Appendix 1

Company Profile

In 1993, the Quality Control Department introduced Quality Control Circle (QCC) to promote the employee's involvement. In the QCC concept, employees were encouraged to participate in work-related decisions and improvements activities, with the objectives of tapping the creative energies. Teams of workers and supervisors from the same work area were set up and they meet regularly to address workplace problems involving quality and productivity. The quality improvement processes were also supported with the documentation and standardisation of manufacturing processes. Besides the above, On-line Quality Control was also being implemented in Printing Section whereby the operator who produced the printing material was required to inspect his own work.

In 1994, CHS's top management has committed on Total Quality approach by embarking on ISO 9002. It achieved the ISO 9002 certification in October, 1995 with zero non-conformances. The market status is thus enhanced from this achievement because it became the first converter to attain the ISO 9002 certification. As such, a quality policy was developed. The CHS Quality Journey continues with the promotion of teamwork and co-operation amongst employees with the inception of MSGA in 1996. MSGA is customised from the Quality Control Circle (QCC) by simplifying the protocol and cut down bureaucracy. It consists a small number of people with complementary skills who are committed to a common purpose, set of performance goals and an approach for which they hold themselves mutually accountable. The members may perform a variety of problem-solving activities such as determining customer needs, developing a flowchart to study a process, brainstorming to discover opportunities for improvement, selecting projects, recommending corrective actions and tracking the effectiveness of solutions.

In line with the business strategies of customer focus, the Application Development function has been incorporated in Quality Assurance

Department. The activities entail customer requirements of dissatisfiers, satisfiers, exciters or delighters. In 1998, the company management tried to understand the linkages between the voice of customer and design, production and delivery processes. As a result, the Product Design was integrated into Quality Assurance Department in order to promote Quality at Source. This practice has successfully minimised the potential gap between expected quality and actual quality. Realising the public social and fundamental responsibilities as important aspects of the leadership system in any organisation, the top management embarked on ISO 14000 in 1999. This system provides a common approach to environmental management and strengthens the company's ability to improve and measure its environmental performance. CHS was awarded the ISO 14000 Environmental Management System certification by SIRIM in September 2000.

In this new millennium, the evolution of quality in the organisation has matured and the awareness of the need for TQM in the entire organisation. The top management has taken this lead and has incorporated this philosophy in its strategic plan.

Appendix 2

Calibrating the organisation's climate and attitude towards change.
(Yusof, 2001)

Self-actuation

a) Self-influencing
   Circular causality and causal loops-patterns of causation or influence that become circular, such as large populations producing more offsprings.
b) Self-regulating
   Maintenance of a particular variable – organised so as to keep essential variables within definable limits. It relies on negative feedback and specified limits
c) Self-organising
   The self-amplification of fluctuations generated in the system as a consequence of perturbations from the environment.
d) Self-sustaining
   Self-sustaining operations are organisationally closed – when all possible states of activity must always lead to or generate further activity within itself. Once an organisationally closed process is started, it is self-sustaining.
e) Self-producing
   Autopoietic systems self-produce both their components and their boundary.
f) Self-referential
   Symbolic reference to the self. These systems refer to themselves in terms of themselves or their components through image, express symbolically.
g) Self-conscious
   Able to interact with descriptions of self.

Appendix 3

Calibrating the organisation's climate and attitude towards change.
(Yusof, 2001)

Actor System identity – individual

a) Self-referencing closure

Attempts by organisations to interact with their Environment as projections of themselves. (they want to be a part of it, its easier if you are a joiner).

b) Altruism

The attempts by organisations to try to maintain their own identity against a threatening outside world.

c) Self reflective evolution

Subscribing to the process of organisational change as an evolution of self identity in relation to the wider world.

Actor System identity – generic

a) Wholeness

Works as a whole and in connection with the cognitive purpose that derive from the metasystem (cohesiveness).

b) Propositional

The characteristics of the profile are determines by metasystem. Proposition is a basic set of assumptions, logic and orientation for organised activity.

c) Normative

The set of characteristics is normatively agreed to define distinct classes of behaviour. (strong discernible shared values)

d) Extension

The set of characteristics is enabling the similarity or commensurability between systems to be evaluated. (Their presence establish a space of extension that identifies a system generically – there's room to manoeuvre)

e) Qualities

Evaluation of qualities in a given extension will enable similarity between theoretical generic class and system classification. Lack of these qualities hampers the evaluation of similarities. There is pattern distinct between fixed and variable.

f) Generic identity

High scores means there is no loss of generic identity. The generic characteristics have not lost their normative coherence.

Appendix 4

Calibrating the organisation's climate and attitude towards change.
(Yusof, 2001)

System Dissipativeness : Conservative System vs. Dissipative System

a) Structural orientation
   Structure preservation vs. structure changing

b) Action towards deviation
   Counteracting vs. Amplification

c) Dynamic
   Close to zero energy changes and steady state with changes in time vs. far from zero energy change with change in time.

d) Tendency of form
   Morphostasis vs. morphogenesis

e) Internal condition
   Near to steady state vs. far from steady state

f) Referent
   Reference to steady state vs. self reference

g) Logical orientation
   Irreversible process towards steady vs. cyclical irreversible process

h) System type
   Open with possible growth vs. Open, continuous, balance energy exchange.

Appendix 5

Six-Level Organisational Diagnosis

The diagnostic method involves a far more extensive assessment of the organisation issues and might discover other issues that need to be addressed or redefined the initial issues. There are three levels of assessing the functioning of the organisation in the diagnosis process i.e. :-

1) Organisation level (includes the design of the company's strategy, structure and processes)
2) Group or department level (includes group design for structuring interaction among members as norms and work schedules).
3) Individual position and level

(Cummings and Worley, 2001)

2.1 Organisation level

There are two key inputs that affect the way an organisation designs its strategic orientations. The first input is the general environment that represents the external environments that can affect the attainment of organisation objectives. The second input, namely organisation's industry structure or task environment is assessing the strength, weakness, opportunities and threat of an organisation in that particular industry.

2.1.1 General environment

It can be defined in terms of the amount of uncertainty present in social, economic, technological, ecological and political forces. The social variables are divided into three category i.e. demographic, lifestyle and social values. Demographic and lifestyle changes affect the composition, location and expectations of an organisation's labour supply and customers. Social values underlie all other social, political, technological and economic changes and determine all the choices that people make in life. (Stoner, Fredman and Gilbert, 1995) However, Yusof (2001), in his monograph defined social as the manifestation of free movement, peace, harmony and tolerance in the society. The general populace is free from basic wants and is protected from

insurgent. In this context, the definition of social will be confined to company commitment in integrating the societal responsibilities and community involvement into their business practices. This includes protection of public health, safety and the environment that may be affected by a company products and services.

The economic variables are the general economic conditions and trends that may be factors in an organisation's activities. (Stoner et. al., 1995) This includes enough jobs for everyone. The general population has and able to find meaningful employment. GDP proceed to grow as expected. The national debt is in control. (Yusof, 2001)

Honesty means that one can trust another with promises. Things get done according to agreed specifications and obligations. (Yusof, 2001) Honesty relates to promoting ethical behaviour in the business and workplace. In view of this, the Malaysian Institute of Corporate Governance (MICG) tries to ensure that business comply voluntarily with various aspects of the law and a little beyond. Meanwhile, Better Business Bureau of Malaysia (BBB[M]) has proposed a system of awards for ethical business be instituted. (Supramaniam, 2000)

Technology variables include advances in basic sciences such as physics as well as developments in products, processes and materials. It also means an extensive use of cybertech, robotics. The general populace are techno-savy in their daily work. (Yusof, 2001) The level of technology in a society or a particular industry determines to a large extent what products and services will be produced, what equipment will be used and how operations will be managed.

The ecology variables are factors relate to natural environment sustainability. People are high regard for basic hygiene, cleanliness, sustainability of non-renewable resources and the preservation of the environment. (Yusof, 2001) Also, there is concerned about problems ranging from pollution to global warming and ozone depletion.

The political variable means there is freedom of speech, thought and democratic selection of leaders. There is judiciary system to protect the citizenry. (Yusof, 2001) It may influence an organisation's activities as a result from political process or climate. The political process involves competition between different interest groups, each seeking to advance its own values and goals.

2.1.2 Industry structure or task environment

As defined by Michael Porter, an organisation's task environment comprises five forces namely, supplier power, buyer power, threats of substitutes, threats of entry and rivalry among competitors.

In the case of supplier power, the situation is positive if there is no pervasive presence of dominant suppliers. The absence of dominant suppliers will ensure that the organisation is in an advantageous and reasonable bargaining position. (Yusof, 2001) It means that a powerful supplier is able to increase price of supplies or force the organisation to pay more.

Conversely, in the context of buyer power, the situation is positive if there is no pervasive presence of dominant buyers. The absence of dominant buyers will ensure that the organisation is in an advantageous and reasonable bargaining position. (Yusof, 2001) Thereby, a powerful buyer can force the organisation to lower the price of the products or set the terms and conditions to be followed.

The threat of entry refers to the new firm entering into the industry. The situation is positive if there is no pervasive presence of new entrants. The absence of dominant entrants will ensure that the organisation is in an advantageous and reasonable bargaining position. (Yusof, 2001)

The threats of rivalry among competitors describe the situation whereby many organisation competing for the same customers. The situation is positive if there is no pervasive presence of dominant competitors. The absence of

dominant competitors will ensure that the organisation is in an advantageous and reasonable bargaining position. (Yusof, 2001) Thus, the organisation must monitor the product offerings, costs and structures carefully in order to survive and prosper in the industry.

Similarly, the threats of substitutes often concerned new products that can replace existing offerings. The situation is positive if there is no pervasive presence of substitutes. The absence of dominant substitutes will ensure that the organisation is in an advantageous and reasonable bargaining position. (Yusof, 2001) As such, costs and prices must be monitored closely as it is easy for consumer to switch to another products.

Lastly, the threats of complementary refer to the demand for the complementary products such as packed foods, packed pharmaceutical products and so on. The situation is positive if there is pervasive presence of complementary. The presence of complementary will ensure that the organisation is in an advantageous and reasonable bargaining position. Their presence will expand the demand for the organisation's products and services. (Yusof, 2001) For example, when the demand for these items increase, indirectly the demand for the packaging material will increase as well.

2.1.3 Strategic orientation

A strategic orientation comprises five major design components namely, strategy, core activity systems, structural systems, measurement systems, human resource systems and culture. A strategy represents the way an organisation uses its resources (human, economic or technical) to gain and sustain a competitive advantage. It is the lucid description of organisation's mission, goals and objectives, strategic intent and functional policies. (Yusof, 2001)

Core activities are activities that transform inputs into value outputs. They are current and unambiguous (technically stable, tested, formalised, and fully

supported manually as well as electronically. The product realisation system (production methods, workflow and equipment) is dependable, reliable and safe. (Yusof, 2001) Analysis of core activities can include assigning costs to each of the major phases of the workflow to identify costs that may be hidden by activities of the production process.

Human resource systems include mechanisms (for selecting, developing, appraising and rewarding organisation members) aimed at influencing the mix of skills, personalities and behaviours of the populace of the entity. (Yusof, 2001) On the other hand, the human resource management process includes seven basic activities, namely, i) human resource planning, ii) recruitment, iii) selecting, iv) socialisation, v) training and development, vi) performance appraisal and vii) promotions, transfer, demotions, and separations.
(Stoner et. al., 1995)

The structural system describes how attention and resources are focused on task accomplishment. There are transparent division and coordination of work through differentiation (formal division of work by function and product groupings), integration (extensive use of plans and schedules, using budgets, assigning special roles such as project managers and integrators, creating cross departmental task force) and matrix structures (combination of both differentiation and integration). (Yusof, 2001)

Measurement systems are the provision of accurate, understandable and timely information exist. It involves methods of gathering, assessing and disseminating information on the activities of groups and individuals in organisation. This information will gauge the performance of the organisation against its explicit goals. For example, the measurement systems monitor organisational operations and feed data about work activities to managers and members in a manner that they can better understand current performance and coordinate work. (Yusof, 2001)

Culture represents a variety of values, work ethics and norms of correct behaviour. It can be differentiated through employee response to workplace

policies such as employee involvement programme, reward systems, career planning and development. There is sufficient understanding of the current culture that is well enough to determine its alignment with the other design factors. There is explicitness in the norms, languages, the do's and don'ts (highly protocol, backstabbing, bureaucratic, performance oriented).
(Yusof, 2001)

2.2 Group level (Regional, Divisional, Departmental, and Sectional)

The group design should be congruent with the larger organisation design. The five variables in the group design namely, goal clarity, task structure, group functioning, performance norms and group composition are related to the previously mentioned variables in industry structure.

Goal clarity entails the group members understanding of the company objectives as well as the method for measuring, monitoring and feeding back information about goal achievement. (Cumming and Worley, 1997)

Task structure is in regards with the design of the group's work and it involves coodinating and regulating group member's work. It also refers to the degree to which group tasks are structured to promote effective interaction among group members. The regulation relates to degree of empowerment to the work group in task behaviour such as supervision, plans and programs. For independent tasks, it means the degree to which members can control their own tasks, behaviours and be relatively free from external controls. (Yusof, 2001)

Group functioning is the underlying basis of group life. This relates to the quality of relationships that affecting the task performance. The commitment to help work group members develop healthy interpersonal relationships, including an ability and a willingness to share feelings and perceptions about members' behaviours so that interpersonal problems and task difficulties can be worked through and resolved. It entails holding group together as a cohesive team and includes encouraging, harmonising, compromising, setting standards and observing. (Yusof, 2001)

Performance norms are member perception on the way the group should perform its task and also include acceptable levels of performance. There is agreement (implicitly or explicitly) among members on performance norms. Norms derive from interactions among members and serve as guides to group behaviour. And members routinely perform tasks according to those norms. (Yusof, 2001)

Group composition concern the demographic of the members such as age, education, experience and skills and abilities that can affect people behaviour and group cohesiveness. There is a balanced demographic and psychographics amongst members to meet the job requirements. There is satisfaction and a less stressful work environment because of the balanced composition. (Yusof, 2001)

2.3 Individual position and level

This individual position and level is in regards to gauging the individual effectiveness in carrying out the job as well as the characteristics of the individual.

2.3.1 Job level - Individual effectiveness

The individual jobs have five factors and they are skill variety, task identity, autonomy, task significance and feedback about results.

Skill variety identifies the degree to which a job requires a range of activities and abilities to perform the work. The job entails diverse activities and several different skills in performing the work. (Cumming and Worley, 1997)

Task identity measures the degree to which a job requires the completion of a relatively whole identifiable pieces of work. They are able to see a job through from beginning until the end. (Cumming and Worley, 1997)

Task significance identifies the degree to which a job has a significant impact on other people's lives. (Cumming and Worley, 1997)

Autonomy indicates the degree to which a job provides freedom and discretion in scheduling the work and determining the work methods. (Cumming and Worley, 1997)

Feedback about results involves the degree to which a job provides employee with direct and clear information about the effectiveness of task performance. (Cumming and Worley, 1997)

2.3.2 Job level – personal characteristics

The personal characteristics of individuals occupying jobs include age, experience, abilities, growth needs, education, skills, personal needs & expectation and family needs.

Age is related to high energy level and healthy. (Yusof, 2001) In this context, age refer to the duration of life of the employee. It is not the number of years that the employee is employed in this company. It is a concern in the job design because if the majority of the workers are approaching 40 years, the management should think of automating the process or recruit young employees to take over the manually operated process. It is undeniable that older employees are less mobile and weaker compare to young employees.

Experience means any matter practically acquaintance with or gain by trail or wisdom derived from the changes and trial of life. (Chambers, 1983) An experience person means a person who is street smart and know the ropes. (Yusof, 2001)

Ability means the quality or fact of being able intellectually and physically. The pronounced intellectual abilities (number aptitude, verbal comprehension, perceptual speed, inductive reasoning – extrapolation or forecasting from surveys results, deductive reasoning – cause effect analysis, spatial

visualisation, memory). The physical abilities – stamina, balance, strength, flexibility. (Yusof, 2001)

Skill refer to expert knowledge, a craft or accomplishment. (Chambers, 1983) In this job level diagnosis, it means personnel who are certified Charted Financial Analysis (CFA), Charted Public Accountant (CPA), Economists, statisticians, certified technicians, etc. (Yusof, 2001)

From another point of view, the individual differences in growth needs such as self-direction, learning and personal accomplishment will become indicator of employee motivation and satisfaction. It is an important contingency that affect work design success. For example, the greater people's growth needs, the more responsive they are to enriched forms of work. (Cummings and Worley, 1997) On the other hand, according to Maslow, self-actualisation is the personal growth needs and also the highest level of human needs. Whereas Alderfer defined growth needs as needs for personal creativity or productive influence. In general, the older employees are easily satisfy and very complacent with the current situation. As such, this group of employee will choose status quo in the workplace and place more resistant to change.

Education refers to the formal learning in primary school, vocational school, tertiary education institute and professional certification body. Education is an important factor as it judges the individual ability in accomplishing various level of task complexity.

Once the personal needs and expectation being fulfilled, the staff are generally satisfied (with regard to Maslow and Mclelland's achievement, power and affiliation needs). There is ample opportunity to perform and there is equity. Nevertheless, personal needs and expectation will generally associate with the individual wealth accumulation. Comparatively, the younger peers are more receptive to change as they are more energetic in achievement, power and affiliation needs.

On another context, the family needs refers to the stability, peace, good health and harmony in the family life. It may be associated to the medical expenses and also children or siblings education expenses in the family of the employees. This variable is important because it may affect the employee performance when the employee is burden with the family needs.

Appendix 6

Four Intervention Strategies

The term intervention refers to a set of sequenced planned actions or events intended to help an organisation increase its effectiveness. Three criteria to be taken into account when designing an intervention are :-

i) the extent to which it fits the needs of organisation;

ii) the degree to which it is based on causal knowledge of intended outcomes;

iii) the extent to which it transfers competence to manage change to organisation members.

The intervention strategies designed should target four interrelated issues, namely, strategic issues, technology and structure issues, human resource issues and human process issues. (Cummings and Worley, 2001)

Human process interventions

This intervention focusing on people within organisations and the processes through which they accomplish organisational goals. It related to interpersonal relations and group dynamics. These include the following 4 interventions T-group, process consultation, third party intervention and team building. Besides these, there are more system-wide interventions that focus on the total organisation or an entire department, as well as relations between groups. These include organisation confrontation meeting, inter-group relations, large group interventions and grid organisation development.

Technostructural Interventions

This intervention entails 2 area i.e. technology (task methods and job design) and structure (division of labour and hierarchy) of organisations. The approaches include employee involvement, as well as methods for designing organisations, groups and jobs. Technostructural interventions are rooted in the disciplines of engineering, sociology and psychology and in the applied fields of sociotechnical systems and organisation design. It concerned with restructuring organisation such as structural design, downsizing and re-engineering.

Human Resource Management Interventions

This intervention used to integrate people into organisation. These practises include career planning, reward systems, goal setting, performance appraisal, and managing work force diversity and employee wellness. Human resource management interventions are rooted in the discipline of economics and labour relations and in the applied personal practices of wages and compensation, employee selection and placement and performance appraisal.

Strategic Interventions

These interventions actually link the internal functioning of the organisation to the larger environment and transform the organisation to keep pace with changing conditions. Thereby, the open systems planning, integrated strategic change and transorganisational development are essential for linking the organisation to the environment. For transforming the organisation, culture change, self-designing organisations and organisation learning are applied.

APPENDIX 7

Actor System - individual level analysis : Self-referencing closure

	V1	X-XM	(X-XM)2
P1	4	1.314286	1.727346939
P2	5	2.314286	5.355918367
P3	3	0.314286	0.09877551
P4	4	1.314286	1.727346939
P5	4	1.314286	1.727346939
P6	4	1.314286	1.727346939
P7	3	0.314286	0.09877551
P8	4	1.314286	1.727346939
P9	3	0.314286	0.09877551
P10	3	0.314286	0.09877551
P11	3	0.314286	0.09877551
P12	3	0.314286	0.09877551
P13	2	-0.685714	0.470204082
P14	3	0.314286	0.09877551
P15	4	1.314286	1.727346939
P16	3	0.314286	0.09877551
P17	4	1.314286	1.727346939
P18	4	1.314286	1.727346939
P19	4	1.314286	1.727346939
P20	3	0.314286	0.09877551
P21	3	0.314286	0.09877551
P22	4	1.314286	1.727346939
P23	3	0.314286	0.09877551
P24	3	0.314286	0.09877551
P25	3	0.314286	0.09877551
P26	3	0.314286	0.09877551
P27	1	-1.685714	2.841632653
P28	1	-1.685714	2.841632653
P29	2	-0.685714	0.470204082
P30	3	0.314286	0.09877551
P31	3	0.314286	0.09877551
P32	3	0.314286	0.09877551
P33	3	0.314286	0.09877551
P34	1	-1.685714	2.841632653
P35	1	-1.685714	2.841632653
P36	3	0.314286	0.09877551
P37	2	-0.685714	0.470204082
P38	3	0.314286	0.09877551
P39	2	-0.685714	0.470204082
P40	2	-0.685714	0.470204082
P41	1	-1.685714	2.841632653
P42	1	-1.685714	2.841632653
P43	2	-0.685714	0.470204082
P44	3	0.314286	0.09877551
P45	3	0.314286	0.09877551
P46	2	-0.685714	0.470204082
P47	2	-0.685714	0.470204082
P48	2	-0.685714	0.470204082
P49	2	-0.685714	0.470204082
P50	2	-0.685714	0.470204082

APPENDIX 7

P51	3	0.314286	0.09877551
P52	2	-0.685714	0.470204082
P53	2	-0.685714	0.470204082
P54	2	-0.685714	0.470204082
P55	2	-0.685714	0.470204082
P56	2	-0.685714	0.470204082
P57	2	-0.685714	0.470204082
P58	2	-0.685714	0.470204082
P59	3	0.314286	0.09877551
P60	2	-0.685714	0.470204082
P61	2	-0.685714	0.470204082
P62	2	-0.685714	0.470204082
P63	2	-0.685714	0.470204082
P64	3	0.314286	0.09877551
P65	2	-0.685714	0.470204082
P66	3	0.314286	0.09877551
P67	3	0.314286	0.09877551
P68	3	0.314286	0.09877551
P69	3	0.314286	0.09877551
P70	4	1.314286	1.727346939
70	188		55.08571429

XM = 2.685714

S^2 = 0.798343685

S = 0.893500803

SQR n = 8.366600265

Sx = 0.106793772

Z = 2.042

E = 0.218072883

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.781927

Upper limit = 4.218073

t obs = -12.30676

Significant

APPENDIX 8

Actor System - individual level analysis : Altruism

	V2	X-XM	(X-XM)2
P1	4	1.085714	1.17877551
P2	4	1.085714	1.17877551
P3	4	1.085714	1.17877551
P4	3	0.085714	0.007346939
P5	2	-0.914286	0.835918367
P6	3	0.085714	0.007346939
P7	3	0.085714	0.007346939
P8	4	1.085714	1.17877551
P9	2	-0.914286	0.835918367
P10	4	1.085714	1.17877551
P11	3	0.085714	0.007346939
P12	3	0.085714	0.007346939
P13	3	0.085714	0.007346939
P14	3	0.085714	0.007346939
P15	3	0.085714	0.007346939
P16	3	0.085714	0.007346939
P17	3	0.085714	0.007346939
P18	3	0.085714	0.007346939
P19	4	1.085714	1.17877551
P20	3	0.085714	0.007346939
P21	4	1.085714	1.17877551
P22	4	1.085714	1.17877551
P23	3	0.085714	0.007346939
P24	3	0.085714	0.007346939
P25	3	0.085714	0.007346939
P26	3	0.085714	0.007346939
P27	3	0.085714	0.007346939
P28	3	0.085714	0.007346939
P29	3	0.085714	0.007346939
P30	3	0.085714	0.007346939
P31	4	1.085714	1.17877551
P32	3	0.085714	0.007346939
P33	3	0.085714	0.007346939
P34	3	0.085714	0.007346939
P35	3	0.085714	0.007346939
P36	3	0.085714	0.007346939
P37	3	0.085714	0.007346939
P38	2	-0.914286	0.835918367
P39	3	0.085714	0.007346939
P40	3	0.085714	0.007346939
P41	1	-1.914286	3.664489796
P42	4	1.085714	1.17877551
P43	3	0.085714	0.007346939
P44	3	0.085714	0.007346939
P45	3	0.085714	0.007346939
P46	3	0.085714	0.007346939
P47	3	0.085714	0.007346939
P48	2	-0.914286	0.835918367
P49	2	-0.914286	0.835918367
P50	3	0.085714	0.007346939

APPENDIX 8

P51	2	-0.914286	0.835918367
P52	2	-0.914286	0.835918367
P53	2	-0.914286	0.835918367
P54	2	-0.914286	0.835918367
P55	2	-0.914286	0.835918367
P56	2	-0.914286	0.835918367
P57	3	0.085714	0.007346939
P58	2	-0.914286	0.835918367
P59	3	0.085714	0.007346939
P60	3	0.085714	0.007346939
P61	2	-0.914286	0.835918367
P62	2	-0.914286	0.835918367
P63	3	0.085714	0.007346939
P64	3	0.085714	0.007346939
P65	3	0.085714	0.007346939
P66	2	-0.914286	0.835918367
P67	3	0.085714	0.007346939
P68	4	1.085714	1.17877551
P69	3	0.085714	0.007346939
P70	3	0.085714	0.007346939
70	204		29.48571429

XM = 2.914286

S^2 = 0.427329193

S = 0.653704209

SQR n = 8.366600265

Sx = 0.078132597

Z = 2.042

E = 0.159546764

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.840453

Upper limit = 4.159547

t obs = -13.89579

Significant

APPENDIX 9

Actor System - individual level analysis : Self-reflective evolution

	V3	X-XM	(X-XM)2
P1	4	1.242857	1.544693878
P2	4	1.242857	1.544693878
P3	3	0.242857	0.058979592
P4	5	2.242857	5.030408163
P5	3	0.242857	0.058979592
P6	3	0.242857	0.058979592
P7	3	0.242857	0.058979592
P8	4	1.242857	1.544693878
P9	3	0.242857	0.058979592
P10	3	0.242857	0.058979592
P11	3	0.242857	0.058979592
P12	4	1.242857	1.544693878
P13	4	1.242857	1.544693878
P14	3	0.242857	0.058979592
P15	4	1.242857	1.544693878
P16	3	0.242857	0.058979592
P17	4	1.242857	1.544693878
P18	2	-0.757143	0.573265306
P19	4	1.242857	1.544693878
P20	3	0.242857	0.058979592
P21	4	1.242857	1.544693878
P22	3	0.242857	0.058979592
P23	3	0.242857	0.058979592
P24	3	0.242857	0.058979592
P25	3	0.242857	0.058979592
P26	3	0.242857	0.058979592
P27	1	-1.757143	3.08755102
P28	1	-1.757143	3.08755102
P29	3	0.242857	0.058979592
P30	3	0.242857	0.058979592
P31	3	0.242857	0.058979592
P32	3	0.242857	0.058979592
P33	3	0.242857	0.058979592
P34	2	-0.757143	0.573265306
P35	3	0.242857	0.058979592
P36	1	-1.757143	3.08755102
P37	1	-1.757143	3.08755102
P38	3	0.242857	0.058979592
P39	3	0.242857	0.058979592
P40	2	-0.757143	0.573265306
P41	1	-1.757143	3.08755102
P42	2	-0.757143	0.573265306
P43	2	-0.757143	0.573265306
P44	4	1.242857	1.544693878
P45	4	1.242857	1.544693878
P46	2	-0.757143	0.573265306
P47	2	-0.757143	0.573265306
P48	2	-0.757143	0.573265306
P49	2	-0.757143	0.573265306
P50	2	-0.757143	0.573265306

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P51	3	0.242857	0.058979592
P52	2	-0.757143	0.573265306
P53	2	-0.757143	0.573265306
P54	2	-0.757143	0.573265306
P55	2	-0.757143	0.573265306
P56	2	-0.757143	0.573265306
P57	2	-0.757143	0.573265306
P58	3	0.242857	0.058979592
P59	3	0.242857	0.058979592
P60	2	-0.757143	0.573265306
P61	2	-0.757143	0.573265306
P62	2	-0.757143	0.573265306
P63	2	-0.757143	0.573265306
P64	3	0.242857	0.058979592
P65	2	-0.757143	0.573265306
P66	3	0.242857	0.058979592
P67	3	0.242857	0.058979592
P68	4	1.242857	1.544693878
P69	3	0.242857	0.058979592
P70	3	0.242857	0.058979592
70	193		52.87142857

XM = 2.757143

S^2 = 0.766252588

S = 0.875358548

SQR n = 8.366600265

Sx = 0.104625358

Z = 2.042

E = 0.213644981

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.786355

Upper limit = 4.213645

t obs = -11.87912

Significant

APPENDIX 10

Actor system - generic level analysis : Wholeness

Department	V1	X-XM	(X-XM)2
Sales & Marketing	3	-0.18181818	0.033058
Administration	3	-0.18181818	0.033058
Accounts	3	-0.18181818	0.033058
Printing	4	0.818181818	0.669421
Lamination	4	0.818181818	0.669421
Finished Goods	3	-0.18181818	0.033058
Quality	3	-0.18181818	0.033058
Production Control	3	-0.18181818	0.033058
Technical	3	-0.18181818	0.033058
Information Technology	3	-0.18181818	0.033058
Engineering	3	-0.18181818	0.033058
Mean	3.181818		1.636364

Sample =	11	S^2 =	0.163636
		S =	0.404519
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0.121967

Lower limit = 3.760944
Upper limit = 4.239056

Z obs = -6.708211
Significant

APPENDIX 11

Actor system - generic level analysis : Propositional

Department	V2	X-XM	(X-XM)2
Sales & Marketing	4	0.272727273	0.07438
Administration	3	-0.72727273	0.528926
Accounts	4	0.272727273	0.07438
Printing	4	0.272727273	0.07438
Lamination	4	0.272727273	0.07438
Finished Goods	3	-0.72727273	0.528926
Quality	4	0.272727273	0.07438
Production Control	4	0.272727273	0.07438
Technical	3	-0.72727273	0.528926
Information Technology	4	0.272727273	0.07438
Engineering	4	0.272727273	0.07438
Mean	3.727273		2.181818

Sample =	11	S^2 =	0.218182
		S =	0.4671
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0.140836

Lower limit = 3.723962
Upper limit = 4.276038

Z obs = -1.936491
Not significant

APPENDIX 12

Actor system - generic level analysis : Normative

Department	V3	X-XM	(X-XM)2
Sales & Marketing	4	0	0
Administration	4	0	0
Accounts	4	0	0
Printing	4	0	0
Lamination	4	0	0
Finished Goods	4	0	0
Quality	4	0	0
Production Control	4	0	0
Technical	4	0	0
Information Technology	4	0	0
Engineering	4	0	0
Mean	4		0

Sample =	11	S^2 =	0
		S =	0
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0
		Lower limit =	4
		Upper limit =	4

Z obs = Infinity

Not Significant

APPENDIX 13

Actor system - generic level analysis : Extension

Department	V4	X-XM	(X-XM)2
Sales & Marketing	4	0.545454545	0.297521
Administration	3	-0.45454545	0.206612
Accounts	4	0.545454545	0.297521
Printing	4	0.545454545	0.297521
Lamination	3	-0.45454545	0.206612
Finished Goods	3	-0.45454545	0.206612
Quality	4	0.545454545	0.297521
Production Control	3	-0.45454545	0.206612
Technical	3	-0.45454545	0.206612
Information Technology	4	0.545454545	0.297521
Engineering	3	-0.45454545	0.206612
Mean	3.454545		2.727273

Sample =	11	S^2 =	0.272727
		S =	0.522233
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0.157459

Lower limit =	3.69138
Upper limit =	4.30862

Z obs = -3.464103

Significant

APPENDIX 14

Actor system - generic level analysis : Qualities

Department	V5	X-XM	(X-XM)2
Sales & Marketing	3	0.090909091	0.008264
Administration	3	0.090909091	0.008264
Accounts	4	1.090909091	1.190083
Printing	2	-0.90909091	0.826446
Lamination	2	-0.90909091	0.826446
Finished Goods	3	0.090909091	0.008264
Quality	3	0.090909091	0.008264
Production Control	3	0.090909091	0.008264
Technical	3	0.090909091	0.008264
Information Technology	3	0.090909091	0.008264
Engineering	3	0.090909091	0.008264
Mean	2.909091		2.909091

Sample =	11	S^2 =	0.290909
		S =	0.53936
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0.162623

Lower limit =	3.681259
Upper limit =	4.318741

Z obs =	-6.708205
	Significant

APPENDIX 15

Actor system - generic level analysis : Generic identity

Department	V6	X-XM	(X-XM)2
Sales & Marketing	4	0	0
Administration	4	0	0
Accounts	4	0	0
Printing	4	0	0
Lamination	4	0	0
Finished Goods	4	0	0
Quality	4	0	0
Production Control	4	0	0
Technical	4	0	0
Information Technology	4	0	0
Engineering	4	0	0
Mean	4		0

Sample =	11	S^2 =	0
		S =	0
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0

Lower limit = 4
Upper limit = 4

Z obs = Infinity
Not Significant

APPENDIX 16

Group level analysis : Goal clarity

Department	V1	X-XM	(X-XM)2
Sales & Marketing	4	0.272727273	0.07438
Administration	3	-0.72727273	0.528926
Accounts	3	-0.72727273	0.528926
Printing	4	0.272727273	0.07438
Lamination	4	0.272727273	0.07438
Finished Goods	4	0.272727273	0.07438
Quality	4	0.272727273	0.07438
Production Control	4	0.272727273	0.07438
Technical	4	0.272727273	0.07438
Information Technology	4	0.272727273	0.07438
Engineering	3	-0.72727273	0.528926
Mean	3.727273		2.181818

Sample =	11	S^2 =	0.218182
		S =	0.4671
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0.140836

Lower limit = 3.723962
Upper limit = 4.276038

Z obs = -1.936491
Not significant

APPENDIX 17

Group level analysis : Task structure

Department	V2	X-XM	(X-XM)2
Sales & Marketing	4	0.090909091	0.008264
Administration	4	0.090909091	0.008264
Accounts	4	0.090909091	0.008264
Printing	4	0.090909091	0.008264
Lamination	4	0.090909091	0.008264
Finished Goods	3	-0.909090909	0.826446
Quality	4	0.090909091	0.008264
Production Control	4	0.090909091	0.008264
Technical	4	0.090909091	0.008264
Information Technology	4	0.090909091	0.008264
Engineering	4	0.090909091	0.008264
Mean	3.909091		0.909091

Sample =	11	S^2 =	0.090909
		S =	0.301511
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0.090909

Lower limit =	3.821818
Upper limit =	4.178182

Z obs = -1.000001

Not significant

APPENDIX 18

Group level analysis : Group functioning

Department	V3	X-XM	(X-XM)2
Sales & Marketing	3	-0.18181818	0.033058
Administration	3	-0.18181818	0.033058
Accounts	3	-0.18181818	0.033058
Printing	4	0.818181818	0.669421
Lamination	4	0.818181818	0.669421
Finished Goods	3	-0.18181818	0.033058
Quality	3	-0.18181818	0.033058
Production Control	3	-0.18181818	0.033058
Technical	3	-0.18181818	0.033058
Information Technology	3	-0.18181818	0.033058
Engineering	3	-0.18181818	0.033058
Mean	3.181818		1.636364

Sample =	11	S^2 =	0.163636
		S =	0.404519
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0.121967

Lower limit = 3.760944
Upper limit = 4.239056

Z obs = -6.708211
Significant

APPENDIX 19

Group level analysis : Performance norm

Department	V4	X-XM	(X-XM)2
Sales & Marketing	4	0	0
Administration	4	0	0
Accounts	4	0	0
Printing	4	0	0
Lamination	4	0	0
Finished Goods	4	0	0
Quality	4	0	0
Production Control	4	0	0
Technical	4	0	0
Information Technology	4	0	0
Engineering	4	0	0
Mean	4		0

Sample =	11	S^2 =	0
		S =	0
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0

Lower limit =	4
Upper limit =	4

Z obs = Infinity

Not significant

APPENDIX 20

Group level analysis : Group composition

Department	V5	X-XM	(X-XM)2
Sales & Marketing	4	0.727272727	0.528926
Administration	3	-0.27272727	0.07438
Accounts	3	-0.27272727	0.07438
Printing	3	-0.27272727	0.07438
Lamination	3	-0.27272727	0.07438
Finished Goods	3	-0.27272727	0.07438
Quality	3	-0.27272727	0.07438
Production Control	3	-0.27272727	0.07438
Technical	4	0.727272727	0.528926
Information Technology	4	0.727272727	0.528926
Engineering	3	-0.27272727	0.07438
Mean	3.272727		2.181818

Sample =	11	S^2 =	0.218182
		S =	0.4671
u =	4	SQR n =	3.316625
Z =	1.96	Sx =	0.140836

Lower limit = 3.723962
Upper limit = 4.276038

Z obs = -5.163976
Significant

APPENDIX 21

Personal characteristics analysis : Age

	V1	X-XM	(X-XM)2
P1	3	-0.042857	0.001837
P2	3	-0.042857	0.001837
P3	3	-0.042857	0.001837
P4	4	0.957143	0.916122
P5	3	-0.042857	0.001837
P6	5	1.957143	3.830408
P7	3	-0.042857	0.001837
P8	3	-0.042857	0.001837
P9	3	-0.042857	0.001837
P10	3	-0.042857	0.001837
P11	2	-1.042857	1.087551
P12	4	0.957143	0.916122
P13	3	-0.042857	0.001837
P14	2	-1.042857	1.087551
P15	4	0.957143	0.916122
P16	4	0.957143	0.916122
P17	4	0.957143	0.916122
P18	3	-0.042857	0.001837
P19	2	-1.042857	1.087551
P20	4	0.957143	0.916122
P21	3	-0.042857	0.001837
P22	3	-0.042857	0.001837
P23	5	1.957143	3.830408
P24	4	0.957143	0.916122
P25	3	-0.042857	0.001837
P26	4	0.957143	0.916122
P27	5	1.957143	3.830408
P28	4	0.957143	0.916122
P29	4	0.957143	0.916122
P30	4	0.957143	0.916122
P31	4	0.957143	0.916122
P32	3	-0.042857	0.001837
P33	4	0.957143	0.916122
P34	4	0.957143	0.916122
P35	5	1.957143	3.830408
P36	4	0.957143	0.916122
P37	4	0.957143	0.916122
P38	3	-0.042857	0.001837
P39	4	0.957143	0.916122
P40	4	0.957143	0.916122
P41	3	-0.042857	0.001837
P42	4	0.957143	0.916122
P43	4	0.957143	0.916122
P44	3	-0.042857	0.001837
P45	3	-0.042857	0.001837
P46	2	-1.042857	1.087551
P47	2	-1.042857	1.087551
P48	2	-1.042857	1.087551
P49	2	-1.042857	1.087551
P50	1	-2.042857	4.173265

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P51	2	-1.042857	1.087551
P52	3	-0.042857	0.001837
P53	1	-2.042857	4.173265
P54	2	-1.042857	1.087551
P55	3	-0.042857	0.001837
P56	2	-1.042857	1.087551
P57	1	-2.042857	4.173265
P58	3	-0.042857	0.001837
P59	2	-1.042857	1.087551
P60	3	-0.042857	0.001837
P61	1	-2.042857	4.173265
P62	1	-2.042857	4.173265
P63	3	-0.042857	0.001837
P64	2	-1.042857	1.087551
P65	2	-1.042857	1.087551
P66	2	-1.042857	1.087551
P67	3	-0.042857	0.001837
P68	2	-1.042857	1.087551
P69	3	-0.042857	0.001837
P70	3	-0.042857	0.001837
70	213		70.87143

XM = 3.042857 S^2 = 1.027122

S = 1.01347

SQR n = 8.3666

Sx = 0.121133

Z = 2.042

E = 0.247353

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.752647

Upper limit = 4.247353

t obs = -7.901595

Significant

APPENDIX 22

Personal characteristics analysis : Experience

	V2	X-XM	(X-XM)2
P1	4	1.228571	1.509388
P2	3	0.228571	0.052245
P3	4	1.228571	1.509388
P4	2	-0.771429	0.595102
P5	3	0.228571	0.052245
P6	5	2.228571	4.966531
P7	4	1.228571	1.509388
P8	1	-1.771429	3.137959
P9	2	-0.771429	0.595102
P10	2	-0.771429	0.595102
P11	5	2.228571	4.966531
P12	1	-1.771429	3.137959
P13	4	1.228571	1.509388
P14	5	2.228571	4.966531
P15	3	0.228571	0.052245
P16	5	2.228571	4.966531
P17	5	2.228571	4.966531
P18	5	2.228571	4.966531
P19	3	0.228571	0.052245
P20	5	2.228571	4.966531
P21	5	2.228571	4.966531
P22	3	0.228571	0.052245
P23	1	-1.771429	3.137959
P24	3	0.228571	0.052245
P25	3	0.228571	0.052245
P26	3	0.228571	0.052245
P27	1	-1.771429	3.137959
P28	1	-1.771429	3.137959
P29	1	-1.771429	3.137959
P30	3	0.228571	0.052245
P31	2	-0.771429	0.595102
P32	3	0.228571	0.052245
P33	2	-0.771429	0.595102
P34	2	-0.771429	0.595102
P35	1	-1.771429	3.137959
P36	3	0.228571	0.052245
P37	1	-1.771429	3.137959
P38	4	1.228571	1.509388
P39	3	0.228571	0.052245
P40	3	0.228571	0.052245
P41	4	1.228571	1.509388
P42	2	-0.771429	0.595102
P43	2	-0.771429	0.595102
P44	5	2.228571	4.966531
P45	4	1.228571	1.509388
P46	1	-1.771429	3.137959
P47	2	-0.771429	0.595102
P48	2	-0.771429	0.595102
P49	2	-0.771429	0.595102
P50	2	-0.771429	0.595102

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P51	2	-0.771429	0.595102
P52	2	-0.771429	0.595102
P53	1	-1.771429	3.137959
P54	3	0.228571	0.052245
P55	2	-0.771429	0.595102
P56	2	-0.771429	0.595102
P57	1	-1.771429	3.137959
P58	3	0.228571	0.052245
P59	3	0.228571	0.052245
P60	5	2.228571	4.966531
P61	1	-1.771429	3.137959
P62	2	-0.771429	0.595102
P63	3	0.228571	0.052245
P64	3	0.228571	0.052245
P65	1	-1.771429	3.137959
P66	2	-0.771429	0.595102
P67	4	1.228571	1.509388
P68	2	-0.771429	0.595102
P69	4	1.228571	1.509388
P70	3	0.228571	0.052245
70	194		116.3429

XM = 2.771429

S^2 = 1.686128

S = 1.29851

SQR n = 8.3666

Sx = 0.155202

Z = 2.042

E = 0.316922

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.683078

Upper limit = 4.316922

t obs = -7.91597

Significant

APPENDIX 23

Personal characteristics analysis : Abilities

	V3	X-XM	(X-XM)2
P1	5	2.471429	6.107959
P2	5	2.471429	6.107959
P3	4	1.471429	2.165102
P4	4	1.471429	2.165102
P5	4	1.471429	2.165102
P6	5	2.471429	6.107959
P7	4	1.471429	2.165102
P8	4	1.471429	2.165102
P9	4	1.471429	2.165102
P10	3	0.471429	0.222245
P11	3	0.471429	0.222245
P12	2	-0.528571	0.279388
P13	3	0.471429	0.222245
P14	3	0.471429	0.222245
P15	3	0.471429	0.222245
P16	3	0.471429	0.222245
P17	4	1.471429	2.165102
P18	3	0.471429	0.222245
P19	4	1.471429	2.165102
P20	3	0.471429	0.222245
P21	3	0.471429	0.222245
P22	3	0.471429	0.222245
P23	2	-0.528571	0.279388
P24	3	0.471429	0.222245
P25	3	0.471429	0.222245
P26	2	-0.528571	0.279388
P27	1	-1.528571	2.336531
P28	1	-1.528571	2.336531
P29	2	-0.528571	0.279388
P30	2	-0.528571	0.279388
P31	2	-0.528571	0.279388
P32	3	0.471429	0.222245
P33	2	-0.528571	0.279388
P34	2	-0.528571	0.279388
P35	2	-0.528571	0.279388
P36	2	-0.528571	0.279388
P37	1	-1.528571	2.336531
P38	2	-0.528571	0.279388
P39	2	-0.528571	0.279388
P40	2	-0.528571	0.279388
P41	2	-0.528571	0.279388
P42	2	-0.528571	0.279388
P43	1	-1.528571	2.336531
P44	3	0.471429	0.222245
P45	3	0.471429	0.222245
P46	1	-1.528571	2.336531
P47	2	-0.528571	0.279388
P48	2	-0.528571	0.279388
P49	2	-0.528571	0.279388
P50	2	-0.528571	0.279388

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P51	2	-0.528571	0.279388
P52	2	-0.528571	0.279388
P53	1	-1.528571	2.336531
P54	2	-0.528571	0.279388
P55	3	0.471429	0.222245
P56	2	-0.528571	0.279388
P57	1	-1.528571	2.336531
P58	3	0.471429	0.222245
P59	2	-0.528571	0.279388
P60	3	0.471429	0.222245
P61	1	-1.528571	2.336531
P62	2	-0.528571	0.279388
P63	2	-0.528571	0.279388
P64	2	-0.528571	0.279388
P65	2	-0.528571	0.279388
P66	2	-0.528571	0.279388
P67	3	0.471429	0.222245
P68	2	-0.528571	0.279388
P69	3	0.471429	0.222245
P70	2	-0.528571	0.279388
70	177		67.44286

XM = 2.528571

S^2 = 0.977433

S = 0.988652

SQR n = 8.3666

Sx = 0.118167

Z = 2.042

E = 0.241296

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.758704

Upper limit = 4.241296

t obs = -12.45216

Significant

APPENDIX 24

Personal characteristics analysis : Growth needs

	V4	X-XM	(X-XM)2
P1	4	0.657143	0.431837
P2	5	1.657143	2.746122
P3	3	-0.342857	0.117551
P4	4	0.657143	0.431837
P5	2	-1.342857	1.803265
P6	3	-0.342857	0.117551
P7	4	0.657143	0.431837
P8	3	-0.342857	0.117551
P9	4	0.657143	0.431837
P10	3	-0.342857	0.117551
P11	3	-0.342857	0.117551
P12	4	0.657143	0.431837
P13	4	0.657143	0.431837
P14	3	-0.342857	0.117551
P15	3	-0.342857	0.117551
P16	4	0.657143	0.431837
P17	4	0.657143	0.431837
P18	4	0.657143	0.431837
P19	3	-0.342857	0.117551
P20	3	-0.342857	0.117551
P21	3	-0.342857	0.117551
P22	4	0.657143	0.431837
P23	2	-1.342857	1.803265
P24	3	-0.342857	0.117551
P25	3	-0.342857	0.117551
P26	4	0.657143	0.431837
P27	4	0.657143	0.431837
P28	3	-0.342857	0.117551
P29	4	0.657143	0.431837
P30	4	0.657143	0.431837
P31	4	0.657143	0.431837
P32	4	0.657143	0.431837
P33	3	-0.342857	0.117551
P34	3	-0.342857	0.117551
P35	3	-0.342857	0.117551
P36	2	-1.342857	1.803265
P37	2	-1.342857	1.803265
P38	3	-0.342857	0.117551
P39	3	-0.342857	0.117551
P40	3	-0.342857	0.117551
P41	4	0.657143	0.431837
P42	3	-0.342857	0.117551
P43	4	0.657143	0.431837
P44	4	0.657143	0.431837
P45	4	0.657143	0.431837
P46	5	1.657143	2.746122
P47	3	-0.342857	0.117551
P48	3	-0.342857	0.117551
P49	3	-0.342857	0.117551
P50	3	-0.342857	0.117551

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P51	3	-0.342857	0.117551
P52	4	0.657143	0.431837
P53	5	1.657143	2.746122
P54	4	0.657143	0.431837
P55	3	-0.342857	0.117551
P56	3	-0.342857	0.117551
P57	4	0.657143	0.431837
P58	4	0.657143	0.431837
P59	4	0.657143	0.431837
P60	3	-0.342857	0.117551
P61	2	-1.342857	1.803265
P62	2	-1.342857	1.803265
P63	3	-0.342857	0.117551
P64	2	-1.342857	1.803265
P65	2	-1.342857	1.803265
P66	4	0.657143	0.431837
P67	3	-0.342857	0.117551
P68	3	-0.342857	0.117551
P69	3	-0.342857	0.117551
P70	3	-0.342857	0.117551
70	234		37.77143

XM = 3.342857

S^2 = 0.547412

S = 0.739873

SQR n = 8.3666

Sx = 0.088432

Z = 2.042

E = 0.180578

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.819422

Upper limit = 4.180578

t obs = -7.431075

Significant

APPENDIX 25

Personal characteristics analysis : Education

	V5	X-XM	(X-XM)2
P1	4	1.528571	2.336531
P2	5	2.528571	6.393673
P3	3	0.528571	0.279388
P4	4	1.528571	2.336531
P5	3	0.528571	0.279388
P6	4	1.528571	2.336531
P7	4	1.528571	2.336531
P8	4	1.528571	2.336531
P9	4	1.528571	2.336531
P10	2	-0.471429	0.222245
P11	2	-0.471429	0.222245
P12	4	1.528571	2.336531
P13	2	-0.471429	0.222245
P14	2	-0.471429	0.222245
P15	2	-0.471429	0.222245
P16	3	0.528571	0.279388
P17	3	0.528571	0.279388
P18	3	0.528571	0.279388
P19	3	0.528571	0.279388
P20	3	0.528571	0.279388
P21	2	-0.471429	0.222245
P22	2	-0.471429	0.222245
P23	2	-0.471429	0.222245
P24	2	-0.471429	0.222245
P25	2	-0.471429	0.222245
P26	2	-0.471429	0.222245
P27	2	-0.471429	0.222245
P28	2	-0.471429	0.222245
P29	3	0.528571	0.279388
P30	2	-0.471429	0.222245
P31	2	-0.471429	0.222245
P32	2	-0.471429	0.222245
P33	3	0.528571	0.279388
P34	2	-0.471429	0.222245
P35	2	-0.471429	0.222245
P36	2	-0.471429	0.222245
P37	2	-0.471429	0.222245
P38	2	-0.471429	0.222245
P39	2	-0.471429	0.222245
P40	2	-0.471429	0.222245
P41	2	-0.471429	0.222245
P42	2	-0.471429	0.222245
P43	2	-0.471429	0.222245
P44	3	0.528571	0.279388
P45	3	0.528571	0.279388
P46	2	-0.471429	0.222245
P47	3	0.528571	0.279388
P48	3	0.528571	0.279388
P49	3	0.528571	0.279388
P50	2	-0.471429	0.222245

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P51	3	0.528571	0.279388
P52	2	-0.471429	0.222245
P53	2	-0.471429	0.222245
P54	2	-0.471429	0.222245
P55	2	-0.471429	0.222245
P56	2	-0.471429	0.222245
P57	2	-0.471429	0.222245
P58	2	-0.471429	0.222245
P59	2	-0.471429	0.222245
P60	2	-0.471429	0.222245
P61	2	-0.471429	0.222245
P62	2	-0.471429	0.222245
P63	2	-0.471429	0.222245
P64	2	-0.471429	0.222245
P65	3	0.528571	0.279388
P66	2	-0.471429	0.222245
P67	2	-0.471429	0.222245
P68	2	-0.471429	0.222245
P69	2	-0.471429	0.222245
P70	2	-0.471429	0.222245
70	173		37.44286

XM = 2.471429

S^2 = 0.54265

S = 0.736648

SQR n = 8.3666

Sx = 0.088046

Z = 2.042

E = 0.17979

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.82021

Upper limit = 4.17979

t obs = -17.361

Significant

APPENDIX 26

Personal characteristics analysis : Skills

	V6	X-XM	(X-XM)2
P1	3	0.085714	0.007347
P2	4	1.085714	1.178776
P3	2	-0.914286	0.835918
P4	4	1.085714	1.178776
P5	3	0.085714	0.007347
P6	4	1.085714	1.178776
P7	4	1.085714	1.178776
P8	3	0.085714	0.007347
P9	3	0.085714	0.007347
P10	3	0.085714	0.007347
P11	5	2.085714	4.350204
P12	3	0.085714	0.007347
P13	3	0.085714	0.007347
P14	4	1.085714	1.178776
P15	3	0.085714	0.007347
P16	4	1.085714	1.178776
P17	4	1.085714	1.178776
P18	4	1.085714	1.178776
P19	4	1.085714	1.178776
P20	4	1.085714	1.178776
P21	3	0.085714	0.007347
P22	4	1.085714	1.178776
P23	1	-1.914286	3.66449
P24	3	0.085714	0.007347
P25	3	0.085714	0.007347
P26	3	0.085714	0.007347
P27	1	-1.914286	3.66449
P28	1	-1.914286	3.66449
P29	3	0.085714	0.007347
P30	3	0.085714	0.007347
P31	3	0.085714	0.007347
P32	3	0.085714	0.007347
P33	3	0.085714	0.007347
P34	2	-0.914286	0.835918
P35	2	-0.914286	0.835918
P36	3	0.085714	0.007347
P37	3	0.085714	0.007347
P38	4	1.085714	1.178776
P39	2	-0.914286	0.835918
P40	2	-0.914286	0.835918
P41	2	-0.914286	0.835918
P42	3	0.085714	0.007347
P43	2	-0.914286	0.835918
P44	4	1.085714	1.178776
P45	3	0.085714	0.007347
P46	2	-0.914286	0.835918
P47	3	0.085714	0.007347
P48	3	0.085714	0.007347
P49	3	0.085714	0.007347
P50	3	0.085714	0.007347

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P51	3	0.085714	0.007347
P52	3	0.085714	0.007347
P53	2	-0.914286	0.835918
P54	3	0.085714	0.007347
P55	3	0.085714	0.007347
P56	2	-0.914286	0.835918
P57	1	-1.914286	3.66449
P58	3	0.085714	0.007347
P59	3	0.085714	0.007347
P60	3	0.085714	0.007347
P61	1	-1.914286	3.66449
P62	2	-0.914286	0.835918
P63	3	0.085714	0.007347
P64	3	0.085714	0.007347
P65	2	-0.914286	0.835918
P66	3	0.085714	0.007347
P67	4	1.085714	1.178776
P68	3	0.085714	0.007347
P69	3	0.085714	0.007347
P70	3	0.085714	0.007347
70	204		49.48571

XM = 2.914286

S^2 = 0.717184

S = 0.846867

SQR n = 8.3666

Sx = 0.10122

Z = 2.042

E = 0.206691

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.793309

Upper limit = 4.206691

t obs = -10.72628

Significant

APPENDIX 27

Personal characteristics analysis : Needs & expectation

	V7	X-XM	(X-XM)2
P1	4	0.671429	0.450816
P2	4	0.671429	0.450816
P3	4	0.671429	0.450816
P4	4	0.671429	0.450816
P5	4	0.671429	0.450816
P6	3	-0.328571	0.107959
P7	3	-0.328571	0.107959
P8	3	-0.328571	0.107959
P9	4	0.671429	0.450816
P10	3	-0.328571	0.107959
P11	3	-0.328571	0.107959
P12	4	0.671429	0.450816
P13	4	0.671429	0.450816
P14	3	-0.328571	0.107959
P15	3	-0.328571	0.107959
P16	4	0.671429	0.450816
P17	4	0.671429	0.450816
P18	4	0.671429	0.450816
P19	3	-0.328571	0.107959
P20	3	-0.328571	0.107959
P21	4	0.671429	0.450816
P22	4	0.671429	0.450816
P23	2	-1.328571	1.765102
P24	3	-0.328571	0.107959
P25	3	-0.328571	0.107959
P26	4	0.671429	0.450816
P27	4	0.671429	0.450816
P28	3	-0.328571	0.107959
P29	4	0.671429	0.450816
P30	3	-0.328571	0.107959
P31	4	0.671429	0.450816
P32	3	-0.328571	0.107959
P33	3	-0.328571	0.107959
P34	3	-0.328571	0.107959
P35	3	-0.328571	0.107959
P36	2	-1.328571	1.765102
P37	2	-1.328571	1.765102
P38	3	-0.328571	0.107959
P39	3	-0.328571	0.107959
P40	3	-0.328571	0.107959
P41	3	-0.328571	0.107959
P42	3	-0.328571	0.107959
P43	4	0.671429	0.450816
P44	3	-0.328571	0.107959
P45	4	0.671429	0.450816
P46	5	1.671429	2.793673
P47	4	0.671429	0.450816
P48	4	0.671429	0.450816
P49	4	0.671429	0.450816
P50	4	0.671429	0.450816

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P51	4	0.671429	0.450816
P52	4	0.671429	0.450816
P53	5	1.671429	2.793673
P54	4	0.671429	0.450816
P55	3	-0.328571	0.107959
P56	2	-1.328571	1.765102
P57	2	-1.328571	1.765102
P58	4	0.671429	0.450816
P59	3	-0.328571	0.107959
P60	3	-0.328571	0.107959
P61	2	-1.328571	1.765102
P62	2	-1.328571	1.765102
P63	2	-1.328571	1.765102
P64	2	-1.328571	1.765102
P65	2	-1.328571	1.765102
P66	4	0.671429	0.450816
P67	4	0.671429	0.450816
P68	3	-0.328571	0.107959
P69	3	-0.328571	0.107959
P70	3	-0.328571	0.107959
70	233		39.44286

XM = 3.328571

S^2 = 0.571636

S = 0.756066

SQR n = 8.3666

Sx = 0.090367

Z = 2.042

E = 0.18453

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.81547

Upper limit = 4.18453

t obs = -7.430004

Significant

APPENDIX 28

Personal characteristics analysis : Family needs

	V8	X-XM	(X-XM)2
P1	4	1.128571	1.273673
P2	4	1.128571	1.273673
P3	4	1.128571	1.273673
P4	2	-0.871429	0.759388
P5	4	1.128571	1.273673
P6	2	-0.871429	0.759388
P7	2	-0.871429	0.759388
P8	3	0.128571	0.016531
P9	3	0.128571	0.016531
P10	3	0.128571	0.016531
P11	3	0.128571	0.016531
P12	3	0.128571	0.016531
P13	3	0.128571	0.016531
P14	3	0.128571	0.016531
P15	2	-0.871429	0.759388
P16	3	0.128571	0.016531
P17	2	-0.871429	0.759388
P18	3	0.128571	0.016531
P19	3	0.128571	0.016531
P20	3	0.128571	0.016531
P21	3	0.128571	0.016531
P22	4	1.128571	1.273673
P23	3	0.128571	0.016531
P24	3	0.128571	0.016531
P25	3	0.128571	0.016531
P26	2	-0.871429	0.759388
P27	3	0.128571	0.016531
P28	3	0.128571	0.016531
P29	3	0.128571	0.016531
P30	3	0.128571	0.016531
P31	2	-0.871429	0.759388
P32	3	0.128571	0.016531
P33	3	0.128571	0.016531
P34	3	0.128571	0.016531
P35	3	0.128571	0.016531
P36	2	-0.871429	0.759388
P37	2	-0.871429	0.759388
P38	2	-0.871429	0.759388
P39	3	0.128571	0.016531
P40	3	0.128571	0.016531
P41	3	0.128571	0.016531
P42	3	0.128571	0.016531
P43	3	0.128571	0.016531
P44	3	0.128571	0.016531
P45	2	-0.871429	0.759388
P46	3	0.128571	0.016531
P47	3	0.128571	0.016531
P48	3	0.128571	0.016531
P49	3	0.128571	0.016531
P50	4	1.128571	1.273673

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P51	3	0.128571	0.016531
P52	4	1.128571	1.273673
P53	3	0.128571	0.016531
P54	2	-0.871429	0.759388
P55	2	-0.871429	0.759388
P56	3	0.128571	0.016531
P57	3	0.128571	0.016531
P58	3	0.128571	0.016531
P59	3	0.128571	0.016531
P60	3	0.128571	0.016531
P61	2	-0.871429	0.759388
P62	3	0.128571	0.016531
P63	2	-0.871429	0.759388
P64	3	0.128571	0.016531
P65	3	0.128571	0.016531
P66	3	0.128571	0.016531
P67	3	0.128571	0.016531
P68	2	-0.871429	0.759388
P69	3	0.128571	0.016531
P70	3	0.128571	0.016531
70	201		21.84286

XM = 2.871429

S^2 = 0.316563

S = 0.562639

SQR n = 8.3666

Sx = 0.067248

Z = 2.042

E = 0.137321

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.862679

Upper limit = 4.137321

t obs = -16.78217

Significant

APPENDIX 29

Individual effectiveness analysis : Skill variety

	V1	X-XM	(X-XM)2
P1	2	0.028571	0.000816
P2	4	2.028571	4.115102
P3	1	-0.971429	0.943673
P4	4	2.028571	4.115102
P5	4	2.028571	4.115102
P6	4	2.028571	4.115102
P7	1	-0.971429	0.943673
P8	2	0.028571	0.000816
P9	3	1.028571	1.057959
P10	2	0.028571	0.000816
P11	2	0.028571	0.000816
P12	3	1.028571	1.057959
P13	3	1.028571	1.057959
P14	2	0.028571	0.000816
P15	3	1.028571	1.057959
P16	3	1.028571	1.057959
P17	3	1.028571	1.057959
P18	2	0.028571	0.000816
P19	3	1.028571	1.057959
P20	2	0.028571	0.000816
P21	3	1.028571	1.057959
P22	2	0.028571	0.000816
P23	1	-0.971429	0.943673
P24	4	2.028571	4.115102
P25	2	0.028571	0.000816
P26	3	1.028571	1.057959
P27	1	-0.971429	0.943673
P28	1	-0.971429	0.943673
P29	2	0.028571	0.000816
P30	2	0.028571	0.000816
P31	2	0.028571	0.000816
P32	3	1.028571	1.057959
P33	2	0.028571	0.000816
P34	2	0.028571	0.000816
P35	2	0.028571	0.000816
P36	2	0.028571	0.000816
P37	1	-0.971429	0.943673
P38	2	0.028571	0.000816
P39	2	0.028571	0.000816
P40	2	0.028571	0.000816
P41	2	0.028571	0.000816
P42	1	-0.971429	0.943673
P43	1	-0.971429	0.943673
P44	4	2.028571	4.115102
P45	4	2.028571	4.115102
P46	1	-0.971429	0.943673
P47	2	0.028571	0.000816
P48	2	0.028571	0.000816
P49	2	0.028571	0.000816
P50	2	0.028571	0.000816

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P51	2	0.028571	0.000816
P52	1	-0.971429	0.943673
P53	1	-0.971429	0.943673
P54	1	-0.971429	0.943673
P55	1	-0.971429	0.943673
P56	1	-0.971429	0.943673
P57	1	-0.971429	0.943673
P58	1	-0.971429	0.943673
P59	1	-0.971429	0.943673
P60	2	0.028571	0.000816
P61	1	-0.971429	0.943673
P62	1	-0.971429	0.943673
P63	1	-0.971429	0.943673
P64	1	-0.971429	0.943673
P65	1	-0.971429	0.943673
P66	1	-0.971429	0.943673
P67	2	0.028571	0.000816
P68	1	-0.971429	0.943673
P69	1	-0.971429	0.943673
P70	1	-0.971429	0.943673
70	138		63.94286

XM = 1.971429

S^2 = 0.926708

S = 0.962657

SQR n = 8.3666

Sx = 0.115059

Z = 2.042

E = 0.234951

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.765049

Upper limit = 4.234951

t obs = -17.63063

Significant

APPENDIX 30

Individual effectiveness analysis : Task identity

	V2	X-XM	(X-XM)2
P1	1	0	0
P2	1	0	0
P3	1	0	0
P4	1	0	0
P5	1	0	0
P6	1	0	0
P7	1	0	0
P8	1	0	0
P9	1	0	0
P10	1	0	0
P11	1	0	0
P12	1	0	0
P13	1	0	0
P14	1	0	0
P15	1	0	0
P16	1	0	0
P17	1	0	0
P18	1	0	0
P19	1	0	0
P20	1	0	0
P21	1	0	0
P22	1	0	0
P23	1	0	0
P24	1	0	0
P25	1	0	0
P26	1	0	0
P27	1	0	0
P28	1	0	0
P29	1	0	0
P30	1	0	0
P31	1	0	0
P32	1	0	0
P33	1	0	0
P34	1	0	0
P35	1	0	0
P36	1	0	0
P37	1	0	0
P38	1	0	0
P39	1	0	0
P40	1	0	0
P41	1	0	0
P42	1	0	0
P43	1	0	0
P44	1	0	0
P45	1	0	0
P46	1	0	0
P47	1	0	0
P48	1	0	0
P49	1	0	0
P50	1	0	0

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P51	1	0	0
P52	1	0	0
P53	1	0	0
P54	1	0	0
P55	1	0	0
P56	1	0	0
P57	1	0	0
P58	1	0	0
P59	1	0	0
P60	1	0	0
P61	1	0	0
P62	1	0	0
P63	1	0	0
P64	1	0	0
P65	1	0	0
P66	1	0	0
P67	1	0	0
P68	1	0	0
P69	1	0	0
P70	1	0	0
70	70		0

XM = 1

S^2 = 0

S = 0

SQR n = 8.3666

Sx = 0

Z = 2.042

E = 0

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 4

Upper limit = 4

t obs = Infinity

Significant

APPENDIX 31

Individual effectiveness analysis : Autonomy

	V3	X-XM	(X-XM)2
P1	5	2.742857	7.523265
P2	5	2.742857	7.523265
P3	4	1.742857	3.037551
P4	4	1.742857	3.037551
P5	3	0.742857	0.551837
P6	5	2.742857	7.523265
P7	4	1.742857	3.037551
P8	4	1.742857	3.037551
P9	4	1.742857	3.037551
P10	2	-0.257143	0.066122
P11	4	1.742857	3.037551
P12	3	0.742857	0.551837
P13	3	0.742857	0.551837
P14	3	0.742857	0.551837
P15	3	0.742857	0.551837
P16	3	0.742857	0.551837
P17	3	0.742857	0.551837
P18	3	0.742857	0.551837
P19	4	1.742857	3.037551
P20	3	0.742857	0.551837
P21	1	-1.257143	1.580408
P22	2	-0.257143	0.066122
P23	2	-0.257143	0.066122
P24	3	0.742857	0.551837
P25	3	0.742857	0.551837
P26	3	0.742857	0.551837
P27	1	-1.257143	1.580408
P28	1	-1.257143	1.580408
P29	2	-0.257143	0.066122
P30	2	-0.257143	0.066122
P31	2	-0.257143	0.066122
P32	2	-0.257143	0.066122
P33	1	-1.257143	1.580408
P34	1	-1.257143	1.580408
P35	1	-1.257143	1.580408
P36	1	-1.257143	1.580408
P37	1	-1.257143	1.580408
P38	2	-0.257143	0.066122
P39	2	-0.257143	0.066122
P40	2	-0.257143	0.066122
P41	2	-0.257143	0.066122
P42	1	-1.257143	1.580408
P43	1	-1.257143	1.580408
P44	3	0.742857	0.551837
P45	4	1.742857	3.037551
P46	1	-1.257143	1.580408
P47	2	-0.257143	0.066122
P48	2	-0.257143	0.066122
P49	2	-0.257143	0.066122
P50	2	-0.257143	0.066122

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P51	2	-0.257143	0.066122
P52	1	-1.257143	1.580408
P53	1	-1.257143	1.580408
P54	1	-1.257143	1.580408
P55	1	-1.257143	1.580408
P56	1	-1.257143	1.580408
P57	1	-1.257143	1.580408
P58	1	-1.257143	1.580408
P59	2	-0.257143	0.066122
P60	2	-0.257143	0.066122
P61	1	-1.257143	1.580408
P62	1	-1.257143	1.580408
P63	2	-0.257143	0.066122
P64	2	-0.257143	0.066122
P65	2	-0.257143	0.066122
P66	3	0.742857	0.551837
P67	3	0.742857	0.551837
P68	1	-1.257143	1.580408
P69	2	-0.257143	0.066122
P70	1	-1.257143	1.580408
70	158		91.37143

XM = 2.257143

S^2 = 1.324224

S = 1.150749

SQR n = 8.3666

Sx = 0.137541

Z = 2.042

E = 0.280858

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.719142

Upper limit = 4.280858

t obs = -12.67156

Significant

APPENDIX 32

Individual effectiveness analysis : Task significant

	V4	X-XM	(X-XM)2
P1	4	1.3	1.69
P2	4	1.3	1.69
P3	4	1.3	1.69
P4	4	1.3	1.69
P5	4	1.3	1.69
P6	4	1.3	1.69
P7	4	1.3	1.69
P8	1	-1.7	2.89
P9	1	-1.7	2.89
P10	4	1.3	1.69
P11	4	1.3	1.69
P12	4	1.3	1.69
P13	3	0.3	0.09
P14	4	1.3	1.69
P15	4	1.3	1.69
P16	4	1.3	1.69
P17	4	1.3	1.69
P18	4	1.3	1.69
P19	4	1.3	1.69
P20	4	1.3	1.69
P21	4	1.3	1.69
P22	1	-1.7	2.89
P23	4	1.3	1.69
P24	4	1.3	1.69
P25	4	1.3	1.69
P26	4	1.3	1.69
P27	1	-1.7	2.89
P28	1	-1.7	2.89
P29	3	0.3	0.09
P30	3	0.3	0.09
P31	4	1.3	1.69
P32	4	1.3	1.69
P33	2	-0.7	0.49
P34	1	-1.7	2.89
P35	1	-1.7	2.89
P36	2	-0.7	0.49
P37	1	-1.7	2.89
P38	2	-0.7	0.49
P39	3	0.3	0.09
P40	3	0.3	0.09
P41	3	0.3	0.09
P42	1	-1.7	2.89
P43	1	-1.7	2.89
P44	4	1.3	1.69
P45	4	1.3	1.69
P46	2	-0.7	0.49
P47	2	-0.7	0.49
P48	2	-0.7	0.49
P49	2	-0.7	0.49
P50	2	-0.7	0.49

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P51	3	0.3	0.09
P52	2	-0.7	0.49
P53	2	-0.7	0.49
P54	1	-1.7	2.89
P55	1	-1.7	2.89
P56	1	-1.7	2.89
P57	1	-1.7	2.89
P58	1	-1.7	2.89
P59	2	-0.7	0.49
P60	2	-0.7	0.49
P61	1	-1.7	2.89
P62	2	-0.7	0.49
P63	4	1.3	1.69
P64	4	1.3	1.69
P65	2	-0.7	0.49
P66	3	0.3	0.09
P67	3	0.3	0.09
P68	2	-0.7	0.49
P69	3	0.3	0.09
P70	1	-1.7	2.89
70	189		104.7

XM = 2.7

S^2 = 1.517391

S = 1.231824

SQR n = 8.3666

Sx = 0.147231

Z = 2.042

E = 0.300646

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.699354

Upper limit = 4.300646

t obs = -8.829653

Significant

APPENDIX 33

Individual effectiveness analysis : Feedback results

	V5	X-XM	(X-XM)2
P1	5	1.928571	3.719387755
P2	5	1.928571	3.719387755
P3	2	-1.071429	1.147959184
P4	4	0.928571	0.862244898
P5	3	-0.071429	0.005102041
P6	5	1.928571	3.719387755
P7	3	-0.071429	0.005102041
P8	4	0.928571	0.862244898
P9	3	-0.071429	0.005102041
P10	4	0.928571	0.862244898
P11	3	-0.071429	0.005102041
P12	4	0.928571	0.862244898
P13	3	-0.071429	0.005102041
P14	3	-0.071429	0.005102041
P15	3	-0.071429	0.005102041
P16	3	-0.071429	0.005102041
P17	3	-0.071429	0.005102041
P18	4	0.928571	0.862244898
P19	4	0.928571	0.862244898
P20	3	-0.071429	0.005102041
P21	4	0.928571	0.862244898
P22	4	0.928571	0.862244898
P23	2	-1.071429	1.147959184
P24	3	-0.071429	0.005102041
P25	3	-0.071429	0.005102041
P26	3	-0.071429	0.005102041
P27	4	0.928571	0.862244898
P28	3	-0.071429	0.005102041
P29	4	0.928571	0.862244898
P30	4	0.928571	0.862244898
P31	4	0.928571	0.862244898
P32	4	0.928571	0.862244898
P33	3	-0.071429	0.005102041
P34	2	-1.071429	1.147959184
P35	3	-0.071429	0.005102041
P36	3	-0.071429	0.005102041
P37	3	-0.071429	0.005102041
P38	3	-0.071429	0.005102041
P39	3	-0.071429	0.005102041
P40	3	-0.071429	0.005102041
P41	3	-0.071429	0.005102041
P42	2	-1.071429	1.147959184
P43	4	0.928571	0.862244898
P44	4	0.928571	0.862244898
P45	4	0.928571	0.862244898
P46	2	-1.071429	1.147959184
P47	3	-0.071429	0.005102041
P48	3	-0.071429	0.005102041
P49	3	-0.071429	0.005102041
P50	3	-0.071429	0.005102041

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P51	3	-0.071429	0.005102041
P52	3	-0.071429	0.005102041
P53	2	-1.071429	1.147959184
P54	2	-1.071429	1.147959184
P55	2	-1.071429	1.147959184
P56	3	-0.071429	0.005102041
P57	1	-2.071429	4.290816327
P58	2	-1.071429	1.147959184
P59	3	-0.071429	0.005102041
P60	2	-1.071429	1.147959184
P61	1	-2.071429	4.290816327
P62	2	-1.071429	1.147959184
P63	2	-1.071429	1.147959184
P64	2	-1.071429	1.147959184
P65	3	-0.071429	0.005102041
P66	3	-0.071429	0.005102041
P67	3	-0.071429	0.005102041
P68	3	-0.071429	0.005102041
P69	3	-0.071429	0.005102041
P70	3	-0.071429	0.005102041
70	215		48.64285714

XM = 3.071429

S^2 = 0.704968944

S = 0.839624287

SQR n = 8.366600265

Sx = 0.100354297

Z = 2.042

E = 0.204923474

Zcl 95

d.f. 30 = 2.042

u = 4

Lower limit = 3.795077

Upper limit = 4.204923

t obs = -9.252931

Significant

APPENDIX 34

Testing hypotheses : Self-actuation

Self-actuation	Mean	X-XM	(X-XM)2
Self-influencing	3	-0.428571429	0.183673
Self-regulating	4	0.571428571	0.326531
Self-organising	4	0.571428571	0.326531
self-sustaining	4	0.571428571	0.326531
self-producing	2	-1.428571429	2.040816
self-referential	3	-0.428571429	0.183673
self-conscious	4	0.571428571	0.326531
Mean	3.428571		3.714286

Sample		7	S^2 = 0.619048
			S = 0.786796
	u =	4	SQR n = 2.645751
	Z =	1.96	Sx = 0.297381

Lower limit = 3.417133
Upper limit = 4.582867

Z obs = -1.921537
Not Significant

APPENDIX 35

Testing hypotheses : Actor system

Actor sytem	Mean	X-XM	(X-XM)2
Self-referencing closure	2.69	-0.601111111	0.361335
Altruism	2.91	-0.381111111	0.145246
Self-reflective evolution	2.75	-0.541111111	0.292801
Wholeness	3.18	-0.111111111	0.012346
Propositional	3.73	0.438888889	0.192623
Normative	4	0.708888889	0.502523
Extension	3.45	0.158888889	0.025246
Qualities	2.91	-0.381111111	0.145246
Generic identity	4	0.708888889	0.502523
Mean	3.291111		2.179889

Sample	9	S^2 =	0.272486
		S =	0.522002
u =	4	SQR n =	3
Z =	1.96	Sx =	0.174001

Lower limit =	3.658959
Upper limit =	4.341041

Z obs =	-4.074059
	Significant

APPENDIX 36

Testing hypotheses : System dissipativeness

Dissipativeness	Mean	X-XM	(X-XM)2
Structural orientation	4	0.75	0.5625
Action towards deviation	2	-1.25	1.5625
Dynamic	3	-0.25	0.0625
Tendency of form	3	-0.25	0.0625
Internal condition	3	-0.25	0.0625
Referent	3	-0.25	0.0625
Logical orientation	4	0.75	0.5625
System type	4	0.75	0.5625
Mean	3.25		3.5

Sample	8	S^2 =	0.5
		S =	0.707107
u =	4	SQR n =	2.828427
Z =	1.96	Sx =	0.25
		Lower limit =	3.51
		Upper limit =	4.49
		Z obs =	-3
			Significant

APPENDIX 37

Testing hypotheses : Six-level organisational diagnosis

Six level OD	Mean	X-XM	(X-XM)2
General environment	3.83	0.741666667	0.550069
Industry structure	3	-0.088333333	0.007803
Strategic orientation	2.83	-0.258333333	0.066736
Group level	3.6	0.511666667	0.261803
Personal characteristics	2.94	-0.148333333	0.022003
Individual effectiveness	2.33	-0.758333333	0.575069
Mean	3.088333		1.483483

Sample	6	S^2 =	0.296697
		S =	0.544699
u =	4	SQR n =	2.44949
Z =	1.96	Sx =	0.222372

Lower limit =	3.56415
Upper limit =	4.43585

Z obs = -4.099729

Significant

APPENDIX 38

Testing hypotheses : Internal environmental assessment

Internal Environmental Assessment	Mean	X-XM	(X-XM)2
Environmental Policy	3	0.64706	0.418685
Environmental Aspects	2	-0.3529	0.124567
Legal and other requirement	4	1.64706	2.712803
Objectives and targets	4	1.64706	2.712803
Environmental Management Programme	3	0.64706	0.418685
Structure and Responsibility	2	-0.3529	0.124567
Training, Awareness and Competence	1	-1.3529	1.83045
Communication	1	-1.3529	1.83045
EMS Documentation	4	1.64706	2.712803
Document Control	4	1.64706	2.712803
Operation Control	1	-1.3529	1.83045
Emergency preparedness and response	1	-1.3529	1.83045
Monitoring and Measurement	1	-1.3529	1.83045
Non-conformance and Corrective & Preventive Action	2	-0.3529	0.124567
Records	3	0.64706	0.418685
EMS Audit	2	-0.3529	0.124567
Management Review	2	-0.3529	0.124567
17	40		21.88235

XM = 2.35294

S^2 = 1.367647

S = 1.169464

SQR n = 4.123106

Sx = 0.283637

Z = 1.96

E = 0.555928

Zcl 95

Z = 1.96

u = 4

Lower limit = 3.4441

Upper limit = 4.5559

Z obs = -5.807

Significant

APPENDIX 39

Testing hypotheses : Internal quality assessment

Internal Quality Assessment	Mean	X-XM	(X-XM)2
Management Commitment	5	1.761905	3.1043084
Customer Focus	5	1.761905	3.1043084
Quality Policy	2	-1.238095	1.5328798
Quality Planning	3	-0.238095	0.0566893
Administration	5	1.761905	3.1043084
Management Review	3	-0.238095	0.0566893
Provision of resources	3	-0.238095	0.0566893
Human Resource	2	-1.238095	1.5328798
Infrastructure	4	0.761905	0.5804989
Work Environment	2	-1.238095	1.5328798
Planning of Product realisation	2	-1.238095	1.5328798
Customer related processes	3	-0.238095	0.0566893
Design and Development	3	-0.238095	0.0566893
Purchasing	2	-1.238095	1.5328798
Production and service provision	3	-0.238095	0.0566893
Control of Monitoring and measuring devices	4	0.761905	0.5804989
Planning	4	0.761905	0.5804989
Measurement and monitoring	4	0.761905	0.5804989
Control of nonconforming product	3	-0.238095	0.0566893
Analysis of data	3	-0.238095	0.0566893
Improvement	3	-0.238095	0.0566893
21	68		19.809524

XM = 3.2381

S^2 = 0.9904762

S = 0.9952267

SQR n = 4.5825757

Sx = 0.2171763

Z = 1.96

E = 0.4256655

Zcl 95

Z = 1.96

u = 4

Lower limit = 3.57433451

Upper limit = 4.42566549

Z obs = -3.50823208

Significant

Work Schedule For Training and Implementation of Intervention Strategies

Activity	Month									
	1	2	3	4	5	6	7	8	9	10
Phase 1 : Initial Review										
Initial Preparation										
Initial Review										
Conduct Training										
Phase 2 : Planning										
Human Process Intervention										
Human Resource Intervention										
Techno-structural Intervention										
Strategic orientation Intervention										
Phase 3 : Documentation Development										
Develop Procedures List										
Develop Operating Instructions List										
Develop Records List										
Write Draft Procedures and Instructions										
Develop Management Manual										
Adequacy Audit										
Phase 4 : System Implementation										
Procedure Walkthrough and Testing										
Conduct Training (Awareness & Procedure)										
Implement and Test All Procedures										
Phase 5 : Performance Measure and Review										
Implement Performance Measuring Systems										
Measure Performance Against Indicators										
Train Internal Auditors										
Organisation and System Audit										
Management Review										
Corrective and Preventive Measures										

Appendix 40

Appendix 41

Matrix for area of improvement in the organisational level

Organisation level	Company
Self-influencing	X
Self-regulating	
Self-organising	
Self-sustaining	
Self-producing	X
Self-referential	X
Self-conscious	
Structural orientation	
Actions towards deviation	X
Dynamic	X
Tendency of form	X
Internal condition	X
Referent	X
Logical organisation	
System type	
Social	
Economics	
Honesty	
Technological	X
Ecological	
Political	
Suppliers	X
Buyers	X
Rivalry among competitors	X
Threat of substitutes	X
Threat of entry	
Threat of complementary	
Strategy	
Core activity systems	X
Human resource systems	X
Structural systems	X
Measurements systems	
Culture	X
Environmental Policy	X
Environmental Aspect	X
Legal and other requirement	
Objectives and targets	
Environmental Management Programme	X
Structure and responsibility	X
Training, awareness and competence	X
Communication	X
Environmental Management System Documentation	

Appendix 41

Document Control	
Operation Control	X
Emergency preparedness and response	X
Monitoring and measurement	X
Nonconformance and Corrective and preventive action	X
Records	X
Environmental Management System Audit	X
Management Review	X
Management Commitment	
Customer Focus	
Quality Policy	X
Quality Planning	X
Administration	
Management Review	X
Provision of resources	X
Human Resource	X
Infrastructure	
Work Environment	X
Planning of Product realisation	X
Customer related processes	X
Design and Development	X
Purchasing	X
Production and service provision	X
Control of Monitoring and measuring devices	
Planning	
Measurement and monitoring	
Control of nonconforming product	X
Analysis of data	X
Improvement	X

Matrix for area of improvement in the Group Level

Group level	SMD	AMD	ACD	PTD	LMD	FGD	QAD	PCD	TED	ITD	EGD
Wholeness	X	X	X			X	X	X	X	X	X
Propositional		X			X	X		X	X		X
Normative											
Extension	X	X		X	X	X	X	X	X	X	X
Qualities											
Generic identity											
Goal clarity		X	X								X
Task structure						X					
Group functioning	X	X	X			X	X	X	X	X	X
Performance norms											
Group composition		X	X	X	X	X	X	X			X

Matrix for area of improvement in the Individual Level

Individual level	Manager	Supervisor	Operator
Self-referencing closure	X	X	X
Altruism	X	X	X
Self-reflective evolution	X	X	X
Age	X	X	X
Experience	X		X
Abilities		X	X
Growth needs	X	X	X
Education	X	X	X
Skills	X	X	X
Needs & expectation	X	X	X
Family needs	X	X	X
Skill variety	X	X	X
Task identity	X	X	X
Autonomy		X	X
Task significant	X	X	X
Feedback about results	X	X	X