

Mapping attitudes by performances: A case study of practical research techniques for employee selection

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Organisational Effectiveness

Project background

The consultant group had undertaken strategic planning for an overseas specialist manufacturing plant. This involved three sub-phases within the training area:

1. A complete analysis of all jobs, evaluation of all positions and regrading.
2. The construction of level one induction training for technical specialists.
3. The construction of training programs for all other levels.

During the discussion Senior managers highlighted a major point. The Company's selection of staff had, in the main, resulted in a high calibre of technical personnel. However, some personnel appeared to be more motivated in their work. It was these who gravitated towards the more complex control processes after two or three years of service.

An in-house examination of work practices had failed to reveal why some men achieved this status and others did not. Whilst some, operators could be classified as more motivated because they achieved controller status there was virtually no difference in actual work results, time taken, safety aspects, work based knowledge or general expertise. An examination of individuals had failed to show any particular characteristics in background or otherwise which could account for the end difference in positions held.

The training process from cadet operator to controller was costly and extended. It was not cost-effective to take on personnel and be unsure of their potential for at least two years. The Company required that all its technical operations personnel have the ability to develop into control managers. This allowed for natural work-force attrition rates, the training of newcomers and any unforeseen circumstances.

The Consultancy was asked to conduct an analysis to define the differences between the most motivated and the 'least motivated' operators. The profile produced was to be used for the hiring of new operators to maintain the overall excellence in personnel. It was also to be used to enhance the general workforce with a greater certainty that individuals would attain controller status.

There were two provisos:

1. There had been a fairly impactful 'shakeout' as a result of the strategic planning. Matters were assuming a more desirable level. The sensitivity of the workforce had to be respected and no indication must be given of 'weeding' or 'singling out' individuals in any discriminatory manner. There was no intention to dismiss any worker as a result of the study. It was aimed solely at future employees.
2. The union involved were to be appraised of the process. It must not be presented in any way that would alarm or give future cause for alarm. Consequently any process must be as limited as possible in its scope and yet give generalisable results.

The study was intended to be undertaken over a period of six months. However, due to workplace restraints it extended to sixteen months with a twelve month gap between the second and third stages. The effect could have been an essentially post hoc process with severe limitation on validity of results. However, this was avoided due to the unique characteristics of the workplace. This will be discussed at the end of the paper.

Methodology and literature review

The consultant in charge of the project had used behavioural modelling principles in role definitions previously. This included application of a trait analysis questionnaire to individuals exhibiting 'ideal' behaviours. The results to assist in mapping appropriate attitudes through later observance of their behaviour. These were expressed in their processes of socialisation, team work and work procedures as trainees within the computer industry.

The analysis process had involved observing required behaviours in a number of individuals. The trait profiles were examined for similarities. Where these occurred, sets of behaviours were assigned as key points for tracing or 'mapping' the parameters of the desired trait.

The behaviours derived were later taught as a supportive agenda within the main curriculum. By this means a set of industry specific attitudes were developed and inculcated in preparing the trainees to meet work requirements or the industry culture.

In the current project the requirement was to define the attitude of 'motivation' as it was seen to occur in 'ideal' performers. The forms of enquiry by management had not provided any clues. The only recourse available was to look for discrete sets of behaviours within the motivated group that could be assigned as indicators of motivation.

That is, 'what behaviours are consistent with a motivated attitude?'. Alternatively, 'what specific behaviours seem to outline, set the parameters of or 'map' the motivated attitude in the workplace.

Previous consultant experience had emphasised the applicability of work culture. For that reason this was recognised at the beginning of the project and explanations follow.

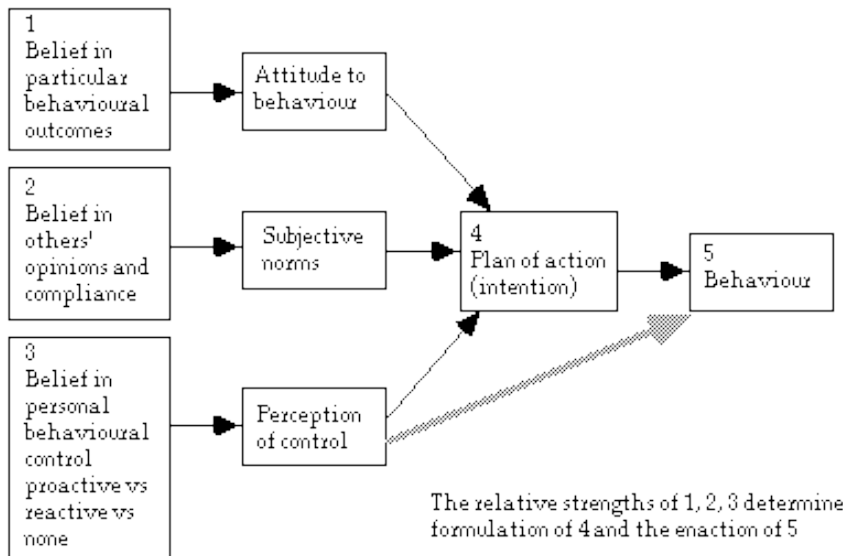


Figure 1: Measuring attitude Azjen's model of planned behaviour (1985).

Key terms and definitions

'Mapping' Attitude as opposed to 'Measuring' Attitude and the influence of 'Culture'.

Azjen's and Madden's research (1986) developed a model of 'measuring' attitude by the observance of planned behaviour. That is, the subject developed a certain intention and demonstrated it by particular behaviour(s). The constancy and consistency of those behaviours could be said to be a measurement of attitude.

However, attitude is only one contributor to the plan development. This is demonstrated in Figure 1 the Azjen model presented by Bezzina (1989). What is highlighted here is that 'measuring' attitude really requires an extensive investigation of the subject's belief structures.

'Mapping' does not require that depth of investigation. Figure 2 is a model developed by the consultant through this research exercise. It acknowledges the emphasis of the individual's belief structures on behavioural selection as developed by Azjen.

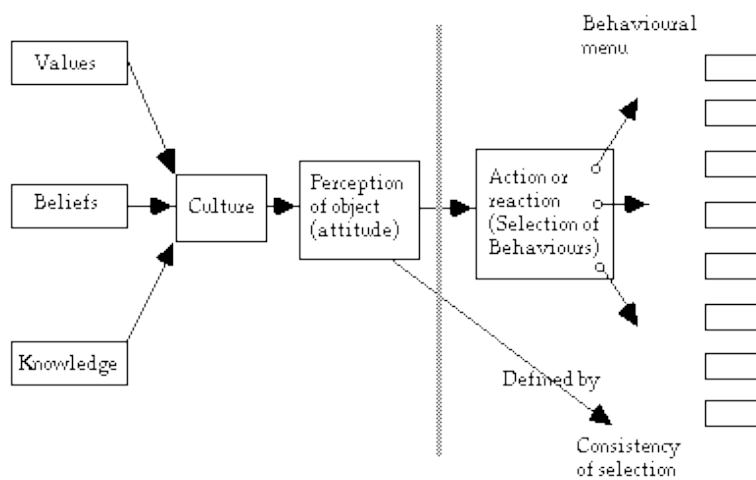


Figure 2: Mapping attitudes

However, the essential difference is the interpolation of a cultural boundary defining those beliefs. Filtered through the culture, the subject's values, beliefs and knowledge-bases form the perception of an object. From this perception the subject chooses one or more behaviours in response (reaction) or proactive decision-making.

Each subject is seen to have a menu of behaviours from which they might choose. It is the consistency of selection or one or more behaviours that

defines the attitude. That is, the subjects response to their perception of the object as a direct result of their culture.

As Jarvis notes (1983) culture is a dynamic phenomenon represented by changing elements of economics, technology, values, beliefs and knowledge. An individual interacts with those elements by selecting those most suited to their personal perceptions.

Consequently, a consistent set of behaviours may be viewed as a cultural statement. Alternatively, a consistent set of behaviours enacted within a culture may be termed as demonstrative of a particularly defined attitude. However, this does not necessarily mean that all cultures will necessarily define those actions by the same attitudinal title.

This research very carefully noted that factor. The term 'motivated' and the possible set of behaviours isolated are termed culturally specific to deliberately limit their generalisation across other than the target population. No study was undertaken to define or set norms for motivated behaviour in the society or population external to the manufacturing area within the research.

This is particularly why the research process confined itself to mapping rather than measuring the attitude by behaviour. As Bezzina notes (1989) 'measuring is ... identification of a subject's modal salient beliefs [representing] information they have that links certain objects to defined attributes'.

On the other hand this research defines 'mapping' as the profiling or outlining of attitude through detailing consistent choices of individual behaviours as relational within the context of the investigation.

Practical application

The consultancy had been a familiar presence on-site over a period of two years. They were constantly asking job-related questions at all levels at many different plant sites.

The consultant involved in the 'Profile' project had also been on-site over a period of two weeks prior to commencement. He had been involved in occupational skills analysis with the operators and had become known to them. This assisted greatly in developing the methodology employed.

There were other important criteria in the development of the method:

1. The company is a specialist industry. It is in a geographically isolated area quite apart from other secondary or tertiary industry. There are no other plants within the country to provide benchmarks for the operators.

2. So far as was known no similar investigation had been carried out within the industry overseas.
3. As stated before, it was recognised that the term 'motivated' could be culturally specific. That is, the results of this particular attitude 'motivation' were that base-level operators became operations controllers. Those who did not rise to that level lacked the 'motivation' to achieve work-place expectation.

This did not mean that people outside the industry who lacked the components of this particular attitude (whatever they were) were unmotivated in general terms.

Investigating ethnographic elements (culture)

It was agreed all three points emphasised that the investigation would probably highlight an industry-specific cultural phenomena.

The investigation was primarily an educational issue (what makes a good learner for the controller's position). Consequently, Wiersma (1986;233) particularly applies. He notes that such research into specialist performance areas is essentially an investigation of culture, or ethnography. It is '...the process of providing scientific descriptions of [systems] processes and phenomena within their specific contexts'.

That is, when a researcher first defines a particular area of investigation they make a blanket nomination of all the separate groups and structures within that area. Each of those groups is a discrete element with particular values, strengths, weaknesses, constraints, freedoms, attitudes, or interactions. The cumulative effect is the creation of a group 'culture'. Within each group or association of groups this is the organisational 'norm' (Pfeiffer, Goodstein, Nolan; 1985;57).

The structures undergirding these norms are rarely overt expressions. They are generally recognised in 'end results' or terminal activities issuing from their attitudes or 'values base' (Pfeiffer et al 1985;56). This was found to be most true by the company in its initial investigations. It was the 'values-base' that was being investigated.

Owens, Steinhoff and Rosenbaum (1989;2,3) note the cause of organisational culture is really individuals making sense of their environment. They create shared social realities, values and norms so that the organisation makes sense to them. Their individual reactions combine to form the corporate end result. The current 'corporate end-result' was the cause of the investigation of the attitudes or values.

In ethnography the role of the researcher is to 'map' the end results and determine cause as far as possible. That is, to map the culture or its critical elements impacting within certain areas.

Qualitative versus quantitative research

The process of ethnographic research is predominantly one of values or attitudinal investigation. To the interpretative researcher, the investigation of human affairs must take into account that end results or meanings are both historically and socially bounded. The interpretation of these bonds is expressed in situational rather than neutral scientific language (Smith, 1983, p10). That is, it is a definition of how values and interests shape approaches to reality.

The general consensus may be that investigative approaches to such areas are not objectively possible. However, as Butler (1984, p3) notes it is possible by utilising qualitative and naturalistic methods where 'a priori' decisions cannot be made as to what counts as significant.

This process fitted the investigative approach required in the manufacturing operator's instance. Due to the nature of the problem it was realised that hypotheses were more likely to emerge from the data than be formulated prior to the research. As Wiersma notes (1986, pp 236, 244), hypothesis generation is essentially a continuing activity as a result of data generated throughout an ethnographic study.

Cross referencing data (Triangulation)

The essential point is that conclusions drawn from individual or collective data items are subject to a fragility, susceptibility or subjectivity. There is a need to verify that the researcher has not manipulated study variables through personal bias (Butler, 1984, p6).

In addition, much of the data in initial investigation has very hazy parameters. Its appearance frequently acts as an indicator rather than confirmation of the fact. This requires cross-checking of the data and the interpretations. That is, the framing of explanations for phenomena through different theoretical perspectives and even using different investigators with varying collection strategies.

For this purpose triangulation was used in the research. The concept or hypothesis was examined from three different and independent sources. Each set of examinations was conducted by different analytical methods and collection types to provide corroboration or justify the ultimate conclusions. Otherwise there is the possibility of the researcher being faced with a dilemma of what to record as fact and what to discard (Wiersma 1986, p246).

In the case of the manufacturing operators it was necessary to avoid as much bias as possible in the initial investigations. Management had already decided who they thought were best operators. The researcher wished to avoid too much contact with those ideas at the start.

Previous interactions with the target group had already demonstrated a few areas for initial investigation. That is, it was possible for a reasonable or experienced person or analyst to draw assumptions between the characteristics of the various personality types without necessarily conducting an investigation.

During the occupational analyses various operators had been used as Subject Matter Experts to verify results obtained. Some individuals were conspicuous by their ability to think laterally, be innovative in their approaches, seek support for their opinions etc.

However, not all of these individuals were operations controllers. Others were distinguished by their ability to fine-point qualify various operational descriptions. They had a mind for minutiae, demonstrated serial or sequential thinking, were frequently dogmatic, rarely sought confirmation, had a tendency to denigrate others expertise.

However, one or two of these individuals were operations controllers. These initial observations were utilised in the research.

Implementation

It may be beneficial to reiterate the aim of the research to be met by qualitative, naturalistic ethnographic triangulation research.

To isolate those actions within the personal profiles of best performer operators/ controllers that distinguished them from other operators /controllers. Those performances to indicate an attitude able to be described as 'motivated'. It should be consistent with that required by the company to determine those individuals apparently most suitable for progress to operations controller positions.

Each of the three methods of the research process to provide confirmation or denial of previous assumptions and indicators of ways forward.

Triangulation was achieved by three methods:

1. Observation and Interaction
2. Data Gathered from Personnel Records
3. Questionnaire

Method 1: Independent on-site observations and interviews

Observations were of relational processes and interactions within the workplace. These did not demonstrate any visually significant differences between the employees.

The questioning of operators and controllers dealt with background, preferences and activities, attitudes to work and management. It must be

remembered that the work-site was extremely sensitive and care had to be avoided in the process. It had to be as casual, non-interrogative and definitely as 'general conversational as possible.

A great deal was simply 'fact gleaning' by listening to conversations between groups of operators or controllers. Details as varied as conversational topics, language usage, vocabulary, sentence construct, product/process knowledge were noted. Facts, procedures and principles were obliquely verified with someone else.

It was not possible to take written notes at the time. This resulted in generalised observations only and some fairly broad-based conclusions. However, they were valuable in providing indicators.

Preliminary conclusions as to the observations and differences were then discussed with management. This was to explain any unusual features emerging (very few, in fact) and to shed further light if possible.

The results indicated that focus points for further investigation were in the areas of education and work history and personal activities. These were used as predictors within the analysis of the second method.

Selecting the population sample

The next two methods of data gathering were both directly affected by the need for low profile procedures. A sample of operators/controllers was required for in-depth analysis. It was not possible to cover the whole of the plant of one-hundred-twenty operations personnel.

A minimum sample had to be selected to provide optimum coverage. It was agreed that management would assess all employees and select thirty for in-depth assessment. Twelve would be best or 'top' workers and twelve would be the least motivated or 'bottom' workers. To provide a point of comparison for both groups an additional six would be a 'middle' ranking.

The workers must first be chosen then ranked from 1 to 30. A difficulty was that the work-groups were spread over four plant-sites. Not all site managers knew all the workers well enough to be able to assess and rank them.

The first step was that the managers held discussion sessions and surveyed the work groups. They decided the individuals that would be included in the group from which the sample would be selected.

This was a comparatively easy task. Each site manager with supervisor assessed their own groups for 'best' and 'bottom' workers on the basis of 'satisfactory' work levels. The Sum of the Sites Operators/Controllers from the four sites exceeded 30.

These were then ranked by a comparison matrix. A matrix of subjects was constructed. Each worker's name was entered in one square on each side and assigned a number. Each was individually compared with the others and ranked. Comparisons were made on the basis of what each manager knew of the individuals.

Employee records of performance assessment over the service life of the employee were also referenced. These had been completed by supervisors and managers over periods of up to eight years. Points of consensus were reached and individual cross-ranking assigned.

Group ranking was achieved by counting the times an individual's matrix number appeared. The employee with the most occurrences was ranked '1' and so on.

Operator	1	2	3	4	5		N>=30
1	•	1	3	1			
2	•	•	3	4			
3	•	•	•	3			
4	•	•	•	•			
5	•	•	•	•			
N>=30							

Figure 3: Operator ranking matrix

The list of thirty was compiled from the 'top' twelve, the 'bottom' twelve and the six 'middle' employees. The weakness of this method is acknowledged. That is, it relies heavily on the managers' opinions to assign ranking. The strength is that no less than four managers had to agree - no one manager had final say. A minimum of two managers were cognisant with each employee's performance.

Method 2: Investigation of employee records

The records of the employees on the ranked listing were then examined. These provided minimal information on education or work history prior to joining the company. Satisfactory service within the workplace was not performance based but supervisor gradings from one to ten on 'temperature gauges' in the areas of:

1. Work quality (accuracy, and thoroughness)
2. Dependability (supervision requirements)

3. Knowledge (understanding of the job)
4. Output (volume of work expected)
5. Initiative (proactive rather than reactive)
6. Attitude (co-operative)
7. Adaptability (adeptness in learning)
8. Leadership (beyond the call of duty)

Notwithstanding the generalised nature of details available the records were examined statistically by computer analysis within four categories. The first three were derived from method one, the fourth was added to see if any significant differences occurred over a measurable time after employment. This analysis demonstrated that the following variations within the descriptions were common to the factors:

1. Work History - No decision-making; A minimum of supervisory experience; Instructing and decision making.
2. Education - Secondary only; Completion of post secondary courses, mainly trades but including some tertiary.
3. Activities - Competitive / physical; Individual and leisure-based; Community or socially oriented.
4. Company Work Experience - 0-3 years including to controller level; 4-10 years including to controller level; >10 years including to controller level.

The matrix comparison rankings of 'top' 'middle' 'bottom' were included as predictor variables. Regression analysis defining the correlation of predictor variables found that the eight work appraisal characteristics were significant as follows:

1. Work quality - Top rank; involved in competitive and physical activities
2. Dependability - Top and middle ranks involved in competitive and physical activities
3. Knowledge - Top and middle ranks involved in competitive and physical activities
4. Output - Top and middle ranks involved in competitive and physical activities
5. Initiative - Top rank involved in competitive and physical activities and with previous supervisory experience
6. Attitude - Top rank. No significantly related classifications
7. Adaptability - Top rank - competitive and physical activities
8. Leadership - Top rank - competitive and physical activities and previous supervisory experience.

It will be seen that the overall emphasis appeared to be significantly tied to personal and leisure activities. That is, the chief characteristics of the

'motivated' attitude are more than likely to be demonstrated within the target population 'activities' classification.

The fact that other predictors did not appear significant did not necessarily obviate their being considered further. It was a little surprising to see that education had not emerged with a higher profile in the results. On the contrary, the statistical report indicated it was non-contributive.

However, part of Method 1 was an observation of language usage. It was not possible to do a total analysis of language which, if included would no doubt have appeared as significant. This was taken into consideration in the decision to retain education as a predictor.

It was also recognised that the sample population of operators/controllers could be too homogeneous and that a sudden influx of new personnel or even several resignations could drastically alter later measurements. The workplace records were not exhaustive and this was only one step in the triangulation methodology.

This second step did not prove or disprove any previous notion. It simply confirmed the way forward. What emerged most definitely was that 'competitive and physical activities' was a significant predictor within almost all of the appraisal characteristics. Its presence suggested a discrete personality component that required separate investigation.

Method 3: A written questionnaire

The results of the two previous Methods were brought together in a written questionnaire. Due to industrial relations processes at the site and other considerations, the implementation of the questionnaire took place over twelve months after the project began. Under normal circumstances this could have had a significant result effect. The reasons it did not and the possibilities are covered briefly at the end of this paper under 'Post Hoc' considerations.

The results in Methods 1 and 2 justified using a broad-scope model for questionnaire development. Mager's five stage process (1979, p3) was generally adopted under the headings of:

1. PERSONAL DETAILS - (Marital Status, Age, Country of Origin, Children and their ages)
2. EDUCATION
FORMAL - Secondary, Tertiary, Apprenticeship or Trades Studies, Technical Colleges for other than trades studies
INFORMAL - Recognised courses but not necessarily through a university or College (eg. navigation certificate for sailing as a hobby, amateur radio operator's certificate, scuba diving certificate, job skills)

extension courses etc)

FURTHER STUDIES - currently being undertaken; planned; relationship to work; when to be completed; how to be utilised.

3. LEISURE ACTIVITIES - (These were fairly detailed. Each activity was cross-referenced for Leadership Positions, Solo or Team Activities, Social Activities, Competitive Activities, Community activity).
4. PREVIOUS WORK HISTORY - (Employer, Position, Industry Type, Period, Work Alone, Team Work, Supervisory Position)
5. CURRENT WORK HISTORY - (Area, Position, Length of Time in Position, Total Period in Job, Work Alone, Work in Team, Supervisory Position)
6. GENERAL INFORMATION - This covered preferences for work environment, supervisory roles, designing procedures, personal organisation, goal setting, social interactions at work and externally, study course-type preferences across a range of fifteen essentially unrelated options, ranking learning preferences (practice, demonstration, research), observations of ideal supervisors, three most important personal and vocational aims to be achieved.

Administration of questionnaire

Each of the thirty employees had been approached to complete the questionnaire. The union involved had encouraged them to participate. It was presented as a means of developing an employee profile that would enhance future selection processes. It was, to all intents and purposes, well received in concept.

The questionnaire was administered by the company's Employment Relations Supervisor in two group sessions over two days. This minimised, as far as possible, the possibility of members of one group meeting with the second group and discussing the content. All questionnaires were collected and returned to the Australian Office of the consultancy for collation and analysis.

Results

The following contains extracts from the client report, detailing the results for each discrete area of investigation. Where appropriate each area has an interpretation.

It should be remembered that the research was carried out under constraints that prevented absolute validation of conclusions. The interpretation is based on 'reasonable assumptions'. These are made from the results of all three methods.

At this stage the client was advised that the research and report should provide the basis for a greater in-depth study within twelve months.

It is worth mentioning here that the client has since responded to the report. They have indicated that the results are consistent with their own and employee conclusions (this presumably includes the union). They are planning on conducting the in-depth research after the completion of further steps in the strategic planning process.

Personal Details

There are no apparent significant indicators in this segment.

EDUCATION - Post Secondary

Of the sample group of thirty (30) seventeen (17) have completed apprenticeship studies with eight (8) in the 'top' category. Ten (10) have completed technical studies with five (5) in the 'top' category. Six (6) individuals have tertiary education. Four (4) of these are in the 'top' category.

Of the initial seventeen (17) individuals completing apprenticeships at least five (33%) indicated more than one post-secondary qualification. Overall the top category constituted 52% of the group with post secondary education.

EDUCATION - Further Studies

Total group intention to undertake further study demonstrated that 40% were so inclined. This included 64% of the 'top' category of respondents.

Across the group a total of forty-five (45) informal courses were taken. Of these, twenty-five (25) courses or 56% were job-related. 'Top' performers accounted for twenty-one (21) or 47% and 'middle' for eleven (11) or 24%. Together they grouped 66% of their selections as job-related courses. 'Top' performers are more likely (50% of respondents) to undertake informal studies (non-college or tertiary) but they are less likely to be job-related.

This result could be tied to a high degree of competency already gained through post secondary/tertiary education. In addition, informal study often requires a high degree of self-motivation in course seeking and attendance. This is particularly so when not job-related. This may be viewed in relation to the Employment History and Activities factors in the survey.

EDUCATION - Formal

New Operators are more than likely to demonstrate a greater than average interest in formal education. They are likely to have achieved two or more post-secondary qualifications. Indications are that these would tend to favour apprenticeship and technical college qualifications with a possibility of tertiary studies. 'Middle' and 'bottom' groups do not record interest in tertiary level studies.

'Top' group members tend to focus on logic/mathematic centred occupations such as:

- Electrical / Electronics,
- Auto mechanical,
- Construction (Engineering),
- Communications and Telecommunications industries.

EDUCATION - Informal

Indications are that 'Top' performers are willing to undertake further informal job-related studies (in-house, self-study etc). However, these studies are more likely to be for leisure and personal interests. It would appear that their success in apprenticeship and other post-secondary studies as well as previous job experience equips them sufficiently to accommodate any on-the job learning within the Company. Any studies undertaken will probably tend to have a proportionately high component of logic/mathematics related content.

LEISURE ACTIVITIES - Activity Types

Across the group there were listed one-hundred-and-five (105) leisure activity types. The 'top' ranking accounted for fifty-two (52) of these activities - 50% of the total. Within the range of these activity types there were one-hundred and-thirty- six (136) individual registrations of involvement. Of these, the 'top' group (forty percent of the sample group) had seventy (70) registrations or fifty-one percent (51%) of all individual activities.

Of the range of 52 activity types the 'top' group listed thirty-one (31) as 'solo' involvement. That is, sixty-one percent (61%) of top group leisure activities are undertaken alone or with one other person.

Of 'top' group non-solo activities twenty-five percent (25%) were Competitive, fifty percent (50%) were Team based, the balance were a mixture of 'Social' and 'Community' with 'Social' predominant.

LEISURE ACTIVITIES - Activity Factors

Leadership was not a significant factor across the sample although 'middle'; and 'top' rankings were more likely to be found in those positions. Of the group only three (3) 'top' operators held one leadership position each. In activity ranking, 'top' performers are more likely to undertake:

1. Solo (self-actualising) activities
2. Team involvement
3. Competitive

LEISURE ACTIVITIES - Work and Community

'Top' group members appear unlikely to be involved in community activities. By extension, for this group, 'community' could also include the

work community. They socialise with work mates for twenty five percent (25%) or less of non- work activity. However, they do not register a high commitment to extended activities within that sphere.

LEISURE ACTIVITIES - Active/Passive Categories of Interest Areas

Most operators showed some degree of interest in 'logic' or 'active' areas such as mathematics, languages, computers, flying, electronics and music. However, 'top' ranking performers showed a greater interest in these areas.

'Bottom' performers tend to show a marginally greater interest in more 'passive' pursuits such as oil painting, gardening, pottery, non-participative theatre, woodcarving, sculpture and non-participative music.

For 'top' performers, leisure and personal activities appear to reflect a high level of self-actualisation. There is an emphasis on competitive solo activities although some team involvement may be evident.

The following examples are not exhaustive but indicate the types and range of activities encountered.

Solo activities - Examples

- Motor vehicle repairs and restorations
- Cycling
- Fishing
- Boating
- Carpentry
- Computing
- Guitar
- Photography
- Furniture Restoration
- Jogging
- Martial Arts
- Golf
- Weight training
- Swimming
- Flying
- Hunting

Team activities - Examples

- Tennis
- Soccer
- Scuba Diving
- Squash
- Scouting
- Badminton

It will be noted that where the 'passive' activities (such as 'furniture restoration, and 'photography') are encountered for 'top' performers they tend to have a high content of precision involved.

The leisure and interests profiles of any one top performer significantly tends to demonstrate a broad range. 'Top' performers appear to require a comparatively varied range of interests. These activities will be physically and mentally demanding for the most part.

Potential New Operator profiles will probably have a predominance of logical or self-determinative organised activity. Such profiles indicate competitive and self-initiative tendencies. Solo activities may well predominate within their range but team involvement could also feature

Leadership will probably not be seen as an element in leisure activities. When linked to Work History factors it would appear to indicate preference for independent action wherever possible.

EMPLOYMENT - Involvement

The conclusions in this segment are drawn from work histories and general information in the questionnaire.

'Top' performers have a high preference for working independently and a potential for reacting to high levels of recognition in performance. Significantly, there was a 100% affirmative response to achieving satisfaction from demonstrating procedures to others whilst working.

They appreciate a high level of consultation and involvement in the design of work practices and procedures.

EMPLOYMENT - Supervisor Roles

They define workmate co-operation as important to the job. Previous employment is likely to show some supervisory experience but not significantly greater than other rankings. See 'Tenure' for additional comment on this factor.

EMPLOYMENT - Organisation

Across the group there is a great emphasis on the importance of organisation at work. However, 'top' performers were the only ranking to admit to some disorganisation at work. Within the context of the questionnaire there are two options:

1. They are reflecting on institutionalised rather than personal practices - ie. they are more likely to be less accepting of work-place deficiencies than 'middle' and 'bottom' ranking.
2. They have the confidence to be honest about their own shortcomings.

That elements of both may exist is supported by their high degree of defined personal goals both long and short-term. These are more pronounced than either the 'middle' or 'bottom' ranking. They also evidence a very high preference for personal control in the maintenance of records with which they are involved.

EMPLOYMENT - Tenure

'Top' performers show a greater disposition to remain in a job for less than two years. They are only marginally more inclined to remain in a position between two and ten years. They do not appear likely to remain in a position for more than ten years.

Of the one-hundred and four (104) positions held across the group forty one (41) were held by 'top' performers, twenty (20) by 'middle' and forty-three (43) by 'bottom'. The results are grouped in jobs held less than 2 years, 2 to 10 years, more than ten years demonstrated in the following table.

Time	Operator Rank			Total
	Top	Middle	Bottom	
<2 years	18	5	5	28
2-10 years	22	13	32	67
>10 years	1	2	6	9
Total	41	20	43	104

The table could be a demonstration of why the relatively low involvement in supervisory roles in spite of obvious potential and indicated preferences for control. The respondents have not remained in positions long enough to occupy senior posts.

The table also illustrates job tenure for Middle and Bottom groupings which, for the ratio of total jobs to personnel groupings, are quite similar. However, it will be noted that 'middle' and 'bottom' operators are less likely to leave a position within two (2) years and are most likely to remain for up to ten (10) years. The 'bottom' group are the most likely to remain within a position for more than ten years.

The comparatively low incidence of 'turnover' for these groups in the first two years may add support to the conclusions that 'top' operators require a clearly determined career path and challenge.

A factor of note is that 'top' operator employment profiles prior to the Company range from two (2) to six (6) positions with an average of four (4) positions. Mean length of employment for any one position ranged from .6 years to 6.5 years with a group mean length of 3.33 years.

Analysis shows a trend in the 'top' group with the first job being the longest tenure. This is consistent with the gaining of first qualifications. There is also a trend for each succeeding job to decrease in length prior to entry to the Company.

Industry

Information on types of industry associated with 'top' performers transferring to the Company do not reveal significant details. However, for the sample, significant 'clusters' occur in telecommunications, communications, agriculture electronics/ electrical, construction, manufacturing and automotive. Only one registered previous experience in the same industry as the Company.

Listings of Major Industry Groupings and Positions Held for current 'top' performers emphasises that both Industry and Position classification emphasise:

- a. Physical activity
- b. Logic and calculation
- c. Self-reliance/Personal responsibility
- d. Decision-making
- e. Team interaction

Tenure

'Top' performers appear most likely to change jobs very soon after completing two years. They are unlikely to have remained in a large proportion of their jobs for more than ten years. From the education and activities indicators they appear to require stimulation/challenge as a job component. This would be provided by learning a job for a couple of years or even taking up limited leadership positions after that time. However, it could be surmised that once the challenge was met, there was no longer the incentive to stay.

The education factor could indicate that operators would be looking for a career path that has not been met in previous occupations. Interviews with potential operators would be assisted by asking them to define their career expectations from previous positions and if they had been met. An emphasis appears to be that jobs should contain a large element of consultation on position development, interaction and determination.

Leadership

'Top' performers have potential for leadership but it may not always feature significantly on their work history. It is likely to appear on personal references from employers. Such references often contain comments on personal initiative, accountability, dependability, personal organisation. From data obtained it would appear that these personnel are likely to lead by example rather than being consciously organised and directive.

Results

The results of the analysis produced performance profiles of operators within the site. Within those profiles there are performances particularly unique to 'top' operators.

These performances are seen to demonstrate an emphasis on self managed development. Whilst elements may be found in other operators, the complete set of performances is not characteristic of 'middle' and 'bottom' operators. For the purposes of this study those performances are seen to constitute the profile of a 'motivated' attitude within the requirements of the Company.

It should be noted that these performances are not seen as a total analysis of motivational attitude. There is no control group for independent measurement; there were no prior statements of 'standard' performances as ideal indicators either for the Company group or the community generally.

Added to the profile produced by the actual answers to the questionnaire was the way operators answered the questionnaire. An examination showed that 'bottom' operators were most likely to not answer certain questions within categories. These questions could be generally grouped as Supervision, Performance quality, Education and Personal organisation.

Content of written answers was also examined. 'Bottom' operators demonstrated a tendency to brevity (one or two words); 'right' answers (ie. they could be categorised as pleasing to the reader); irrelevant (ie. they indicated that the respondent had not understood the question, had not read the question correctly or had not given thought to the answer).

The actual writing within answers was also considered. The 'bottom' group demonstrated a greater tendency for writing to become illegible towards the end of the questionnaire. The illegible writing, brevity of answers, non-completion of 'personal' questions appear to be directly related to the education factor. The operations controller positions require fairly extensive record keeping functions. These include calculations, time keeping and written reports. It may be that the lack of 'motivation' identified by the performance differences is coupled to de-motivation by the need to be involved in the record-keeping function.

It should be emphasised that no one or two of any of these factors is sufficient to categorically define a difference in motivation between the groups. There could be a multiplicity of currently undefined reasons as to why these trends appear to have emerged from the data. However, there is sufficient evidence on which to base assumptions. There is also sufficient information to argue for further more detailed assessment.

Implications

Owens et al (1989) notes the effect of post hoc application of phases within triangulation studies. The major point is that cultural and environmental factors change within long time frames. Personnel leave, new personnel

enter the scene, each with their own cultural impact. This affects results making the possibility of accurate data analysis suspect (p.25).

Owens' exercise provides a guide to an appropriate definition for post hoc investigation. That is, a process not originally designed within the research model and applied as a result of not in concert with previous analyses. A critical point is the unintentional passing of an extended period of time. In this study the extended period of time between the second and third stages could have had a 'post hoc' result. However, it did not occur.

As noted previously, the plant is geographically isolated. There is little or no alternative employment and therefore little incentive to leave. During the period of the study all subjects within the sample remained constant.

The results of the third stage were consistent with those emerging from the earlier stages. In effect, the consequence of the post hoc administration could be considered less than minimal. This point is raised for special note in that the circumstances of the exercise would appear to be unique. The existence of the extended time-frame with minimal impact cannot be considered a norm and should not be used as a model.

Summary

The analyses produced a profile that demonstrated 'top' or ideal performers as essentially self-starters. They were inclined to take structured courses in tuition for leisure pursuits. These pursuits require a high level of physical or mental activity. They are generally able to be classified as 'solo' activities requiring minimal or no interaction with others.

The propensity of these individuals to change jobs was noted. In general, the longest tenure was in the first job whilst they gained their initial qualifications. Following tenures were noticeably reduced when compared with the rest of the population sample.

As a result of the survey a pre-employment profile was constructed with about forty-questions to be included in the pre-employment questionnaire. This questionnaire was designed to help 'front-line' HRD personnel make preliminary selections for 'short-listing' applicants. It was noted to the client that this questionnaire should not be the sole instrument of assessment. One of its primary functions is to gather additional data for later analyses.

A reiterative point must be made here to ensure a balanced observation on what constitutes 'motivation'. The particular word usage and the derived descriptive performances have a limited scope of validity. That is, within the confines of the particular workplace and this research. The word is

culturally oriented. It is specific only to a particular area of production, manufacturing, or vocation.

Individuals described are part of a target population within a specific context. Placed within a different context they would demonstrate very high rates of motivation in relation to their activities. It would be a gross injustice and an abrogation of the scientific principles of research to allow even a hint of a contrary suggestion.

This statement is reiterated because describing attitudes and interactions as culturally specific (socialised) processes is an emotive Pandora's Box. It is the consultant researcher's experience that members of the workplace and many HRD practitioners may easily take offence at what appears to be a presumptive procedure.

They need to become familiar with the flexibility of the language, moving between the colloquial and the clinical as the occasion requires. Until then, the researcher must take additional pains to make explanations clear and never assume total understanding on the part of others.

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