handlers, two of which were work group leaders and three which were department managers. Four of the interviews were held with suggestion implementers, and the remaining thirteen interviews were held with suggestion submitters. The interviews included most of the departments of the company to get a more complete picture. These departments are; Two of the production lines, IT-department, Research and Development, Logistics, Repairs Accounting and HR.

In addition to these interviews two of the administrative staff was contacted and interviewed under less formal circumstances.

THEORY

Introduction

The theory section is divided into two parts. The first part explains and brings forward relevant research in the fields of Kaizen, Creativity and the motivational aspect of suggestion systems. These sections are supposed to serve as background knowledge as well as definitions that the discussion is founded on.

The second part is supposed to provide a framework for motivation in the context of suggestion submitting, this will then be used as a baseline in the discussions. First Attribution theory, Social Cognitive theory, Self-determination theory and Expectancy theory is presented and relevant research is brought up. Then a New Model is presented that incorporate all of these theories to fill in the blanks that are there when looking at the theories separately. This New Model is not the result of the report, but rather a framework from which the conclusions depend on.

PART 1

Kaizen

The Japanese term *Kaizen* is composed of the two words; *kai*, meaning change, and *zen*, meaning good (Doolen et al, 2008). Hence the meaning of the whole word can be translated to Change to the better.

Kaizen is one of the core concepts in Lean, which is a process improvement discipline where the focus is to reduce waste and through this attain increased productivity and flexibility. Everyone in the organization is working on reducing waste; employees suggest improvements or carry out the improvement themselves when possible. This is where Kaizen comes in. *“Kaizen is meant to be integrated into normal day-to-day activities with the focus on eliminating waste, creating standardization, and having a clean, organized workplace. Improvements made through kaizen are generally small and subtle; however, their results over time can be large and long-lasting”* (Ortiz, 2006 p.31)

The first recognized proponent of kaizen was Masaaki Imai who wrote KAIZEN – The Key to Japan’s Competitive Success in 1986 (Berger, 1997).

When looking at suggestion systems there is a big difference between Kaizen oriented ones and the suggestion systems that are otherwise often used in western countries

According to Imai, American style suggestion systems have stressed the suggestion's economic benefits and provided financial incentives while the Japanese style suggestion systems have stressed the morale-boosting benefits of positive employee participation (Recht and Wilderom, 1998)

The traditional Western suggestion systems can be differentiated from Kaizen-oriented suggestion systems on two basic aspects; means and ends. While Kaizen-oriented suggestion systems are primarily interested in generating many small improvements, Western suggestion systems encourage pursuing innovations. While Kaizen-oriented suggestion systems force all employees to submit suggestions, the Western suggestion systems take a more individualistic and passive stance (Recht and Wilderom, 1998).

Six months before this study, Factory A did change their suggestion system from a Western-oriented to a Kaizen-oriented one. According to Berger (1997), history tells us that transferring concepts from one cultural and organizational context to another can lead to complete failure [continuous improvement and kaizen] but it seems that the change has gone relatively smooth. The Analysis part of this will show more information about the transition.

Creativity

It is of importance to acknowledge and account for the aspect of creativity when addressing the problem stated in this study, this because of the creative nature of problem solving and suggesting improvements.

In research on creativity, the focus has often been on intrapersonal determinants, that is personality traits of the person being creative, instead of external determinants, the creative situations or the circumstances for which it occur (Amabile, 1983). This study will look at creativity from the perspective of social psychology (investigating external determinants) since it is more relevant in the context from which this study is conducted. This view can however not be proposed as an answer to all questions about creativity any more then the personality approach or a cognitive approach can be proposed as a complete answer (Amabile, 1983).

In the article *The Social Psychology of Creativity: A Componential Conceptualization* Amabile (1983) presents the definition of creativity that will be used in this report:

“A product or response will be judged as creative to the extent that it is both novel and appropriate, useful correct or valuable response to the task at hand and the task is heuristic rather than algorithmic.” (Amabile, 1983 p. 360)

A study performed by Amabile et al (Amabile, 1988) showed that the second most common quality that promote creativity that were found in problem solvers was *Self-motivation* (Intrinsic motivation), right under *Various personality traits*. Also, the same study shows that most common quality that inhibits creativity, found in problem solvers, is lack of motivation. This shows that motivation can have an affect on creativity; both positively, when motivated, as well as negatively, when *amotivated* (see Self-determination theory). Creativity is also enhanced in an environment that is perceived to be comfortable and psychologically unthreatening, then the individual can relax the internal and external barriers of creativity (Williams, 2002).

Amabile et al (1986) claims that *“Explicitly contracting to do an activity in order to obtain a reward leads to lower levels of creativity than contracting to do the activity for no reward, or simply being presented with the task, or being presented with the task and a subsequent reward.”* (Amabile et al, 1986 p. 22). However, in a subsequent article, Amabile (1988) states that some people can work under strong extrinsic constraints and still remain creative. Under certain conditions external motivators may even increase creativity; the key seems to be the motivational orientation of the individual. If the individual already has low intrinsic interest in his/her work, then extrinsic motivators should at least provide some source of motivation.

To sum up, creativity has a personality aspect as well as an environmental. It can be increased by increasing the motivation of the individuals. If the individual has very low intrinsic motivation, extrinsic motivators can increase creativity; otherwise increasing intrinsic motivation is appropriate for increasing creativity. It is also important to create safe environment where self-censorship stop the creative thoughts.

How to motivate suggestions

This section of the report will shortly give you an idea about the existing research related to motivation in the context suggestion support systems. Most of it is based on research by Fairbank and Williams (2001; 2003) but it is also related to other research. The suggestions will be divided into three parts that touch different areas of the suggestion process which are important to consider; the confidence of the submitter, credibility for the process and organizational culture.

Create confidence

By making the task of submitting a suggestion less difficult, the threshold for making a suggestion is lowered, but it also has another positive effect that is brought up by Fairbank et al (2003). A more intuitive interface for submitting also boosts the employee's perception of their abilities, thus increasing the employee's expectancy (see Expectancy theory section for definition) for submitting. To maximize expectancy, the task of generating and submitting ideas must be easy. Simple electronic suggestion forms can assist the process of submitting by allowing suggestions to be saved and edited (Fairbank et al, 2003).

Another way of increasing the employees confidence to submit suggestions is by telling a success story. "*When managers publicize the stories of successful submitters, employees can learn from their peers' example that they too can be successful*" (Fairbank and Williams, 2001 p. 71). This can be seen as a vicarious experience, mentioned in social cognitive theory and the new method. If acknowledged by the employee it both increase expectancy if the employee himself is the person told about, as well as instrumentality when the employee sees that a suggestion is implemented.

Establish trust for the process

For the employees to be motivated to use the system they must also trust the process. Trust is necessary because it increases instrumentality (see Expectancy theory section for definition), the perception that a good suggestion actually will be implemented. A lot of the measures that can be done here have to do with providing the right information and providing transparency.

According to Fairbank et al, a major problem encountered by companies, especially in the past (Fairbank et al, 2003), is that employees perceive the evaluation process as being biased, that the evaluation process is influenced by company politics. By making the process systematic and transparent, and providing detailed feedback on suggestions that are not accepted the mystery surrounding the process is removed which might reduce the perception that the process is political (Fairbank et al, 2003). According to Fairbank and Williams (2001) it is also a good idea to use a cross-functional team to coordinate the evaluation process to increase the trust for the evaluation process. A cross-functional team is in this case a decision group that is comprised of persons from different departments and that include different expertise.

Giving the right feedback in the right time is a vital part of the suggestion support system. The possibilities for providing feedback on suggestions is increased as the Suggestion Support Systems are becoming more technologically sophisticated. Functions like sending an acknowledgement to the suggestion submitter that the suggestion has been read and provide information about what is going to happen next will encourage participation in the continuous improvement.

Many of the suggestions will not be judged as worthy of implementation and it is important that the suggestion handlers give constructive feedback in this case. According to Amable (1988), negative feedback must be more informative than judgmental. Criticism tends to suppress creativity, but informational feedback may actually be helpful since it can be used to improve the quality of the creative output.

When employees can monitor the process and see that the process is advancing through a series of stages, their confidence that their suggestions are handled appropriately will increase. In addition, features of the system that allows submitters to understand the decision process and reduce the chance that personal interests bias the process will also build confidence in the fairness of the system (Fairbank and Williams, 2001).

A tracking system that shows where each suggestion is in the evaluation process also demonstrates to submitters that their suggestions are being evaluated. Physical suggestion systems that rely on boxes seldom offer any tracking features (Fairbank et al, 2003).

Fairbank et al (Fairbank et al 2003) also suggests that a limit should be placed on the time allowed for routing each suggestion to evaluators and for their evaluations. *"Both computer and human aspects of the process must be structured effectively to promote high instrumentality. To ensure that suggestions are evaluated and that employees are aware that they are being evaluated, suggestion support systems should ensure a rapid, transparent, and interactive process"*(Fairbank et al 2003 p. 309).

Organizational culture

Having an organizational culture that is forgiving and foster creativity is a requirement for having a functional kaizen implementation. According to Axtell et al (2000), employees who work in what they perceive as a "safe" climate for creativity tend to make more suggestions. Anderson and West (1998) confirm this in their study where *"participative safety emerged as the best predictor of the number of innovations and team self-reports of innovativeness"* (Anderson and West, 1998 p. 245).

Fairbank and Williams (2001) writes that the trust for the system will increase and having a policy of asking for clarifications or revisions of ideas that are not usable in the form that they were submitted. Then the submitter feels that it is all right to submit a suggestion even if it might be rejected.

Summary

To shortly sum up this section, the following properties and parts of a suggestion system affect motivation:

- Simplicity
- Success story
- Perceived biased evaluation
- Feedback
- Ability to monitor progress

- Rapid evaluation
- Safe environment

These things will be covered in the interviews, even if the questions will change between each interview these things will be investigated in all of them.

PART 2

Attribution theory

The attribution theory is used to understand how individuals attribute behaviors, either the individuals own or someone else's, to something else.

According to the attribution theory, a person who perceives the cause of success for a task to be out of his/her control may lose motivation to perform the task. In the same way, persons who attribute their success to themselves are more likely to have a higher motivation to perform the task at hand (Kelley and Michela, 1980). This perceived causality in different circumstances will be related to other motivation theories in this report since it can be seen as either increasing or decreasing instrumentality (see Expectancy theory).

The *Covariation model* to explain has been created to explain how people determine the cause of behavior, if it is internal or external. That person then examines three attributes; *Consistency*, *Distinctiveness* and *Consensus*. (Orvis et al, 1975)

Consistency indicates whether the observed behavior will be repeated by the person when facing the same circumstances. It is high if the person acts the same way when facing the same type of situation.

Distinctiveness indicates whether the behavior will occur when the person faces another situation. If the person behaves in the same way in a variety of contexts, then the distinctiveness is high.

Consensus indicates to what degree the observed behaviour occurs when other persons are facing the same circumstances. If other people are seen acting the same way as the person in the same situation, then the consensus is high.

When all of these three factors are high there is an external cause for the behavior. If Consistency and Consensus are high but Distinctiveness is low, then the cause of the behavior is attributed to internal factors.

There is however one common misconception that usually occurs, called *self-serving bias*. This bias says that people tend to make other attributions to their own successes and failures than the successes and failures of others. When a person succeeds, he/she often perceives the success to be generated by internal factors (like effort or ability) instead of external factors (like luck or difficulty). The opposite applies for failure. That is, the cause is often attributed to external factors instead of internal (Miller and Ross, 1975; Mezulis et al, 2004).

The self-serving bias need to be considered in the context of suggestion support systems since it affects how the suggestion submitter perceives the response of his/her suggestion. If the suggestion submitter receives a rejection on his/her suggestion there is a considerable possibility that he/she will perceive the rejection to be a result of external factors like unbiased evaluation. It can also have a positive effect when the suggestion is approved and this is perceived as being a result of the submitters' own ability.

Social cognitive theory

“Among the types of thoughts that affect action, none is more central or pervasive than people's judgments of their capabilities to exercise control over events that affect their lives.” (Bandura, 1989 p. 59) This quote by Bandura summarizes the essence of social cognitive theory quite well. In the same article he writes that people's judgments of their own capabilities additionally influence whether their thought patterns are self-hindering or self-enhancing.

A central concept in social cognitive theory is self-efficacy, which can be explained as a person's judgment of his/her capability to perform action in a successful manner. It differs from both capability and self-esteem; Capability because it is a perception on the own capacity and not the reality; Self-esteem because it relates to a person's ability to reach a goal and not self worth.

Sources of information

According to Bandura (1977, 1982, 1989), judgments of self-efficacy, whether accurate or faulty, are based on four principal sources of information. These sources will be used in the new model to explain how historical events affect the motivation to perform a task. The sources of information are; *Enactive attainments*, *Vicarious experiences*, *Verbal persuasion* and *Physiological state*.

Enactive attainments, which is the most influential source of information, is based on one owns performance. “*Successes heighten perceived self-efficacy; repeated failures lower it, especially if failures occur early in the course of events and do not reflect lack of effort or adverse external circumstances*” (Bandura, 1982 p. 126)

Vicarious experiences is information about what happened to others when doing the behavior, as the own experiences are not the only sources of information. “*Seeing similar others perform successfully can raise efficacy expectations in observers who then judge that they too possess the capabilities to master comparable activities*” (Bandura, 1982 p. 126). In the same way, observing others who are perceived to be of similar competence fail despite high effort lowers observers' self-efficacy.

Verbal persuasion is another source of information that can increase self-efficacy. It is limited in its power to create a lasting increase in self-efficacy, but it can contribute to successful performance if the heightened appraisal is within realistic bounds. It therefore has greatest impact on people that already have high self-efficacy.

Physiological state (Bandura, 1982), or Emotional arousal (Bandura, 1977), is also a source of information that affects self-efficacy. The self-efficacy is changed according to how one interprets the physiological reactions of the body. Since the author of this report does not perceive the psychological state to be relevant when submitting suggestions, this because submitting a suggestion over a form does not create any physiological reactions.

Motivators

When looking at the motivational aspect of social cognition theory Bandura (1989) states that performance of observationally learned behavior is influenced by three major types of incentive motivators; *direct*, *vicarious*, and *self-produced*.

Direct motivators refer to positive own experiences. “People are more likely to exhibit modeled behavior if it results in valued outcomes than if it has unrewarding or punishing effects” (Bandura, 1989 p. 24).

Vicarious motivators refer to how observed cost and benefits occurring to others influences ones behavior, in a similar way as directly experienced consequences. “People are motivated by the successes of others who are similar to themselves, but are discouraged from pursuing courses of behavior that they have seen often result in adverse consequences” (Bandura, 1989 p. 24).

Self-produced motivators provide a further source of incentive motivation based on personal standards of conduct. “The evaluation reactions people generate to their own behavior regulate which observationally learned activities they are most likely to pursue. They express what they find self-satisfying and reject what they personally disapprove” (Bandura, 1989 p. 24).

Summary

To sum up, self-efficacy should not be neglected when designing a suggestion support system since it is a requirement for willingly performing any action; you will not perform something that you believe you will fail in. Self-efficacy also provides the motivation for the task and the motivators mentioned in this section can be used to motivate participation in the continuous improvement.

Self-determination Theory

According to Deci and Ryan’s (1985) self-determination theory, three dimensions of motivation are needed to examine motivation; *extrinsic*, *intrinsic* and *amotivation*.

Intrinsic motivation refers to the engagement in an activity for the pleasure and satisfaction of performing it. Intrinsically motivated individuals voluntarily participate in an activity without feeling pressures, external or internal, to do so and without expecting rewards (Deci and Ryan, 1985; Barkoukis et al, 2008).

In contrast, *extrinsic motivation* refers to the engagement in an activity to obtain rewards or avoid punishment. Being engaged in an activity because of internal or external pressures is also to be considered as external motivation (Deci and Ryan, 1985; Barkoukis et al, 2008).

The *amotivation* dimension refers to the absence of contingency between actions and outcomes. Amotivated individuals are not perceived as having a specific purpose or goal and they do not seem to approach ends in a systematic way (Deci and Ryan, 1985; Barkoukis et al, 2008).

These three dimensions, especially the first two, should be considered when designing a suggestion system. In many cases, an action that reinforces one of these two motivation dimensions decreases the other one. That is why they are important to consider. In the Kaizen section the difference between Kaizen-oriented and Western-oriented suggestion systems were discussed. You could say that Kaizen oriented suggestion systems enhance intrinsic motivation while Western-oriented ones enhance intrinsic motivation.

Self-determination Theory contains 4 sub-theories that try to explain intrinsic motivation as well as the relationship between intrinsic and extrinsic motivation as well as amotivation. These theories are; Cognitive Evaluation Theory, Organismic Integration Theory, Causality Orientation Theory and Basic Needs Theory. Only two of these theories; Cognitive Evaluation Theory and Basic Needs Theory, will be explained since only these theories will be used and mentioned in this report.

Cognitive Evaluation Theory

Cognitive Evaluation Theory proposes that intrinsic motivation can be affected by external factors in two kind of ways; *Perceived Locus of Causality* and *Perception of Competence* (Deci and Ryan, 2002).

The concept of *Perceived Locus of Causality* says that intrinsic motivation is decreased when an external contextual event crates a change towards a more External Locus of Causality, and if the event creates a change towards a more Internal Locus of Causality intrinsic motivation is increased. This concept relates to the need for autonomy (Deci and Ryan, 2002). *“Tangible rewards which were typically found to decrease intrinsic motivation , were theorized to have their effect by prompting a shift toward a more external perceived locus of causality for the reward activity”* (Deci and Ryan, 2002 p. 11).

The concept *Perception of Competence* basically says that when a contextual event increases the perceived self competence of performing the task at hand, it also increases the intrinsic motivation of the individual. This concept relates to the need for competence (Deci and Ryan, 2002).

The theory also makes a distinction between the informational and controlling aspect of a contextual event or environment. For example, positive feedback from ones boss are in most cases perceived as informational, but if the boss then says “you should always work this well”, then it may be perceived as a controlling event. The informational aspects tend to shift the focus towards an internal locus of causality which increases intrinsic motivation by providing information and feedback on the individual’s performance and thus increasing the individual’s perception of competence. The controlling aspects do however shift towards external lotus of causality by increasing the pressure to achieve the specified outcomes (Deci and Ryan, 2002).

The impact of the *perceived locus of causality* should be considered when selecting a reward system for a Kaizen-oriented suggestion system. While rewards increase extrinsic motivation, it also can decrease intrinsic motivation. Perception of competence is also important to consider, but its effect on intrinsic motivation has more to self-efficacy and the effect that now will be described in the Basic needs theory.

Basic Needs Theory

According to the Basic Needs Theory individuals have a need for autonomy, competence and relatedness. These needs are necessary for a person to develop and function in a healthy way (Deci and Ryan, 2002). Many motivation theories that consider intrinsic motivation are based on this theory since fulfillment of the need for competence increase intrinsic motivation.

Summary

The Self-determination theory define and explain the relationships between three dimensions of motivation; extrinsic motivation, intrinsic motivation and amotivation.

The concept of perceived locus of causality explains the relationship between intrinsic and extrinsic motivation, and how a change in locus of causality can change both.

Perception of competence was also explained together with the Basic Needs theory; if the need for competence is fulfilled, then intrinsic motivation increase.

Expectancy theory

The expectancy theory was created in 1964 by Vroom (1964) and has since then held a major position in the study of work motivation (Van Eerde and Thiery, 1996). Vroom indicated that the motivational force for performing a task is affected by three variables; Expectancy, Instrumentality and Valance. According to the Expectancy theory the motivational force for performing a task is greatest when the performer believes that (Fairbank et al, 2003):

- he/she is able to successfully complete the task (high expectancy),
- completing the task will lead to certain outcomes (high instrumentality) and
- the outcomes for completing the task are attractive (high valence).

Expectancy

Vroom described expectancy as a subjective probability of an action or effort leading to an outcome or performance. In practice, expectancy has also been measured as the perceived relation or correlation between an action and an outcome. In addition, expectancy has been interpreted as the subjective probability that effort leads to the outcome of performance (Van Eerde and Thiery, 1996). In other words, people are more motivated to engage in activities for which they believe they are competent.

When expectancy in the context of suggestion submitting, it can be seen as the persons perception about his/her competence at the task at hand. Expectancy is not seen as a motivational factor itself but more a regulator of valance, that can decrease the motivational force of the person.

Instrumentality

Vroom explained this concept as an outcome association, and it has been interpreted not only as a relationship between an outcome and another outcome but also as a probability to obtain an outcome (Van Eerde and Thiery, 1996).

If expectancy is the person's perception of the environment, then instrumentality is the person's perception of the environment. In the context of suggestion submitting, it can be seen as the chance that a good suggestion from the persons part will in fact be implemented. E.g. if the person thinks that the evaluation process is biased, then the instrumentality. It is, just as expectancy, a regulator of valance.

Valance

One of the most fundamental and obvious concerns in employee motivation is the attractiveness of the incentives offered for performance, valance represents the attractiveness of these incentives.

Vroom described this concept as all kind of affective orientations toward outcomes, and it is interpreted as the importance, attractiveness, desirability, or anticipated satisfaction with outcomes (Van Eerde and Thiery, 1996). The expectancy theory notes that the more attractive the rewards to anyone who successfully performs a task, the more motivated he or she is to perform that task (Fairbank and Williams, 2001).

Summary

Expectancy Theory is a motivation theory that explains how a person's motivation to perform a task can be affected by outside factors. The three terms expectancy, instrumentality and valance are used to describe different requirements for motivation and how these can be affected to change motivation. It is suitable to use in the context of submitting suggestions since it is possible to observe how different attributes of the suggestion system affects motivation to perform the task of submitting a suggestion.

New Model

According to Porter and Lawler (1968) models that are based on the expectancy theory need to address two issues. First, the expectancy theory is accused of being ahistorical because of its vagueness about the kind of previous learning experiences that produce the different expectancies. Also, the expectancy theory does not specify how outcomes acquire positive or negative qualities for individuals. To address these issues in this study a new model has been created by relating the expectancy theory to other motivation theories that address these issues.

The first issue, about the vagueness of historical learning experiences, will be addressed by Social Cognitive Theory (SCT). Self-efficacy, which is a central concept in SCT, can be explained as a person's perception that he/she will be able to succeed at a task. It addresses the same thing as expectancy and instrumentality in expectancy theory; you could say that instrumentality addresses the environmental aspect of self-efficacy while expectancy addresses the internal. This relationship makes it possible to use the research on SCT to describe the historical learning experiences.

The second issue, concerning the lack of specification on how outcomes acquire positive or negative qualities for individuals, will be addressed using the Self-determination theory and the Attribution theory. The concepts of Perceived Locus of Causality and Perception of Competence from the Self-determination theory addresses how the outcomes from a task or behavior acquire qualities for the individual; Perceived locus of causality addresses the effects of rewards, and perception of competence addresses the effect of the success or failure on Self-efficacy. The Attribution theory addresses how the success or failure is interpreted by the individual himself/herself as well as by other persons.

Figure 1, shown below, explains how motivation is affected by different concepts that are related to a person that is to perform a specific task. The structure is to a large extent based on the construct of the expectancy theory, but self-efficacy is added as an aspect of motivation that is affected by both Expectancy and Instrumentality. Also, the perceived determinants of success has been added as a two sides of instrumentality, this to show how Attribution theory can be related to expectancy theory.

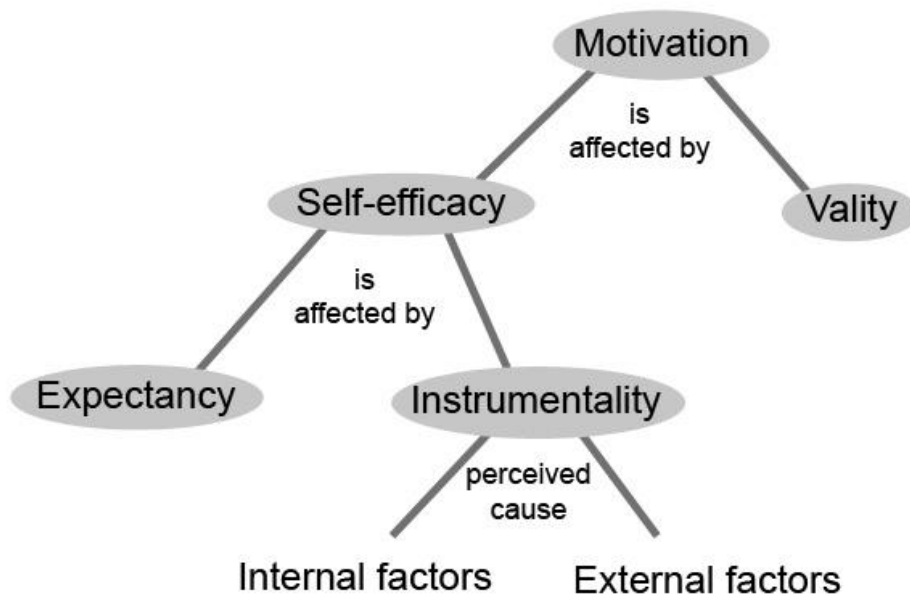


Figure 1. Motivational terms relationship

Self-efficacy, which can be explained as belief in ones capability of successfully performing a task, is in this new model put along with Valance as cause for motivation. Self-efficacy then has two parts; Expectancy, which is the individuals perceived ability to perform in a task, and Instrumentality, which is the perceived degree in which performance is correlated with success. Self-efficacy might easily be mistaken to be the same as expectancy, but there is a difference.

As stated before, expectancy is high if the person believes that he/she will perform well at a task, but for the person to have a high self-efficacy the person must also perceive that this high performance will lead to success. Here Instrumentality comes into the picture; if it is high, then the success is only depending on the performance, while low instrumentality means that success is dependent on external factors (like luck). The two sides (extremes) of Instrumentality have been added to the figure to illustrate where the attribution theory comes into the picture. These sides have a bipolar relation that can vary in degree toward one side. When internal factors are perceived as determinants for success then Instrumentality is high, and when external factors are perceived as determinants for success then Instrumentality is low.

The relationships explained in Figure 1 make it possible to create a model for how intrinsic motivation changes before and after a task has been performed. This is visualized in Figure 2.

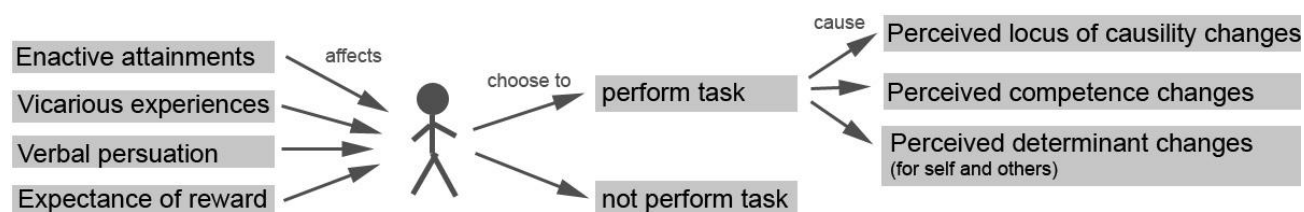


Figure 2. Motivational change

The history, what happens before the person choose about whether or not to perform the task is that the person has received information from the sources mentioned in Social Cognitive Theory; *Enactive attainments*, *Vicarious experiences* and *verbal persuasion*. *Expectancy of reward* has also been added since this information also affects the choice of the person. Then the person ether chooses to perform the task or not. If the person performs the task a number of effects will occur that changes the motivation of the person; The perceived locus of causality may change, Perceived competence for the task may change and the perceived determinant for success may change. These changes will have an effect on the motivation the next time a person is choosing whether or not to perform the task. The perceived competence as well as the perceived determinant for success may also be changed on others observing the task depending on how that person perceive as being the cause for the success or failure.

One thing that needs to be stated about this New Model is that it has been assumed that high expectancy and instrumentality can have a motivation effect itself in the same time as it has a regulating effect on valance. This assumption is based on the early need theories, that individuals innate a need for personal development and growth. Most of the theories associated with intrinsic motivation have their roots in early need theories (Cheser, 1998), but this connection that I have made has not been scientifically confirmed.

Summary

The first part of the theory section first explained continuous improvement as well as the concept of Kaizen. This was followed by some research in Creativity, which was presented to show how motivation is related to creativity. At the end, research about motivation in the context of suggestion systems were presented, which gave suggestions on how to enhance motivation. These suggestions related to the model and serves as a base for the interviews.

In the second part of the theory section, four motivational theories were described; Attribution theory, Social cognitive theory, Self-determination theory and Expectancy theory. These theories were then used to form a new model for motivation in the context of suggestion systems that gives a broader view on motivation than the theories by them selves.

THE COMPANY

Brief organisational history

The company that has collaborated in this report is a manufacturing company with over 120 years of history. It has a large variety of products and is currently (2008) the worldwide leader in its business segment. The company has its manufacturing plants located in different countries but the factory that is investigated in this report is located in Sweden. This factory has started an organizational change to become a lean oriented organization and along with this they have also started an implementation of Kaizen, a concept and tools for continuous improvement.

Suggestion system

Factory A has used several suggestion systems with different processes, reward systems as well as means of collecting the suggestions. Six month prior to this study, the suggestion system changed from one focused on innovations to one that is more based on a Kaizen way of thinking. It is necessary to present some information on the old suggestion system since some of the results from the interviews refer to this system.

Before the change of the suggestion system, employees at Factory A were able to submit suggestions by writing it on a paper and putting it in one of the suggestion boxes. The suggestion was then brought up on a meeting where a change committee reviewed the suggestion and made a choice whether or not to implement it. The committee was composed of persons from different parts of the organization, and its members changed after a while. If a suggestion was approved the employee received half of the revenues generated by the suggestion in the first year. It was also possible to submit suggestions group wise. The reward was then equally divided among the submitters.

Three major changes were done in the new suggestion system; a computer based suggestion support system was implemented in addition to paper forms, the reward system was changed and the decision process was changed.

A computer based suggestion support system was created to support the new suggestion system. Now the employees use an application on the company intranet to submit suggestions. The suggestion submitter or submitters fill a form where the names of the submitters are inserted and the department that is to make the decision is selected. The submitter then describes the suggestion using two text fields; the first field is for describing the situation today, the second field is for describing the improvement (What, how and why). The suggestion submitter also has the option to attach a file to the suggestion. When he/she then presses the “Send/Save” button, the suggestion is stored in a database together with the attached file and an email is send to the person in charge of the selected department (The Suggestion handler).

After the suggestion is submitted the suggestion handler has 48 hours to make a decision about the suggestion. The alternatives are “Approved”, “Denied” or “Under evaluation”.

If the suggestion is denied the suggestion handler has to motivate his/her decision in a text field. The suggestion should then be closed; the suggestion handler does this by writing the current date in a field.

The suggestion handler sets the suggestion under evaluation if the suggestion needs to be investigated or discussed further, he/she has to provide an explanation of how it is investigated and why in a text field. The date when a decision is to be made must also be specified. The response from the suggestion handler is saved together with the suggestion in the database and if the suggestion is approved a mail is sent to the suggestion implementer.

If the suggestion is approved, the suggestion handler selects someone to implement the idea (suggestion implementer) from a dropdown menu containing all employees. The suggestion handler also must also write a comment or motivation why the suggestion was approved and set a date for when the suggestion is to be implemented. An email is then automatically sent to the suggestion implementer with the information about the suggestion that is stored in the database. After the suggestion is implemented the suggestion implementer usually contacts the suggestion handler who open the suggestion in the suggestion support system and add some additional information to the suggestion; what has been done and when was it done. The suggestion handler is then to close the suggestion in the system by filling in the current date.

If a suggestion is approved the suggestion submitter or submitters are rewarded. If there is only one submitter, then he/she receives a lottery ticket as a symbolic token of appreciation. If there are two or more suggestion submitters, then the suggestion is registered as part of a competition, at the end of the year the workgroups that have submitted the most suggestions receive a prize in the form of a trip which the group is to go on together. There is also a reward in the form of a bonus that is added to all the employees' salary if the company's goals for continuous improvement are met (12 suggestions per employee and year).

The suggestion support system has a reminder function that sends an email to the suggestion handler if a decision is not taken in time, and also to the suggestion implementer if the suggestion is not implemented before the date specified by the suggestion handler. The administrative work in the new suggestion system is less when looking at the coordinative aspect but they still need to administrate the rewards and the task of gathering the information that is required to generate the monthly report on improvement is far too heavy.

According to the improvement coordinator, the system works well in most parts but he/she thinks that there is a potential for improving the usability. Also, the system is partially hard to maintain and the monthly follow-up of the continuous improvement requires a large amount of administrative work.

RESULT AND ANALYSIS

Introduction

During the study 22 persons have been interviewed about their habits, experiences, opinions and thoughts about suggestion giving and the suggestion system at Factory A. In addition to the interviews, information was gathered from observing the work environment, reading suggestions in the suggestion support system and through conversations with the persons responsible for the suggestion system. The gathered information has been used to continuously change the layout of the interviews and some of it will also be seen here.

This part of the report will show the analyzed result from the study, and the result will then be discussed and conclusions drawn.

Result and Analysis is divided into the same categories as *How to motivate suggestions*, found in the first part of the theory section. Two new categories has been added since some unexpected information arose during the interviews. First, a *group* part has been added to the *Organizational culture* section. Also, *Rewards* has been added as a separate section.

Create confidence

Simplicity

Factory A uses a computerized suggestion support system to support the suggestion process; suggestions are submitted by filling a form located at the intranet homepage. This approach is similar to what Fairbank et al (2003) have suggested.

Some of the older employees at Factory A with little computer experience think that the suggestion support system is a little complicated. For this reason Factory A still have paper forms as an alternative to using a computer. When receiving a suggestion in paper the administrator types the suggestion into the system himself/herself using the information from the paper form.

It is noticeable that the suggestion support system at Factory A has been created with the purpose of providing a user friendly and simple way of submitting, managing and reading suggestions. There are improvement possibilities in this area that could be achieved by reducing the number of fields in the form to a minimum and simplifying the menu, but overall they have relatively simple system.

During the interviews simplicity was not mentioned as a motivating factor, it was however referred to as something that lowers the threshold so that the people that are not used to submitting ideas feel that they can use the system even though they are not used to it. One of the employees said to me that “It is the ones that only submit suggestions occasionally that you need to catch by making the system simpler. The risk is that they think that ‘this is nothing for me’ since they have to use the computer”. This is why simplicity needs to be considered when creating a suggestion support system.

Success story

Telling a success story to a person may affect that person’s motivation toward the activity told about if the persons expectancy, instrumentality or valance changes when hearing the story. This could be done at A by publicizing the best or most interesting suggestion of the month at the intranet. This is not currently done but it would probably be a good idea to introduce this. This type of feedback will, in an easy comprehensible way, give the reader a better understanding of the Kaizen effort and also actualize it. It is also a good way for the company to balance talk and rumors among the employees that might focus negative aspects of the suggestion system.

Expectancy could either be increased or decreased by hearing a success story. If the person relates to the person in the success story and thinks that ”Wow, I could also do this!” then expectancy increases, but if the suggestion submitter in the success story is perceived as “being in an other league” of oneself in e.g. creativity, then the success story can have an decreasing effect on expectancy. In relating this to the theory section, you can say that if the behavior of the success story has high consensus (see Attribution theory), then expectancy could be increased. If the consensus is low, expectancy could instead be decreased.

Instrumentality can also be increased by success stories; when reading about the success story a person could also get more insight into the process. Insight into the suggestion process can according to Fairbank et al (2003) increase instrumentality.

One of the more profound effects from publishing success stories is the effect on the person that is in the success story. He/she will probably become more motivated because someone is writing about his/her good idea. There is a great chance that the expectancy of the person increases and the valance towards suggestion submitting should increase for all employees in the organization if being published is perceived as a good thing that gives positive attention to good suggestion submitters.

Establish trust for the process

Perceived biased evaluation

Six months before this study, when the new suggestion system was introduced, the decision process distinctly changed. Before the suggestions were evaluated by an improvement committee comprised of people with different areas of expertise. After the new system was introduced, the suggestions have been sent to the workgroup leaders instead so that they can make a decision.

Based on what Fairbank and Williams (2001) has written one might think that employees at Factory A would think that the old decision process was less biased then the new one. According to Failbank and Williams (2001) using cross-functional teams for the evaluation creates more trust for the process and thereby increases instrumentality. The result of the study does however show the opposite; that the employees at Factory A have more confidence for the new decision process then the old one. While some of the employees experienced the old decision process as biased and influenced by company politics, everyone experienced the new decision process as unbiased. There are several possible explanations why the new decision process is perceived as less biased, probably all of these explanations affect the common perception to some extent.

One explanation is that Factory A had some problems in the old suggestion system when it came to calculating the reward for the suggestions. For some of the suggestions is was hard to calculate its financial value and this lead to some conflicts between the suggestion submitters and the board. Once the factory was even forced to settle a dispute concerning a suggestion reward in court. These situations become more sensitive when there are high rewards for suggestions.

Another explanation why the new suggestion decision process is perceived as less biased is that the employees have confidence for their workgroup leader. These leaders often start as one of the workers and then rise to the position because of leader qualities, and this gives them more credibility to the other workers. Also the interviews with the workgroup leaders (Suggestion handlers) showed that most of them talk the suggestions through with their workgroups in many cases. This is a successful way of creating trust for the decision process. If the suggestion submitter's closest colleagues, and maybe the submitter himself/herself, take part in the decision process, then he/she is likely to get insight and hopefully also understanding of the decision.

Feedback

When observing the suggestion process at Factory A, two types of feedback were found that are directed towards suggestion submitters. The first type was feedback on a suggestion which comes from the suggestion handler through the suggestion support system or sometimes also verbally. The second type of feedback was directed towards the whole organization and contained information about the continuous improvement goals and to what extent they have been reached.

The first type of feedback, feedback on suggestions, is important to consider when analyzing a suggestion process or a suggestion support system. When relating this type of feedback to the new model that was created in the theory section, motivation is affected in two ways. First feedback can have a positive effect on efficacy by giving appraisal when a suggestion is approved, if the suggestion is rejected informative constructive feedback can have the same effect if the suggestion submitter feels that he/she has learned something from the feedback. Second, proper feedback can prevent a decrease in instrumentality if the feedback is informative since people, according to the attribution theory, tend to blame their failures on external factors like a biased decision process.

During the study a negative effect on both expectancy as well as instrumentality as a result of lack of feedback was observed. This confirms what is stated at the theory section about the correlation between feedback and self-efficacy. The enhancing effect that informative feedback can have on expectancy was not observed sufficiently to make any conclusions, only the fact that lack of informative feedback has a negative effect.

The second type of feedback, the one that is directed towards the whole organization, is a force that can have a positive effect on instrumentality. By showing the goals for Kaizen and showing to what extent these goals have been met. Telling success stories can also be seen as a type of feedback where the whole organization get informed about successful suggestions, but this has been discussed earlier in the result section.

At Factory A paper message boards and monitors with slideshows are used to inform employees. The paper message boards are located through out the facilities of the factory, at the different workstations, while the monitor is located in the food diner. The information about the number of suggestions is only shown on the monitor in the diner because it requires a lot of work keeping the paperboards updated monthly. The monitor slideshow shows in a diagram the number of suggestions submitted the month prior, the different bars in the diagram shows the number of suggestions from different departments. The feedback provided by the slideshow monitor is important since it creates a transparency to the continuous improvement so that employees can see how well the different departments at the factory are doing when it comes to suggesting improvements.

Ability to monitor progress

The ability to monitor the progress of ones suggestion is a functionality that has a great effect on instrumentality. By being able to see what is happening with the suggestion, the suggestion submitter get insight into the process.

At Factory A all employees are able to look at all the submitted suggestions using the application on the intranet. There they can see if a decision has been made, what the decision is and the motivation behind the decision. Information about how the suggestion was implemented can also be seen here if the suggestion was approved. Although the function for monitoring suggestions is a good tool, it is not that frequently used by the employees. The suggestion handlers and the suggestion submitters that often use the system to submit suggestions do not have any problem reading suggestions, but for the employees that do not use the system that often it is not that easy.

It wasn't possible to confirm that the possibility to monitor the progress of the suggestions have had a positive effect on instrumentality since not that many used the function. To be able to observe this an easier search function would have to be made where one could search for suggestions with the submitter as search criteria.

Rapid evaluation

Rapid evaluation is according to Fairbank one factor that increases instrumentality. He suggests that a limit should be placed on the time allowed for routing each suggestion to evaluators and for their evaluations.

At Factory A, the routing for the suggestions is instant in the current suggestion support system since the suggestion is automatically connected to the suggestion handler after the suggestion submitter have selected who is to make a decision about the suggestion. A mail is then sent to the suggestion handler that a suggestion has been directed to him/her.

When introducing the current suggestion system at Factory A, rules about response time was set up; the suggestion submitter should receive an answer for his/her suggestion within 48 hours and if the suggestion is set under investigation it should be decided within 14 days whether or not it should be implemented.

All of the interviewed suggestion submitters except two perceived the decision process to be rapid. The two persons who disagreed said that some departments did not follow the time restrictions and since they had not received a reply they did not know what was happening with the suggestion. The restrictions aren't always followed because of various reasons, e.g. sometimes an issue needs to be addressed at a specific meeting.

The reminder-mail function in the current suggestion support system at Factory A is a successful way of improving the rapidness of the decision process as it reminds the suggestion handlers and suggestion implementers to handle the suggestions. The interviewed suggestion implementers perceived the mail reminders as a support instead of something annoying.

Organizational culture

Safe environment

In the situation of suggestion submitting, a safe environment is a workplace where the person feels that he/she is able to submit a suggestion without risking some sort of social punishment from colleagues because of the outcome, whether it is envy because of a successful suggestion or mockery because of a stupid suggestion.

When interviewing the suggestion submitters, they were asked whether or not they were afraid of submitting a stupid suggestion, and all of the people that were asked this question said that they were not. Based on what I have observed when staying at the factory I perceive that most of these answers are probably true. There was however some tendency that the employees from the same workgroup seemed to have the same opinion about submitting suggestions and the interviewed employees that hadn't submitted any suggestions all worked in a group where few suggestions were submitted. An unsafe environment could be an explanation why some workgroups continuously submit fewer suggestions than other. This observation will be further discussed in the next section concerning groups.

An unsafe environment can also come from the perception that a suggestion that is implemented will create envy among colleagues. Since the currently used reward system at Factory A mainly is group based and the rewards are perceived as being small, at least compared to the old system, no envy was found during the interviews. The phenomenon did however arise in an interview when two suggestion submitters were asked about what they thought about the old reward system. They said that "it worked until ten years ago when that guy was rewarded with one million (SEK)". They said that after that event some suggestions were implemented and rewarded with several thousand SEK but after a while it died out and people stopped submitting suggestions in the same extent as before. The two suggestion submitters said that it probably died out because of uncertainties in the rules. It was not clear what was part of the job description and what was not. When asking another employee about the old reward system he said that the large rewards created envy among the employees. The fact that the old system decreased the environment safety was further confirmed by one of the persons responsible for the suggestion system, who said that one of the reasons for changing the reward system was because it created envy and prohibited collaboration among colleagues.

The reward systems effect on motivation will be discussed later in this report but one conclusion that can be drawn is that the perceived environment safety, and thereby also the intrinsic motivation, of a person can in the context of suggestion submitting be affected negatively by a generous reward system. It is however hard to estimate how the total motivation force of submitting suggestions is affected since the same reward system that decreases environment safety and thereby intrinsic motivation in the same time increases extrinsic motivation.

Groups

The fact that colleagues can have an effect on intrinsic motivation through the perception of environment security was discussed earlier in this section. The influence of groups on intrinsic motivation will now be further discussed.

One of the interview questions that was put to all the suggestion submitters was “Do you prefer to submit suggestions individually or in a group?”. The majority of the questioned said that they prefer to work in a group when submitting suggestions, the reason for this is that it is safer. One of the interviewed persons said “then you don’t have to keep it to yourself and wonder; was this idea right? And maybe it was wrong”. The same person then confirmed that it had to do with confidence. The persons who thought that submitting suggestions individually was better were all people that considered themselves as creative persons and good suggestion submitters. The interviews thus indicate that group submitting can be used to increase expectancy, but if the individual already has high expectancy it is not changed.

The extent to which the employees were affected by their workgroups was not anticipated before the interviews were conducted; the importance of considering the workgroups did however become apparent as early as in the first interviews. Comments like “We usually do it this way, write the whole workgroup as the submitter” and “It has only been small suggestions, but we believe that it is improvements anyway” were answers to questions about how the interviewed person submits his/her suggestions. This indicates that a common view about suggestion submitting could be found among the employees in the same workgroup.

This common view among close colleagues may not be that surprising since the colleagues within a workgroup spend a lot of time together and relate to one another, but this was not mentioned in literature used for this study. The attribution theory explains how motivation for a behavior changes when observing others showing the same behavior, but in this situation it seems to have more to do with group psychology and conformity than observing a behavior.

The interviews conducted in this study indicate that groups need to be taken into consideration when designing a suggestion system that promotes suggestion submitting. This can be done by dividing the bonus that is to be paid to all employees if the kaizen goals (12 suggestions per employee and year) are reached, so that it is paid only to those workgroups who fulfill these goals. This forces the workgroup leader to actively promote Kaizen and encourage his group to participate if the group is to receive the bonus.

Rewards

The issue of rewards is one of the most complicated problems when creating a well functioning and motivating suggestion system. During the study this arose as one of the main problems associated with the new suggestion system. This section will discuss some of the issues that have been identified throughout this study, associated with rewards.

The reward system that is currently used on Factory A gives small rewards that are supposed to be a symbolic token of appreciation; if the approved suggestion was submitted by a single person a lottery ticket is the reward and if it was submitted by a group the suggestion is registered in a competition where the department that have given the most suggestions wins a trip. A bonus is also given to all employees if the goal for continuous improvement (12 suggestions per employee and year) is reached. In the old suggestion system the suggestion submitter was given half of the revenues of the first year from the suggestion, at one occasion this amounted to one million Swedish crowns.

The contrast between these two reward systems is quite large and the extensive change is one of the main factors that decrease the motivation to submit suggestions at Factory A. A majority of the interviewed employees of Factory A express that they do not like the current reward system and some of them feel that there is no point in submitting suggestions since they do not get anything out of it. This raises the question why the board at Factory A decided to change the old reward system. The employer gets a proportional large reward and the company get half of the revenue the first year and all of the revenue after that, it sounds like a good deal for both parties.

One of the answers for this question arose in one of the interviews when two employees were asked what they think about the old Suggestion system. They said that “It was working up till that guy was rewarded one million (SEK) ten years ago. The number of suggestions was then significantly decreased. It was probably because of indistinctive rules and unwillingness from the company, there were discussions about what is part of your duty as an employee and what should be seen as a rewarded suggestion”.

Later when talking to the change coordinator two other reasons as to why the company has chosen to change the rewarding system arose. One of them is that the large rewards from the old reward system created jealousy among the employees and it encouraged them to hold their ideas to themselves and not discuss them with anyone. The new reward system encourage group suggestions since the rewards for group suggestions are higher than the rewards for single person suggestion.

The other reason why Factory A has changed the suggestion system is that the old reward system encourages large and high profit innovations. As Kaizen is being introduced to the factory, the board wants to change the focus to small improvements that can gradually shape the organization to something better and more effective. This difference between Western-oriented suggestion systems and Kaizen-oriented ones is described in the theory section. It seems that the only way of getting a more Kaizen oriented suggestion system is by decreasing the rewards and by that making the reward system what could be perceived as less fair. This might make some employees keep their ideas in or take their ideas elsewhere. One way of solving this is by making special arrangements in some cases where an employee has a profitable innovation (not improvement), and try to keep creative individuals by giving them new positions where their ideas can be better fostered.

I believe that the current reward system, even though it is thought less motivating by many people, is better for the continuous improvement than the old reward system, and this is because it supports Kaizen in a better way. During a transition a lot of people will be disappointed but it will probably improve with time. Some of the interviewed employees had the same view, that this rewarding system is more “sound” and that the reluctance is part of the transition.

CONCLUSION

The problem that has been investigated in this report is how the suggestion process and suggestion support system should be designed to serve kaizen in the best way possible. Different aspects of the suggestion process and suggestion support system have been investigated at Factory A where Kaizen has recently been implemented. The following conclusions can be drawn from this study.

Simplicity was mentioned as an important aspect of the suggestion support system that lowers the threshold for inexperienced suggestion submitters and according to the new Model and Faibank and Williams (2003) it enhances intrinsic motivation by increasing expectancy.

Success stories were not used at Factory A, which made it impossible to investigate. Fairbank and Williams (2001) does however state that it can serve as an enhancer for expectancy and if it is done in the right way it could also serve as an enhancer of valance, both which increase intrinsic motivation. This would be interesting to examine in future research.

The current decision process at Factory A was, unexpectedly, perceived as being less biased than the old one, using cross functional groups for decision-making. This contradicts Fairbank and Williams (2001) beliefs, but the result from the study shows evident signs and the discussion in the Result and Analysis section provides a possible explanation.

Examples of both good and bad feedback were observed at Factory A. The negative effect that lack of feedback can have on motivation was confirmed. The positive effect that constructive feedback, according to Fairbank and Williams (2001), is supposed to have on motivation was however not confirmed, this due to lack of planning before the interviews. The positive effect that, according to Fairbank and Williams (2001), comes from the ability to monitor the progress of ones suggestions was also not confirmed. This was however due to the fact that the function was not used to a large extent by the employees at Factory A. These two factors should be investigated in further research.

The suggestion support system at Factory A, described in the company section, has been proven to have a successful design when considering the rapidness of the suggestion process, and especially the evaluation. This has been shown to have a positive effect on motivation. The study has also shown that decreasing the rewards for suggestions have created a perceived safer environment for the employees. It is hard to estimate how this have effected the total motivational force for submitting suggestions, but it has increased intrinsic motivation which, according to Recht and Wilderom (1998), is more important in Kaizen-oriented suggestion systems.

The influence that the workgroups had on their members and their opinions and beliefs about submitting suggestions and the suggestion system was evident, but not expected. This should be investigated further in future research.

These summarized conclusions from the study show both the good parts of the suggestion system, those which could be used in other Kaizen-oriented suggestion systems, and the bad parts that should be done differently. Hopefully these suggestions have provided a clearer picture about how a suggestion system should look like to serve Kaizen in the best way possible. Factory A currently has a good suggestion system that considers the motivation of the suggestion submitter in most aspects. But, and this is written in the spirit of Kaizen, there is always room for improvement.

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APPENDIX A

Glossary

Suggestion process – The set of activities that are used to leading the suggestion to either implementation or refusal.

Suggestion support system – The administrative tool that is used to keep information and forward information about the suggestion. In this case it is a computerized system located at the intranet.

Suggestion system – All activities and tools that can be directly related to enhancing and supporting the suggestion process. This includes the suggestion process itself, the suggestion support system, the reward system and the suggestion strategy.

Suggestion submitter – A person that submits a suggestion.

Suggestion handler – The person that receives the suggestion and is supposed to make a decision.

Suggestion implementer – The person that is responsible for carrying out the suggestion when approved.

System Administrator – A person who is responsible of maintaining the suggestion support system and/or support the suggestion process.