



**RESISTANCE TO CHANGE: A COMPANY'S
EXPERIENCE**

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ABSTRACT

This preliminary research challenges the preconceived notion that resistance is an impediment to change by producing evidence identifying inconsistencies with theory and highlighting the lack of consideration about its constructive role within organisations.

As a result there is a need to accurately measure the nature of resistance within the organization and a questionnaire was developed to identify the type of resistance that existed within a particular environment. The paper will include the results of the testing instrument for the measurement of resistance at a particular manufacturing company in Australia.

**THESE RESULTS LEAD TO THE CONCLUSION THAT ANY CHANGE
PROCESS IS DEPENDENT ON AN IDENTIFICATION OF THE TYPE OF
RESISTANCE PRIOR TO ANY CHANGE STRATEGIES BEING PLANNED.
THEREFORE IT IS CRUCIAL TO REDEFINE RESISTANCE BEFORE
REDESIGNING AN ORGANIZATION.**

THE ROLE AND RESPONSIBILITIES OF QUALITY MANAGERS

INTRODUCTION

Much has been done based on the assumption that resistance is bad for a change process. There have been many strategies devised whereby resistance has been circumvented, ignored and/or even negated. But preliminary research has identified that although resistance is perceived as negative by managers, in fact, resistance has been used to successfully implement many change processes in organisations.

This report highlights the need to measure resistance to facilitate successful change. It recognises individual differences and the need to be aware of the multifaceted nature of resistance, in both attitude and behaviour. Once these facets have been collated about an organisation, it then becomes possible to redefine resistance to incorporate these varying aspects. A preliminary questionnaire was designed to articulate the multifaceted nature of resistance and it was tested with every employee at a manufacturing organisation in the suburbs of Melbourne.

MEASUREMENT OF RESISTANCE

A questionnaire was administered to 90 employees over a period of one day. This survey was an outcome of a PhD research on resistance to change in the manufacturing industry (Waddell 1995). They were divided into groups of approximately ten throughout the day and completed the survey under the researcher's supervision. The researcher assisted in the process of administration by going through each question one at a time, and was available for inquiries regarding the survey. As far as possible, instructions were identical so as to avoid inconsistencies. Participants were encouraged to quickly respond to the statement as 'the first guess is the best guess', and to answer ALL questions by circling a number.

A typical semantic differential approach was used which is a series of attitude scales (de Vaus 1985). This is a popular attitude-measurement technique consisting of identification of a concept, in this instance resistance, followed by a series of seven-point bipolar rating scales. Bipolar adjectives, such as 'good and bad', anchor the beginning and end (or poles) of the scale. The respondent then makes repeated judgements of the concept on each of the scales, eg. Bad, 1, 2, 3, 4, 5, 6, 7, Good. The arithmetic mean or the median was then plotted to determine the profile of resistance within that organisation. Statistical techniques also included factor analysis.

It was also noted that behavioural researchers have found that respondents are unwilling to use the extreme negative or positive side of a scale. Therefore, rather than using for example FEAR and NO FEAR as extremes of a continuum, adjectives were altered to represent a more acceptable option, APPREHENSION to CONFIDENCE. This modified version of the semantic differential is an acceptable method of measuring the meaning of resistance to an individual (de Vaus 1985:77) and is versatile for this purpose.

ANALYSIS OF DATA

Descriptive analysis refers to an abstraction of the raw data into a form that will make them easy to understand and interpret. Describing responses or observations is typically the first form of analysis. The calculation of averages, frequency distributions, and usage proxy variables is the most common form of summarising data.

Mean and Frequency Distribution:

Ninety (90) questionnaires were completed. The mean and standard deviation of each scale are presented in Table 1:

Table 1: The Company's Profile Results

<u>Facet</u>	<u>Responses</u> (Negative - Positive)	<u>Mean</u>	<u>Std. Dev</u>
FEAR	Uneasy - Confident	4.61	1.31
DISRUPTION	Hinder - Smooth	4.19	1.27
TANGIBLES	Loss - Profit	4.46	1.10
THREAT	Insecure - Secure	4.72	1.45
INTANGIBLES	Reduced- Increased	4.00	1.25
WORKLOAD	Increase - Decrease	3.01	1.28
CULTURE	Reject - Accept	3.01	1.18
CERTAINTY	Never - Always	5.57	1.53
PERSONAL	Anger - Fulfilment	4.43	1.46
CHANGE	Bad - Good	5.36	1.31
COMMUNICATION	Difficult - Easy	4.56	1.57
APATHY	Non Caring - Challenged*	5.00	1.51

* Indicates that the scales were reversed to test for sincere responses.

Only seventeen (17) respondents used both ends of the semantic differential to identify their feelings, ie '1' and/or '7'. This confirms the suspicion that participants are reticent to use extreme responses to the statements. Hence the responses are predominantly between the ranges of '2' to '6'.

Also, of the ninety (90) responses, only four(4) indicated a definite apathy to change, that is, for all questions except the last they circled number 4 (in the middle) whereas the last question they circled that they 'never care about change'. Therefore the middle response for the other eighty-six (86) surveys is a genuine position and the four cases were excluded from most of the analysis from this point on. But before excluding the four cases, the twelve facets were cross-tabulated against whether a person scored a '6' or '7' on APATHY or not. There did not appear to be anything distinguishing about those four respondents, except perhaps their blandness. It confirmed the advantage to have an APATHY category.

Usage Proxy Variables:

In order to gain a clear distinctive numerical value for each facet, the usage proxy value technique was applied:

$$\text{Usage Proxy Variable} = \frac{\text{Total numerical value of each question} \times 100}{\text{Likert Scale (7)} \times \text{No. of Respondents (86)}}$$

The following table is a summary of what the respondents are describing. The facets are arranged in descending order of 'being positive' about change and there are four questions that differ significantly from "average" (a mean of around 4.0): the top two and bottom two.

Table 2: Proxy Variable Results for Facets of Resistance

<u>FACET</u>	<u>NUMERICAL VALUE</u>
<u>POSITIVE</u>	
CERTAINTY - <i>"Change is definitely certain to happen"</i>	79.1
GOOD/BAD - <i>"Change is definitely good"</i>	76.2
THREAT - <i>"I feel a little secure about change and my job"</i>	67.1
FEAR - <i>"I am a little confident about change"</i>	65.4
COMMUNICATION - <i>"Further information is reasonably easy to obtain"</i>	64.4
TANGIBLES - <i>"I am unsure as to whether I will lose or gain tangible benefits from change"</i>	63.3
PERSONAL SATISFACTION - <i>"I am unsure as to whether change makes me fulfilled or angry"</i>	61.9
DISRUPTION - <i>"I am unsure as to whether change will disrupt or smooth my workflow"</i>	59.4
INTANGIBLES - <i>"I am unsure as to whether I will lose or gain intangible benefits from change"</i>	56.3
<u>NEGATIVE</u>	
WORKLOAD - <i>"Change means more work"</i>	41.9
CULTURE - <i>"Other employees reject change"</i>	41.7

(A proxy variable of 100 indicates that all respondents are ALWAYS positive about that particular facet whereas 0 indicates that respondents are NEVER positive about that facet)

*(** The facet of APATHY was excluded as it indicates a NO RESPONSE or NON PARTICIPATION on the part of the respondent)*

The proxy variable results confirms the sequence of facets as indicated in Table 1, but it also broadens the spectrum/scale so that it is visually more recognisable. By referring to Tables 1 and 2, it can be concluded that there is a predominantly positive attitude towards change within this organisation. The behavioural responses/actions that result would be resistance but of a positive nature.

On the part of the respondents, they accept that change is inevitable and that in most cases they expect change to be good. With these as predominant facets, the organisation has a proactive and anticipative employee workforce and the demands then fall upon management to fulfil those expectations. Such an environment is conducive to successful change and should be fully utilised.

On the other hand, although they perceive themselves as proactive and receptive to change, their view of their associates is negative. Respondents feel that other employees do not share their perceptions and perhaps this is typified by their expectations that workload will most likely increase to some degree as a result of change. Therefore if the organisation was considering major change in the near future, it would be suggested that they address this negativity. For example, by emphasising the commonality of views about the certainty and nature of change, it would publicly recognise that change is advantageous to all and that everyone thinks the same.

Univariate Tests for Statistic Significance

As has already been described, analysis begins for most projects with some form of descriptive analysis to reduce the raw data into a summary format. But in this instance there is the need to go beyond the simple tabulation of frequency distributions and the calculations of averages. The foundation of univariate statistical estimation of parameters involves hypothesis testing when the research focuses on one variable at a time.

Hypothesis Testing:

It appears that the sample has responded quite positively about change but it needs to be confirmed that it is not due to random sampling error. Hence a hypothesis test that the mean of the sample is greater than the mid-point (38.5) was conducted.

If the Computed Test Statistic (CTS) is >1.645 , the Null Hypothesis can be rejected. The CTS was calculated to be 10.7 which is >1.645 , resulting in sufficient evidence to conclude that the sample mean is significantly greater than 38.5. Therefore there is statistically significant evidence that a generally positive attitude to change exists in the company.

Note in the above calculations that a sample of 86 is used. If a generalisation is to be made on the whole company, it is probably necessary to use the whole sample, including those respondents who were deemed to be apathetic (if they are in the sample, they will be in the population). The equations are the same as above except there is a mean of 47.911 and a standard deviation of 8.194. The observed Z-value still works out at 10.7, which is still greater than 1.645 and therefore the same conclusion.

Bivariate Analysis - Measures of Association

It is now important to identify if there is an association between the variables or to test the difference between the facets. Bivariate statistics investigates the relationships between two variables in question.

Correlation Matrix:

The first analysis performed was to generate a correlation where there was a large number of correlations. This means that a person who scores very low on FEAR, for example, is also very likely to identify that change is GOOD. This is generally not a good thing, as it means that:

- a) The facets identified are not the unique factors of resistance; or
- b) the responses were bimodal, so that almost the entire sample was in favour of or against change and not very many were undecided. However, by examining the frequency tables, it appears that the results obtained are a fairly nice distribution of responses.

The evidence suggests that option a) is the answer.

This is not a great disappointment; it just stacks the evidence against the hypothesis that there are eleven separate facets of resistance (plus apathy). The only damage this does to the survey is that the 'resistance score' that will be generated will be slightly biased in favour of a certain facet of resistance. For example, let's say that TANGIBLE and INTANGIBLE are in reality a common factor: the fear of loss/hope of gain no matter whether that loss/gain is intangible or tangible. If the scores are simply added together, that loss/gain facet will be given twice the weighting because it is measured by two separate questions. There is little that can be done about this except to acknowledge it as a limitation.

On the other hand, this could most conveniently argue that the correlations show the completeness of the questionnaire. It is, after all, far better to have redundant questions than to miss a crucial facet of resistance altogether. As will be seen, the Factor Analysis could be used as additional evidence.

Multivariate Analysis

When issues are multi dimensional and three or more variables may be involved, this statistical method allows the effects of more than one variable to be considered at one time - if such is the case.

Factor Analysis:

There are sufficient numbers of responses for a Factor Analysis. The minimal requirement is five (5) responses per variable, but with this questionnaire there are twelve (12) variables, therefore there are sixteen (16) more cases than necessary. A Factor Analysis in this instance aims to reduce the data into a few major, underlying dimensions. Basically, if most of the respondents answered two questions similarly, the Factor Analysis will merge into a single factor.

The Factor Analysis extracted four factors, which meant that there were four major facets to resistance, not twelve. But these four factors were not reliable, only 65% of the variance is explained by them. That means that by throwing out the other eight facets, we

lose 35% of the significance, they should therefore remain. If the analysis instead had shown something like 80% of the variance explained by the four factors, it would suggest that the questionnaire was quite redundant.

A more competent Factor Analysis would, however, have overcome the problem of obtaining a "true" resistance score. At this point there are two options:

a) Create a resistance score by adding each person's response. The problem with this is that which was mentioned earlier; we assume that resistance is indeed composed of eleven equal and unique facets when the correlation matrix suggests that it is not.

b) Use the Factor Analysis' four factors. This determines accurate weighting, but it is only 65% accurate.

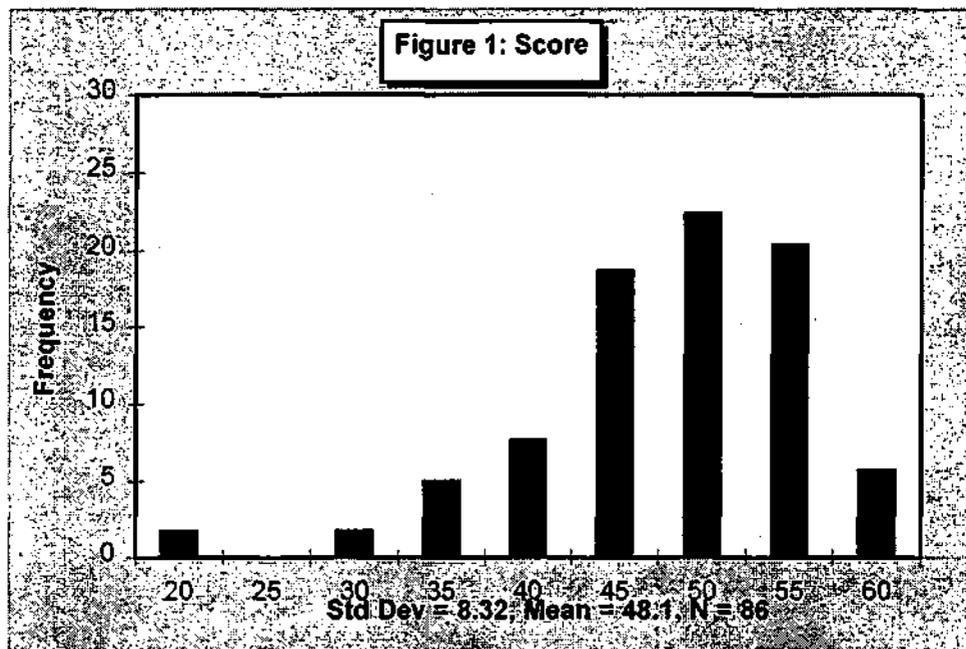
It would be recommended to accept option a) as it would be expected that a certain amount of correlation because many different parts of the same thing are being measured. In addition, the correlation matrix is far from a statistical technique; at the most it is a guide. Note also that the Factor Analysis table states that to get a really adequate model (85%+), there needs to be at least seven factors. This is a valid argument to suggest that:

a) the questionnaire adequately identified the facets of resistance, and

b) resistance is made up of many unique facets.

The variable SCORE was created which is the sum of all other variables except for APATHY.

When referring to Figure 1 on the next page, note that the results are skewed towards positive attitudes to change, although the mean is greater than the mid-point, suggesting a general acceptance of change.



Classification into Categories:

Each person's SCORE was recoded into three groups. The groups are of approximately equal size, representing the bottom, middle and top third scores. This is to facilitate analysis such as cross-tabulation, which requires a few nominal or ordinal categories rather than interval or ratio data. It's also advantageous because the groups can be labelled with descriptive titles which are easily recognised.

The groups have been labelled as follows:

REJECTORS -

The third of respondents that scored lowest overall. Their mean response was 38.9. As this is slightly above the mid-point, it might be a little unjustified to call them "Rejectors". It would be preferred to have a separate class that just included those scoring below the mid-point, but unfortunately there were not enough cases for this to be statistically justified. There are just nine cases in this category, and it would have been impossible to conclude whether or not any significance was purely due to random sampling error.

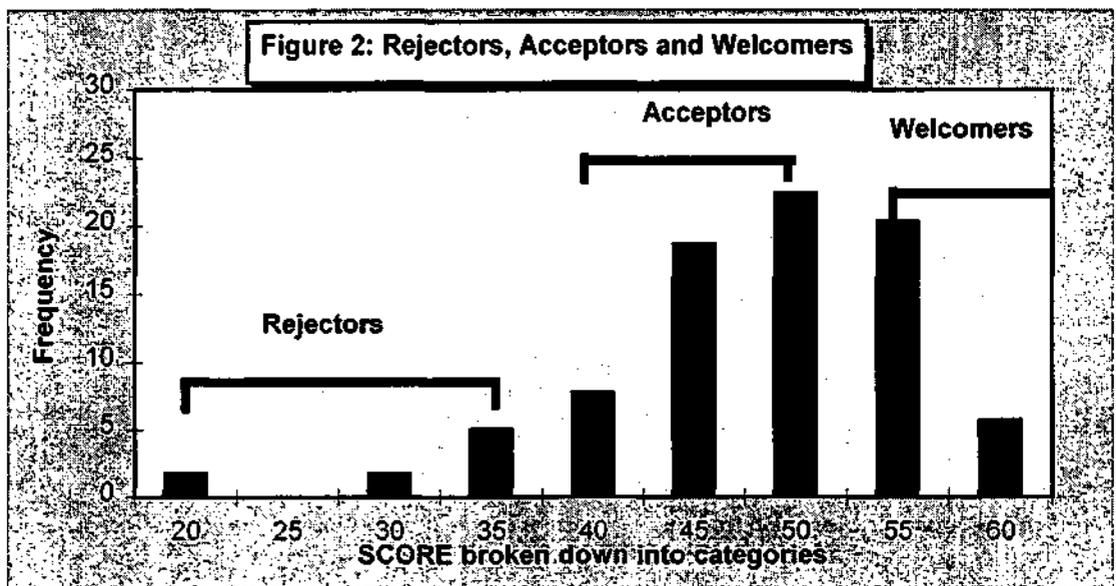
ACCEPTORS -

The middle third of respondents have been labelled as "Acceptors" instead of Undecided because their mean score of 49.2 is significantly greater than the mid-point, 38.5. This suggests that they are slightly more positive than ambivalent.

WELCOMERS -

This is the most positive group of respondents with a mean score of 56.0, so far above the mid-point that it must be considered that these people do not just accept change, but look forward to it.

Figure 2 identifies roughly where each group fits on the previous graph Figure 1:



A Model of Resistance

It is unnecessary to attempt to create another model of resistance, because there already is one: the sum of everything except APATHY. So it is therefore senseless to attempt to create a better model because the best that can be done is the "Sum of Facets" which has been mentioned. This would not be the case if the questionnaire had an 'overall' resistance question on it (it would have been extremely difficult to construct); in that case, the computer program could pick out the important facets to the overall resistance question. Caution has been used to avoid using the word resistance in case it may produce an emotive reaction.

Perhaps a subsequent, or Independent, questionnaire could include this overall question. To include it in this survey would prejudice the responses.

In this case, the best that can be done is attempt to find the importance of each facet to the overall SCORE. The first way was to attempt a Multiple Regression Model which did not prove very helpful. It entered every variable into the equation, as expected, but it is difficult to determine how the computer program rated the importance of each facet as they change depending on what other variables have been already entered. That is, the computer program ranks them one way before it starts forming a model and changes its ranking every time it adds a new variable to the model. A better way to start is to perform simple correlations. The outcome of this exercise was extensive and the subject of ongoing research.

The correlations and cross-tabulation tables were given equal weight and combined to result in Table 3. Final rankings were developed by converting the ranking key (correlation score in the correlation matrix, Mantel-Haenszel score in the cross-tabulations) into a percentage of the top score and the two percentages for each facet were averaged. This is a better method than simply adding ranks, as it acknowledges that the gap between each ranking may not be equal.

Table 3 is not statistically rigorous, but it is convenient if an overall picture is required as constructed by two different forms of analysis.

Table 3: Combined Analysis

<u>Facet</u>	<u>Extremes</u>	<u>Percentage Score</u>
PERSONAL	Frustrated-Fulfilled	98.5%
TANGIBLES	Loss-Gain	94.5%
COMMUNICATION	Difficult-Easy	83.0%
THREAT	Vulnerable-Secure	77.0%
GOOD/BAD	Bad-Good	72.5%
INTANGIBLE	Loss-Gain	64.5%
CERTAINTY	Expected-Denied	64.5%
DISRUPTION	Hinder-Smooth	49.5%

FEAR	Unease-Confidence	46.5%
WORKLOAD	More-Less	19.0%
APATHY	Challenging-Non-Caring	14.5%
CULTURE	Reject-Receptive	13.0%

Synopsis

The analysis started with descriptive statistics; the frequency distributions. Most of the facets have means higher than 4.0, which indicates the sample was more positive than average about change. Some of the stronger statements to come from the survey were:

- . Change is definitely certain to happen
- . Change is definitely good
- . I care about most types of change
- . Change means more work
- . Other employees reject change

There were numerous correlations between the facets. The implications of this are debatable. While it is to be expected that there would be correlations when each question is measuring a different facet of the same construct, it implies that some of the questions may have been redundant. There is no real recourse here except to acknowledge that the "Overall Resistance" score constructed from the eleven facets assumes that each facet is equally important, while this may probably not be the case.

The Factor Analysis provided evidence that the questions may be only slightly redundant, by proving unable to form an adequate model with less than seven separate factors. Its ideal four-factor model explained only 65% of the variance.

It was therefore decided that the "Overall Resistance" score would be constructed from the sum of all eleven facets (APATHY was not included). The result had a mean that was significantly higher than the mid-point, and Hypothesis Testing proved this to be an effect of the population, not a sampling error. It can thus be concluded that the employees were in favour of change, although it also appears that employees perceive their associates to be against it.

Using the overall score, respondents were categorised as 'Rejectors', 'Acceptors' and 'Welcomers'; representing the bottom, middle and top third of scores respectively. This was used to determine which of the eleven facets were most and least important in determining overall resistance. Using a combination of the Correlation Matrix and Cross-Tabulations, the top three facets were found to be:

- . **Personals:** Perhaps obviously, how change makes a person feel is a strong determinant of their attitude towards change in general.
- . **Tangibles:** How a person thinks that they will gain or lose from a change is also a very strong determinant of their overall attitude.
- . **Communication:** The ease of further communication about the change also has a remarkable strong effect on how an individual feels about change. This one surely has special implications for management.

The least important facets of resistance (which may, in fact, not be facets of resistance at all) were:

- . **Workload:** Whether a person thought that a change meant more work or not was unrelated to how resistant to change that person was. Some people welcome the work, others avoid it.
- . **Culture:** How a person's workfellows feel about change also appeared to have no significant influence on his/her attitude to change.

In relation to this last point, there is some suggestion that workers may be divided into two groups; the majority, which is normally distributed around a point that is somewhat positive about change, and a minority, which is fiercely opposed to change. As the questionnaire results show that workers think that their workmates are more negative about change than they are themselves, the implication exists that this minority is either vocal, relatively powerful or both.

IMPLICATIONS FOR THE COMPANY

With the results of the questionnaire, combined with an understanding of the organisation, an interesting profile of the company's perceptions of resistance can be made.

- When counterpart managers from both management and manufacturing assist in the transfer of receptivity to change by promoting it through their words and deeds, the transfer will succeed. There is a positive and conducive environment for change, although the barriers between 'factory' and 'office' could be further resolved.
- Involving manufacturing in the design of the change processes is another powerful promoter, especially as there is a high proportion of factory personnel. Even reluctant personnel, a minority identified in the survey, who saw participation as an unnecessary encroachment on their already overcommitted time schedules, would be soon caught up in the enthusiasm of the project. This early involvement will foster strong partnerships affording them an opportunity to jointly define a form and shape of the new management method that satisfied both parties. But the cultural diversity of thought needs to be addressed with utmost importance.
- The mean for 'Communication' being positive (4.56) confirms that joint agreement is the most satisfactory vehicle for change ensuring both the long-term integrity of the change process and its continued successful use.
- A competent facilitator, from within the company, who conducts the training will be selfishly motivated to devote whatever effort is required to competently train the personnel, without blaming either management or manufacturing when problems arise. Although the questionnaire did not specifically address this role, this could assist with improving the response for 'Workload' and 'Intangibles'.
- Early involvement of a facilitator catalyses many positive relationships, especially as the workforce considers change as 'Good' and 'Inevitable', and would actively assist to exchange information so that there is a general understanding of where the company stands with regard to change.

- Demonstrating the change process in the plant by a team composed of both management and manufacturing personnel has been most effective. Longer term collaborations were promoted, and a sense of close partnership and dedication to success was fostered among the team members. Creative solutions to problems were maximised, and reluctant users were soon won over by the united spirit of the team.

- The assignment of an experienced manufacturing representative within the plant to monitor the change has had many benefits. It provides a focal point for communication and a dedicated expert within the user's environment who can champion the change and resolve floor-level details. Being experienced in the plant and knowing how to get things done in that plant is invaluable. A resident expert, one of their own personnel who is available for the plant personnel to consult, is very comforting to an uncertain participant.

- A deliberate bias towards implementing solutions to problems is very evident (management discourages 'paralysis through analysis' of alternatives and instead emphasises action that insures goal attainment). This results in increased personal satisfaction which stimulates enthusiasm for future change suggestions.

Strategies or specific actions for the company to overcome impediments to change, specifically 'Culture' and 'Workload':

Most common techniques are

- *education* (formal and informal) is needed to address the negative response to facets ('Culture' and 'Workload');

- *participation* (especially in the design of change effort) as this would assist with improving the value of 'Communication';

- *negotiation* (usually after change process has started) particularly where there is uncertainty as to what intangible outcomes may occur;

- *coercion* (usually threatening) in this situation would be unnecessary but reward, although unexpected by employees, would obviously be a successful strategy; and

- *manipulation* of opinion could be used to encourage free speech so that a common cultural perspective about change can evolve.

Conditions for continuing success:

- *Support* and *involvement* in the program by top-level management, work group supervisors, and opinion leaders (For example, there was a willingness to support this particular research although it had no guarantees. This shows confidence in their organisation and a desire to learn and improve.);

- *early success* to encourage further cooperation;

- *respect* for the managerial talents of those whose domain of responsibility is being improved;

- *cooperation* and *involvement* on the part of manufacturing management; and

- effective coordination and control which includes continual measurement of outcomes.

CONCLUSION

The statistical analysis suggests that the questionnaire is valid and the format acceptable. What is also informative is that the questionnaire also serves as an indication of the real perception of resistance that occurs in one particular organisation. There is also a variety of means to give a numerical value for the facets of resistance but whatever means is comfortable it should be used consistently so that variations or trends can be identified.

For example, by using the Usage Proxy Variable as measurement of the facets of resistance can serve as a distinctive numerical value for each facet (not including APATHY). Any measure above 50 could deem to be positive whereas below 50 would be presumed negative.

Statistically the hypothesis testing suggests that there is significant evidence that a generally positive attitude to change exists in the company and that the questionnaire and sampling are valid. The correlations also indicate the 'completeness' of the questionnaire in that it covers the aspects of resistance which have evolved from literature reviews and other research. The factor analysis also confirms the validity of the questionnaire in that it adequately identified the facets of resistance and that resistance is made up of many unique facets.

There appears a need to add respondents' identification and gender to the questionnaire so that ambiguities or contradictions can be resolved. Care must be taken not to deter respondents from being honest in their replies. If amendments to the questionnaire were made, eg gender and status codes, then it may be possible to constructively assist with interventions that will address and improve any negativity or concerns that may exist. For example, if the respondent were to be identified, it would be possible to isolate the small negative minority which appears within the sample. Also the category of 'Apathy' although not a facet of resistance nevertheless was valuable to include in order to test for 'sincerity' of responses.

The tool for measurement can also be manipulated to classify categories with descriptive titles which could be used as a vehicle for explaining the profile of the organisation. In this instance, the titles of 'Rejectors', 'Acceptors' and 'Welcomers' were adopted as a result of the weightings at these levels. Whereas a very negative resistance environment could have personalised descriptors of 'Apathetics', 'Rejectors' and 'Confused', depending on the outcome of the analysis of their SCORE and their familiarity with the language.

The outcome of this survey pertains to this particular company and no other. The most positive facets of 'Personal Satisfaction', 'Tangibles' and 'Communication' using a combination of correlation matrix and cross-tabulations, relate solely to the company. Another company given a similar survey could differ dramatically. Nevertheless the tool for measurement has proven to be a valuable means to identify the perception of resistance in a particular organisation. How this information can be adopted by the management of the organisation is their discretion. It is not prescriptive, nor is it meant to be.

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