Strategic IT, but not by ITself

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APPENDIX A

TYPES

A.1 Introduction

In appendix A, the typologies of the three variables IT, competitive strategy and organizational structure are shown. Each type is determined by the values of the dimensions of the variables. For instance, a cost leader has a high value on the dimension 'low cost', and a low value on the dimension 'focus'. Firstly, the IT typology is presented (appendix A.2), after which the typologies of the competitive strategy (A.3) and the organizational structure (A.4) are commented upon.

A.2 IT types

1. Unconnected IT

Separate PCs are used as low costs tools by operators and managers of small organizations for all kinds of handy supportive activities pertaining to their tasks. This support has a rather general nature and is neither very complex nor innovative, in the industry within which the organization competes. The information-processing is local (near the user). This IT does not have (the demands for) large information-processing capacity. In most cases, the applications are standard (e.g. financial administration applications), and are chosen by the management. Sometimes the PCs are linked in a standard network, but the integration offered is low because the PCs are generally used to enhance individual job performance (word processing, sales estimations, inventory control). Face-to-face meetings and telephone facilities offer better opportunities for lateral contact.

Concluding:

- efficiency: low
- effectiveness: high
- innovation: low
- centralization: high
- concentration: low
- integration: low

2. Concentrated IT

IT, often in the form of central mainframes/mini's with dumb terminals (work-stations), is used for large routine activities, mostly of a transactional nature. This includes computerization for supportive administrative paperwork processes, but also monitoring the production processes for enhanced control. The information-processing is highly regulated, based on standard transactions. This IT usage is primarily necessary for efficiency reasons; it lowers the costs for the organization. Specialized centralized information processing and databases are used for this kind of support. There is much communication between the IT department, software developers, hardware vendors and the general management for the development of this IT. The general management is not able to decide independently on the desired application.

Concluding:

- efficiency: high
- effectiveness: low
- innovation: low
- centralization: average
- concentration: high
- integration: low to average

3. Distributed IT

This IT resembles the concentrated IT, but has the disposal over more or less independent local units with their own computing capabilities and storage devices for professional support, like computing, data control and word processing that does not need central processing. Users, such as operators (granting loans to specific clients) and tactical and strategic managers (marketing scenarios), can use this IT for the support of complex tasks. Besides, the organization has the advantages of the large capacity of the central unit, so that large routine operations can also be performed (batch processing). Communication: via this central unit.

Concluding:

- efficiency: high
- effectiveness: high
- innovation: low
- centralization: average
- concentration: average to high
- integration: average

4. Decentralized IT
Recent developments in IT offer users the ability to communicate independently (client-server models). Advanced communication linkages, within and outside (EDI, telecommunication) the organization deliver new innovative opportunities, for instance for management (group decision-making) and non-face-to-face work teams. This IT can also be used in expert teams to coordinate and execute specific operations. Therefore, the users are clearly involved in the IT development. After the implementation they control their own data, making innovative use of IT when this is possible. This IT is not meant to perform large routine operations.

Concluding:

- efficiency: low
- effectiveness: low to average
- innovation: high
- centralization: low
- concentration: low
- integration: high

A.3 Competitive strategic types

1. Niche marketer
Some companies do not have the capacity (resources, scale) to differentiate with the most efficient production process. It would be expensive and dangerous to allocate a lot of resources to specific (batch) technologies because the organization would then be limited to few groups of customers. This would result in a vulnerable position in a changing market. The organization must be able to switch between segments in this competitive market if necessary. The firm, therefore, has to differentiate with other strengths.
Innovation also requires heavy investments in resources such as experts and technology. In addition, the capacity of these firms is a often too small for these investments. Therefore, aspects like image, service and attainability are more feasible. These aspects strengthen the attractiveness of the products for specific customers. For smaller companies in particular, it is handy to limit themselves to a smaller assortment of products for these customers.

Concluding:

- innovation: low
- focus: high
- marketing differentiation: average to high
- low cost: low

2. Cost leaders

For the attainment of cost leadership, it is important not to interrupt the production process. Cost leaders have the capacity to invest in the required technologies. These technologies must be utilized efficiently so that competitive advantages can be reached with low unit cost production. Cost leaders operate in stable environments and want to control their inputs; therefore, they make use of backward vertical integration. Innovation could become problematic when it disturbs the efficiency of the production process too much. Of course, new products and production technologies are needed. Cost leaders (must) pay attention to innovative aspects. Often already proven 'new' developments are used. Their main concern, however, remains an efficient production process. The emphasis on innovation is not as quite as comprehensive as in the case with innovators. It is nearly impossible for cost leaders to produce for only one market segment, while these organizations have large outputs. These niches have only a limited market capacity. Besides, it would be unsafe to produce for only one segment. They do not diversify very much, because the specialized production is not appropriate to supplying to many various markets. Following the first rule of thumb, (marketing) differentiation is not necessary: the price is the major competitive weapon.

Concluding:

- innovation: average
- focus: low
- marketing differentiation: low
- low cost: high

3. Marketers

Organizations which are not able to be the cheapest producers can offer added value by means of more user-convenience of use and better service than their competitors. They create buyer loyalty in more market segments, based on a thorough understanding of customer preferences. This strategy is less dangerous in a dynamic environment, in comparison with the more costly innovation and low costs strategies. The organizations are market share leaders competing via image, service and quality rather than via price. They are not very efficient producers

because they have unused capacity (Hambrick 1983, p. 698). Being larger than niche marketers, they have more potential to pay attention to product improvements without becoming very innovative. Customers are willing to trade novelties for reliability.

Concluding:

- innovation: average
- focus: average
- marketing differentiation: high
- low cost: average

4. Innovators

Organizations can differentiate through a repetitive introduction of new products (and services). The development of these new, often high-quality products is a central issue for pioneers: expenses for R&D are relatively high compared to organizations of other strategic types. A result is a low average age of the products. It is dangerous to compete in only one market segment. The organization must not become dependent on one single market. Diversification is a method to prevent this dependency. However, much diversification is not permitted; it would be too difficult to pioneer in a large number of markets. The emphasis on innovation makes attention to side-effects like advertisements or delivery aspects superfluous. The customer wants to pay a price for the state-of-the-art products. The resources obtained in this way can again be spent on innovation. This innovative character contradicts the stable production processes needed for cost leadership.

Concluding:

- innovation: high
- focus: average
- marketing differentiation: low to average
- low cost: low

The strategic types described above are more or less 'standard' configurations (Miller 1986). There are also some mixed types combining dimensions in a slightly different way.

5. Niche innovators

These organizations combine elements valid for niche marketers and innovators. Using the present innovative potential is their first aim. If one market segment has

enough potential to absorb all the new developments, they can afford to focus on this segment. There is still no need for low costs production and for paying attention to 'ornaments' relating to products and services.

Concluding:

- innovation: high
- focus: high
- marketing differentiation: low to average
- low cost: low

6. Low costs marketers

The dimensions of low costs and the marketing differentiation are both emphasized. As long as the production process is not hampered by adding extra features, like smooth distribution, advertising efforts, high image building and so on, the dimension of marketing is highly rewarded. Selling a standard product in bulk, differentiation may result in competitive advantages. Then the firm not only competes on price. Forward integration can support the marketing and service efforts.

Concluding:

- innovation: average
- focus: low
- marketing differentiation: high
- low cost: high

A.4 Organizational structure types

Firstly, the content of the dimensions of the organizational structure is identified. These dimensions were not discussed in the main text (chapter 2) because they are supposed to be widely-known. Mintzberg suggests nine dimensions (design parameters) divided over four groups (Mintzberg 1979, p. 66-67).

1. Design parameter of individual positions. These dimensions concern the basic elements of the structure on the individual level. They are especially aimed at regulating behavior:

- (job) specialization. The division of labor into tasks has a horizontal side (the more specific a worker's job, the more horizontally specialized) and a vertical side (the less control over his own labor, the more vertically specialized). Horizontal specialization is the basis for the division of labor;
- formalization is aimed at regulating individual behavior using formal prescriptions for jobs and the workflow or giving general rules for all kinds of situations. In bureaucratic organizations, work is (often) predetermined in this way, resulting in standardized behavior. In organic organizations, there is a lack of standardization. The work is coordinated via direct supervision or mutual adjustment;
- training and indoctrination are needed if the primary business functions are very complex and non-rational. Workers must make a lot of training effort to learn these functions. In this way, their (future) behavior is also standardized (thus: bureaucracy). When they complete their education, they become professionals who (can) work independently to perform their jobs. This education is often accomplished outside the organization (in universities and other institutions). Therefore, the organization needs indoctrination to socialize its members, especially because they work is quite independently.

2. Design parameter of superstructure. These variables describe the grouping of the individual positions into units:

   - unit grouping. Via a grouping based on functions, skills and work processes (functional grouping) or based on products, places and clients (market grouping), a fundament is created for the coordinating of the work of the organization. Via this grouping, direct supervision and mutual adjustment can be enhanced;
   - unit size.

3. Design parameter of lateral linkages. These variables refer to the lateral relation between the positions, jobs and workers:

   - planning and control systems. Performance control is a useful instrument to standardize and check the desired outputs. It particularly serves this goal in market-grouped organizations, leaving the management of

the relatively independent units room to make their decisions. In a more functionally arranged organization, action planning deals with decisions concerning non-routine situations;
- liaison devices encourage direct contact (resulting in actions and decisions) between people without asking for approval at higher management levels. There are four forms distinguishable: liaison positions, task forces, integrating managers and matrix structure.

4. Design parameter of decision-making systems. Centralization is the most secure way to coordinate. However, when too many decisions have to be taken in (larger) organizations, the decision-making authority must be dispersed over several people. Organizations can then react better to all kinds of environmental situations. Centralization can be selective (different decisions are taken at different levels/places) or parallel (decisions are all made at the same (de)centralized place:

   - vertical centralization concerns the vertical division of decision-making power, up or down through diverse (management) levels;
   - horizontal centralization regards the dispersion of decision-making authority between managers (centralized) and non-managers like operators/ workers and analysts (decentralized).

These dimensions are the basis for the following typology (see subsection 2.3.4.3).

1. Simple structure
In many organizations, the chief executive has the authority to take all the important formal/informal decisions (Mintzberg 1979, p. 308). Often he/she is the founder of the organization. This decision-making power is not dispersed to others. Entry barriers in this industry are mostly low. The tasks for the primary process are not very difficult (no sophisticated training required) and the organization cannot afford to invest many resources in comprehensive technologies. In their competitive environments, the organizations must be able to react quickly to changes. Formalization would hamper flexibility. However, formalization it not even necessary because non-complex-tasks can also be coordinated via direct supervision (organic).

Concluding:

- formalization: low
- centralization: high
- integration: low
- training and indoctrination: low

2. Machine bureaucracy

Companies can also function by performing routine activities, mostly of a simple, stable and repetitive nature. Therefore, their work can be regulated via formal prescriptions created by the technical support staff (technostructure), resulting in a bureaucratic organization. This formalization takes away decision-making power concerning the jobs from the operating core and gives it to higher management levels (vertical centralization, limited horizontal decentralization: Mintzberg 1979, pp. 195, 209-210). Due to the uncomplicated character of the tasks, extensive training outside the organization, leading to independent decision-making on the job, and mutual adjustments are not necessary and are unwanted (organizations themselves offer supportive education to the workers). The technologies used range from simple to moderately complex, and have a very regulating nature since this makes the work a matter of routine (Mintzberg 1979, p. 326). Their efficient functioning can only be afforded in calm environments where demand is known and is stable.

Concluding:

- formalization: high
- centralization: high
- integration: low
- training: low

3. Professional bureaucracy

If the tasks are complex, organizations can be bureaucratic without being formalized and centralized. Formalization and training are substitutes for work standardization. If standardization is still necessary but it is not possible due to the complexity of the tasks, comprehensive training for workers is needed, so that they can perform their tasks independently. This results in decentralization. That transfers decision-making power about the tasks to the operators. In a complex but stable environment, management does not have the capacity to regulate the work of the primary process themselves; it has to rely on the craftsmanship of the professionals.

Concluding:

- formalization: low
- centralization: low
- integration: low to average
- training and indoctrination: high

4. Adhocracy

Sophisticated innovation requires expert teams from different disciplines. This innovation takes place in complex and dynamic environments. The management does not have the accurate insight in order to decide on the precise job performance requirements. It must hire experts. The expert teams (work constellations) consist of operators and staff on different places in the organization (hierarchy, disciplines). Therefore, the vertical decentralization is not very thorough, compared with the professional bureaucracy. Decision-making power is handed over to those constellations where the experts can judge the relevant problem situations, alternatives and choice criteria. These organizations are not standardized; complex work makes standardization via formalization impossible. Cooperation is needed between the experts. That excludes standardization via training. In these organic, decentralized companies, one-way direct supervision is not appropriate. Coordination takes place via frequent contacts within and between the constellations of experts.

Concluding:

- formalization: low
- centralization: average
- integration: high
- training: high (indoctrination: low, mutual contact results in socialization)

APPENDIX B

ANALYSES

B.1 Introduction

This appendix B starts with a survey of the dimensions and items that were used in the various analyses and their descriptions (section B.2). The interpretation of the dimensions are characterized in the chapters 2, 6 and 7. Then the main analyses are presented: the factor analyses (sections B.3-6, B.9), the analyses of variance (B.7), the loglinear analyses (B.8, B.10) and finally several supporting correlation analyses (B.11).

B.2 Dimensions

Dimension (Factor)	Items	Description
IT		
INFOCON		IT concentration
	ITCONHW	Concentration of hardware
	ITCONGEG	Concentration of data processing
	ITCONDB	Concentration of data bases
INFOCEN		IT centralization
	ITCENINI	Centralization of initiation of IT
	ITCENANA	Centralization of system analysis
	ITCENONT	Centralization of system design
	ITCENBW	Centralization of system building
	ITCENIMP	Centralization of system implementation
	ITCENINV	Centralization of data input

INFOINT		IT integration
	ITINTDB	Integration via shared use of data bases
	ITINTGEG	Integration via common data
	ITCENAP	Centralization of using application
	ITINTCOM	Integration via direct IT usage
	ITINTRW	Range of data exchange

Competitive strategy

KO		Low costs
	KOSEFFUN	Cost efficiency in business functions
	KOSEFPRO	Efficient utilization of means of production
	KOSVOL	Efficiency via high volumes
MA		Marketing differentiation
	MARAD	Extensive advertizing
	MARSEG	Using market segmentation
	MARIM	Importance of product image
FO		Focus
	FOCPRD	Differentiation with specific products
	FOCPRC	Differentiation with specific production
	FOCKLANT	Differentiation with specific customers
	FOCMAR	Differentiation with specific marketing
IN		Innovation
	INVAAK	Introducing innovations more often than the competitors
	INLEIDEN	Introducing innovations earlier than the competitors
	INPROD	Innovative orientation for products
	INRES	Innovative nature of research and development

Organizational structure

CE		Centralization
	CENINK	Centralization of decision-making on purchasing
	CENMAR	Centralization of decision-making on marketing
	CENPLAN	Centralization of decision-making on production planning
	CENPERS	Centralization of decision-making on personnel policy
	CENINV	Centralization of decision-making on investments policy
FOR		Formalization
	FORCONTR	Formal contracts
	FORWERK	Formal work instructions
	FORINFO	Formal information leaflets
	FORREGEL	Formal regulation
	FORBLD	Formal policy
TR		Training
	TRVAARD	Learning professional skills
	TRTAKEN	Managing professional tasks
INTEG		Integration
	INTCOM	Integrating committees
	INTTAAK	Integrating interim tasks groups
	INTMNGT	Integrating managers

SISP

SISP1		The content of SISP
	INFOBEL	Level of (information policy) goals about the use of IT

	INFOFOR	Presence of formal information policy
	INFOPLAN	Presence of formal information planning
	INFOSTRA	Importance of competitive strategy for SISP
	INFOSTRU	Importance of organizational structure for SISP
SISP2		The support of top management and line management
	INFOTOP	Commitment top management for using IT
	INFOLYN	Commitment line management for using IT

Strategic performance

RTV	Net operating profit (in Dutch: rentabiliteit op totaal vermogen): NOP (percentages)
RTVCONC	NOP related to equally sized competitors
RTVJAAR	NOP-development related to equally sized competitors
MACONC	Market share related to equally sized competitors
MAJAAR	Market share development related to equally sized competitors

B.3 Factor analysis of IT (hypothesis 1)

For the results of the factor analysis of IT see Table B3.1

Assumptions:

1. The factor matrix is not the identity matrix: Bartlett Test of Sphericity = 893.53351, Significance = 0.00000;
2. Partial correlation did not between variables occur: Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.76469. There was little partial correlation between the variables (KMO > 0.5);

Reliability:

INFOCON 0.56
INFOCEN 0.82
INFOINT 0.48

B.4 Factor analysis of competitive strategy (hypothesis 1)

For the results of the factor analysis of competitive strategy see Table B4.1

Assumptions:
1. Bartlett Test of Sphericity = 615.54501, Significance = 0.00000. The identity matrix was rejected;
2. Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy = 0.67229. There was not too much partial correlation between the variables (KMO > 0.5).

Reliability (Cronbach's alfa, indicating the average correlation of items):

IN	0.72
FO	0.62
MA	0.61
KO	0.55

B.5 Factor analysis of organizational structure (hypothesis 1)

For the results of the factor analysis of organizational structure see Table B5.1

Assumptions:
1. Bartlett Test of Sphericity = 1310.1328, Significance = 0.00000
   The identity matrix was rejected;
2. Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.81262. There was little partial correlation between the variables (KMO > 0.5).

Reliability:

FOR	0.89
CE	0.74
INTEG	0.76
TR	0.28

Table B3.1 FACTOR ANALYSIS OF IT

	factor 1	factor 2	factor 3	factor 4
ITCENONT	0.82069			
ITCENANA	0.78619			
ITCENIMP	0.70752			
ITCENBW	0.70646			
ITCENINI	0.65096			
ITCENINV	0.59451			
ITCONHW		0.74436		
ITCONGEG		0.73613		
ITCONDB		0.63967		
ITINTDB			0.56572	
ITINTGEG			0.81362	
ITCENAP			0.64633	
ININTCOM				0.84925
ITINTRW				0.82121
eigen value	4.02	1.68	1.30	1.28
percentage of variance	30.90	12.90	10.00	9.80

total number of cases used: 217

total percentage of variance: 63.7

Table B4.1 FACTOR ANALYSIS OF COMPETITIVE STRATEGY

	factor 1	factor 2	factor 3	factor 4
INLEIDEN	0.85863			
INVAAK	0.82203			
INPROD	0.57036			
INRES	0.54592			
FOCPRD		0.75989		
FOCKLANT		0.74477		
FOCPRC		0.60137		
FOCMAR		0.54799		
MARSEG			0.73400	
MARIM			0.73275	
MARAD			0.68678	
KOSEFPRO				0.76314
KOSEFFUN				0.75407
KOSVOL				0.65494
eigen value	2.83	1.94	1.68	1.30
percentage of variance	20.20	13.90	12.00	9.30

total number of cases used: 232

total percentage of variance: 55.4

Table B5.1 FACTOR ANALYSIS OF ORGANIZATIONAL STRUCTURE

	factor 1	factor 2	factor 3	factor 4
FORREGEL	0.87788			
FORWERK	0.86750			
FORCONTR	0.84054			
FORINFO	0.82804			
FORBLD	0.64221			
CENINV		0.74593		
CENMAR		0.74043		
CENPERS		0.73142		
CENINK		0.72471		
CENPLAN		0.57521		
INTTAAK			0.87486	
INTCOM			0.82892	
INTMNGT			0.68372	
TRTAKEN				0.89864
TRVAARD				
eigen value	4.17	2.57	1.96	1.04
percentage of variance	27.80	17.20	13.10	6.90

total number of cases used: 231

total percentage of variance: 65.0

B.6 Factor analysis of strategic performance (hypothesis 1)

Table B6.1 FACTOR ANALYSIS OF STRATEGIC PERFORMANCE

	factor 1		factor 1
RTVCONC	0.70965	eigen value	2.36
RTVJAAR	0.78031	percentage of variance	59.10
MACONC	0.80500		
MAJAAR	0.77687		

total number of cases used: 146
(only those cases used when factor scores on IT, strategy and structure were available)

Assumptions of the analysis were met:

1. Bartlett Test of Sphericity = 162.56026, Significance = 0.00000. The identity matrix was rejected;
2. Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.70200 (>0.5).

Reliability: 0.76

B.7 Analyses of variance (hypothesis 1)

Table B7.1 ANOVA OF (MARKETING) DIFFERENTIATION, CENTRALIZATION AND IT CONCENTRATION

source of variation	SS	DF	MS	F	sig of F
WITHIN CELLS	1239.98	129	9.61	-	-
CONSTANT	26528.66	1	26528.66	2759.87	0.000
MA	17.51	1	17.51	1.82	0.179
CE	21.14	1	21.14	2.20	0.141
INFOCON	3.26	1	3.26	0.34	0.561
MA BY CE	0.39	1	0.39	0.04	0.841
MA BY INFOCON	3.82	1	3.82	0.40	0.529
CE BY INFOCON	5.99	1	5.99	0.62	0.431
MA BY CE BY INFOCON	45.36	1	45.36	4.72	0.032

total number of cases used: 137

tests of significance for COMPOS using UNIQUE sums of squares

III low (marketing-)differentiation - high centralization - high IT con - centration

The three-way interaction effect was accepted although the probability that there was no an interaction effect at all was 3.2%. This probability was smaller than the significance level of 5%. Therefore the existence of the interaction effect was accepted.

The ANOVA used a 2 x 2 x 2 design. Hence 8 cells were filled with organizations. The 137 organizations were allocated to one of the eight cells on the basis of their factor scores. The ANOVA used the unweighted means of the competitive position because the amount of organizations in each cell was not necessarily the same. This created a non-orthogonal design in which there were relations between the independent variables. Therefore the factors created overlapping effects on the dependent variable. This was corrected via the default regression approach of the MANOVA analysis.

However, to accept the results of the ANOVA, two conditions had to be met.

1. Normality of the dependent variable in each of the groups.
Several tests indicated that the dispersion of the competitive position in each of the cells followed the normal distribution:

- the Shapiro-Wilks and K-S (Lilliefors) measures showed that the null hypotheses of normality of the competitive position could not be rejected in each of the cells;
- this result was supported with normal and detrented plots of the distribution;
- also the histogram, supported with the printed measures for the measures of central tendency (mean, modal, median) and the skewness and kurtosis, indicated normality.

2. The cell variances of all the groups were equal: homogeneity.
The homogeneity was measured with two tests: Cochrans C and Bartlett-Box. Each of these tests did not show violations from equal cell variances:

- Cochrans C(16,8) = 0.19615 P = 0.439 (approx.)
- Bartlett-Box F(7,12921) = 1.20360 P = 0.297

The variances and standard deviations were also plotted against the cell means to check this random distribution of variance over the cells.

These two conditions were also controlled via studying the residuals (observed values minus the effects of the full factorial model including the interactions). The normal and detrented plots supported a normal distribution, and the scatter plot supported equal variances.

Concluding we could state that the ANOVA assumptions were met.

IV high innovation - high integration - high IT integration

Table B7.2 ANOVA OF INNOVATION, INTEGRATION AND IT INTEGRATION

source of variation	SS	DF	MS	F	sig of F
WITHIN CELLS	1124.09	129	8.71	-	-
CONSTANT	26942.15	1	26942.15	3091.87	0.000
IN	46.99	1	46.99	5.39	0.022
INTEG	18.70	1	18.70	2.15	0.145
INFOINT	53.92	1	53.92	6.19	0.014
IN BY INTEG	1.14	1	1.14	0.13	0.718
IN BY INFOINT	0.05	1	0.05	0.01	0.939
INTEG BY INFOINT	9.55	1	9.55	1.10	0.297
IN BY INTEG BY INFOINT	30.19	1	30.19	3.46	0.065

total number of cases used: 137

tests of significance for COMPOS using UNIQUE sums of squares

This three-way interaction effect was significant at a 10% level (6.5%). Notwithstanding we investigated this result because it referred to a predicted fit.

Also the two conditions were met.

1. Normality:
   - Shapiro-Wilks and K-S (Lilliefors) in all the cells were satisfactory;
   - This result was supported with normal and detrented plots of the distribution
   - Also the histogram, supported with the printed measures, indicated normality.
2. Homogeneity:
   - Cochrans C(16,8) = 0.16932 P = 1.000 (approx.)
   - Bartlett-Box F(7,12009) = 1.11110 P = 0.353

The plots supported this equal variances.

The check via the residuals supported the feasibility of the data for the ANOVA.

The assumptions of this ANOVA were met as well.

V high (marketing) differentiation - low formalization - low I T integration

Table B7.3 ANOVA OF (MARKETING) DIFFERENTIATION, FORMALIZATION AND IT INTEGRATION

source of variation	SS	DF	MS	F	sig of F
WITHIN CELLS	1116.37	129	8.65	-	-
CONSTANT	28467.17	1	28467.17	3289.46	0.000
MA	32.42	1	32.42	3.75	0.055
FOR	12.13	1	12.13	1.40	0.239
INFOINT	97.23	1	97.23	11.24	0.001
MA BY FOR	0.52	1	0.52	0.06	0.808
MA BY INFOINT	19.85	1	19.85	2.29	0.132
FOR BY INFOINT	18.30	1	18.30	2.12	0.148
MA BY FOR BY INFOINT	68.90	1	68.90	7.96	0.006

total number of cases used: 137

tests of significance for COMPOS using UNIQUE sums of squares

The probability that the interaction effect was accepted whereas there is no interaction effect at all was 0.6%. This probability was smaller than the significance level of 5%. Therefore the interaction effect was accepted.

Also the two conditions were met.

1. Normality:
   - Shapiro-Wilks and K-S (Lilliefors) measures in all the cells were satisfactory;
   - This was supported with normal and detrented plots of the distribution;
   - Also the histogram indicated normality.
2. Homogeneity;
   - Cochrans C(16,8) = 0.19726 P = 0.421 (approx.)
   - Bartlett-Box F(7,14241) = 1.12040 P = 0.347

The plots supported this equal variances.

The check via the residuals supported the correctness of the data for the ANOVA. The assumptions of the third ANOVA were met too.

B.8 Loglinear analyses (hypothesis 2)

Table B8.1 THE RELATION BETWEEN (MARKETING) DIFFERENTIATION, CENTRALIZATION AND IT CONCENTRATION

K	DF	L.R. X^2	prob	Pearson X^2	prob	iteration
1	3	5.897	0.1168	4.934	0.1767	0
2	3	3.966	0.2652	3.896	0.2729	0
3	1	1.864	0.1722	1.849	0.1739	0

total number of cases used: 137

III Low (marketing) differentiation - high centralization - high IT con - centration

The loglinear test made clear that deleting the relations between the three variables (K = 3) did not have a significant impact on the cellcount (low chisquare, high probability). Only those cases were used that had a score on COMPOS.

Also the assumptions were checked. The standardized residuals did not exceed the absolute value of 1.96. Also the residuals (plots) indicated that the final model fitted properly to the data.

IV High innovation - high integration - high IT integration

Table B8.2 THE RELATION BETWEEN INNOVATION, INTEGRATION AND IT INTEGRATION

K	DF	L.R. X^2	prob	Pearson X^2	prob	iteration
1	3	4.474	0.2146	4.735	0.1922	0
2	3	13.089	0.0044	13.129	0.0044	0
3	1	0.524	0.4692	0.522	0.4699	0

total number of cases used: 137

The loglinear test made clear that deleting the relations between the three variables (K = 3) did not have a significant impact on the cellcount.
The assumptions were met as well.

V High (marketing) differentiation - low formalization - low I T integration

Table B8.3 THE RELATION BETWEEN (MARKETING) DIFFERENTIATION, FORMALIZATION AND IT INTEGRATION

K	DF	L.R. X^2	prob	Pearson X^2	prob	iteration
1	3	1.951	0.5826	2.798	0.4238	0
2	3	7.584	0.0554	7.499	0.0576	0
3	1	0.731	0.3925	0.732	0.3922	0

total number of cases used: 137

The loglinear test made clear that deleting the relations between the three variables (K = 3) did not have a significant impact on the cellcount.
These assumptions were met also.

B.9 Factor analysis of SISP (hypothesis 3)

Table B9.1 FACTOR ANALYSIS OF SISP

	factor1	factor 2
INFOBEL	0.85331	-
INFOFOR	0.89744	-
INFOPLAN	0.88766	-
INFOTOP	-	0.91890
INFOLYN	-	0.91950
INFOSTRA	0.63154	-
INFOSTRU	0.69763	-
eigen value	4.13	1.16
percentage of variance	59.00	16.50

total number of cases used: 227

total percentage of variance: 75.5

Assumptions:

- Bartlett Test of Sphericity = 1087.1484, Significance = 0.00000. The identity matrix was rejected;
- The Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.79992 was sufficient (KMO > 0.5).

Reliability:

SISP1 0.89

SISP2 0.90

B.10 Loglinear analyses (hypothesis 3)

The impact of SISP1
The loglinear test made clear that deleting the relations between the three variables (K = 3) did not have a significant impact on the cellcount (low chi-square, high probability). Only those cases were used that had a score on COMPOS (see Table B10.1).

The model where the relation of SISP1 with marketing, centralization and IT concentration was studied supported this result (see Table B10.2).

The impact of SISP2
The loglinear tests indicated that in the situation of high SISP2, organizations were not significantly often present in fit situation III as well (see Table B10.3).

The model where the relation of SISP2 with marketing, centralization and IT concentration was studied supported this result (see Table B10.4).

The combined impact of SISP1 and SISP2
Finally the impact of SISP1 and SISP2 on the three observed fits was studied. - The loglinear tests indicated that in the situation of high SISP1 and high SISP2 organizations were not significantly more often situated in fit situation III than in the other combinations (see Table B10.5).

The model where the relation of SISP1 and SISP2 with marketing, centralization and IT concentration was studied supported this result (see Table B10.6).

According to the assumptions the final model fitted the data.

Table B10.1 THE RELATION BEWEEN DIFFERENTIATION, CENTRALIZATION AND IT CONCENTRATION (high SISP1)

K	DF	L.R. X^2	prob	Pearson X^2	prob	iteration
1	3	16.649	0.0008	18.140	0.0004	0
2	3	0.348	0.9507	0.350	0.9504	0
3	1	0.116	0.7336	0.116	0.7336	0

total number of cases used: 66

Table B10.2 THE RELATION BETWEEN DIFFERENTIATION, CENTRALIZATION, IT CONCENTRATION AND SISP1

K	DF	L.R. X^2	prob	Pearson X^2	prob	iteration
1	4	5.111	0.2761	4.171	0.3833	0
2	6	28.904	0.0001	30.962	0.0000	0
3	4	2.049	0.7267	1.978	0.7399	0
4	1	0.596	0.4401	0.595	0.4404	0

total number of cases used: 133

Table B10.3 THE RELATION BETWEEN DIFFERENTIATION, CENTRALIZATION AND IT CONCENTRATION (high SISP2)

K	DF	L.R. X^2	prob	Pearson X^2	prob	iteration
1	3	3.546	0.3148	3.163	0.3672	0
2	3	3.172	0.3658	3.079	0.3796	0
3	1	1.076	0.2996	1.068	0.3014	0

total number of cases used: 71

Table B10.4 THE RELATION BETWEEN DIFFERENTIATION, CENTRALIZATION, IT CONCENTRATION AND SISP2

K	DF	L.R. X^2	prob	Pearson X^2	prob	iteration
1	4	5.713	0.2216	4.529	0.3391	0
2	6	5.117	0.5290	5.573	0.4726	0
3	4	3.067	0.5467	3.029	0.5529	0
4	1	0.033	0.8554	0.033	0.8554	0

total number of cases used: 133

Table B10.5 THE RELATION BETWEEN DIFFERENTIATION, CENTRALIZATION AND IT CONCENTRATION (high SISP1 and high SISP2)

K	DF	L.R. X^2	prob	Pearson X^2	prob	iteration
1	3	21.823	0.0001	22.660	0.0000	0
2	3	0.298	0.9603	0.298	0.9604	0
3	1	0.193	0.6607	0.196	0.6581	0

total number of cases used: 39

Table B10.6 THE RELATION BETWEEN DIFFERENTIATION, CENTRALIZATION, IT CONCENTRATION, SISP1 AND SISP2

K	DF	L.R. X^2	prob	Pearson X^2	prob	iteration
1	5	5.720	0.3344	6.981	0.2220	0
2	10	31.331	0.0005	34.170	0.0002	0
3	10	10.378	0.4079	9.278	0.5059	0
4	5	2.604	0.7607	2.535	0.7713	0
5	1	0.022	0.8830	0.022	0.8831	0

total number of cases used: 133

B.11 Supportive analyses (hypothesis 3)

Table B11.1 THE IMPACT OF SISP BEFORE NOMINALIZATION: CORRELATIONS

	COMPOS	SISP1	SISP2
COMPOS	1.0000	0.0644	0.0930
SISP1	0.0644	1.0000	-0.0575
SISP2	0.0930	-0.0575	1.0000

number of cases used: 133

Table B11.2 THE IMPACT OF SISP AFTER NOMINALIZATION: CORRELATIONS

	COMPOS	SISP1	SISP2
COMPOS	1.0000	-0.0413	0.0348
SISP1	-0.0413	1.0000	0.1136
SISP2	0.0348	0.1136	1.0000

number of cases used: 133

This correlation analysis is supported by the outcome of the ANOVA (see Table B11.3).

Table B11.3 THE IMPACT OF SISP AFTER NOMINALIZATION: ANOVA

source of variation	SS	DF	MS	F	sig of F
WITHIN CELLS	1293.23	129	10.03	-	-
CONSTANT	28677.76	1	28677.76	2860.62	0.000
SISP1	3.03	2	3.03	0.30	0.583
SISP2	2.15	2	2.15	0.21	0.644
SISP1 BY SISP2	2.19	4	2.19	0.22	0.641

total number of cases used: 133

tests of significance for COMPOS using UNIQUE sums of squares