

## CHAPTER 6

### INDICATOR DEVELOPMENT

#### 6.1 INTRODUCTION

This chapter forms the essence of this study. It presents the actual development of a system of empowerment indicators for a corporate work environment. It is mainly based on yes/no questions which reflect different "empowerment events" that may or may not have occurred in the organisation. The occurrence of such "empowerment events" may indicate the presence of empowerment in the organisation. This chapter looks at procedures that were followed to develop indicators for this particular study. It presents an index of indicators and significant indicators.

#### 6.2 INDICATOR DEVELOPMENT

The following procedures were followed to develop indicators for this particular study.

##### 6.2.1 Index of indicators

The index of indicators is comprised of the twenty questions in Section C of the questionnaire. The aim of this phase was to determine which indicators may be considered valid and reliable. For this particular study, a comparison between the three identified factors in Section B and each of the indicators in Section C was done by means of T-tests. The three factors represent Section B of the questionnaire. The T-test scores must rate  $>0.05$  to be statistically significant. A score of 0 – 0.1 is seen as a small effect size, 0.3 as medium and 0.5 as a big effect size. It is a process of possible discrimination. This process will determine which indicators are statistically preferable in the case of this study. The different indicator questions are used as (independent) prediction variables to determine the extent to which these predict each factor.

The social world is enormously complex, and behavioural and social phenomena are determined by a great many factors, working in multiple, interacting patterns. There are a number of multivariate procedures that are useful for purposes of 'modelling' complex phenomena and relationships. The most important of these is multiple linear regression, since most often multivariate procedures are derived from it, and are easier to understand in relation to it (Tredoux & Durrheim, 2002:338). Above methods were utilised in this study.

### 6.2.2 Significant indicators

The T-test determines which indicator has an effect on which factor, and which indicator predicts each factor. The indicators which show more significant and practical effects will be rated as the significant indicators for this particular study. The values cannot be compared, but instead the effect will be ranked. Only the indicators with a significant score and effect measure will be listed as follows:

- **Index of indicators**
  - **T-tests: Section C vs. Section B**

**Table 6.1: Question 1: T-Test**

Did you get feedback on your work performance in the last three months?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test	.000		.000
Eta	.387		.288

**Table 6.2: Question 3: T-Test**

Have you had a disciplinary hearing in the last three months?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test			.034
Eta			.128

**Table 6.3: Question 4: T-Test**

Have you been involved in any racial incident at work in the last three months?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test	.000		
Eta	.191		

**Table 6.4: Question 6: T-Test**

Have any of your family members received a bursary from Allwear?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test	.002		
Eta	.184		

**Table 6.5: Question 8: T-Test**

Have any of your ideas been implemented at work in the last three months?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test	.000		.000
Eta	.324		.316

**Table 6.6: Question 9: T-Test**

Do you have a supervisor?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test	.009		
Eta	.155		

**Table 6.7: Question 11: T-Test**

Have you been given your job description in written format?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test	.000		.000
Eta	.216		.215

**Table 6.8: Question 12: T-Test**

Have you received in-job training in the last three months?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test			.043
Eta			.122

**Table 6.9: Question 13: T-Test**

Do you always have a 30-minute lunch break?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test	.051		.002
Eta	.116		.184

**Table 6.10: Question 14: T-Test**

Do you always get tea during your tea break?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test			.039
Eta			.124

**Table 6.11: Question 15: T-Test**

Have you been threatened in any way by another employee at Allwear in the last three months?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test	.006		.064
Eta	.162		.112

**Table 6.12: Question 17: T-Test**

Compared to three months ago are you doing different tasks today?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test		.002	
Eta		.179	

**Table 6.13: Question 18: T-Test**

Do you know if your company has a mission statement?

	First order factor 1	First order factor 2	Second order factor
	Support	Responsibility	Employee empowerment
T-test	.036	.008	.001
Eta	.125	.128	.198

When looking at the scores of the T-test and Eta scores, it may be noted that the scores are not rated high. It must be taken into consideration that in this study the human factor plays a significant role in this study. People's ideas, feelings and opinions cannot be disregarded. It would be impossible to get an exact score because of this. As a result of the human element, this study can only comment on the impact of the statistics presented above, and cannot make statistical judgements.

Examining the results of these statistics, the independent sample test, being the T-test shows that:

- Questions C1, C4, C6, C8, C9, C11, C13, C15 and C18 have the greatest impact on First order factor 1, support;
- Questions C17 and C18 have the greatest impact on First order factor 2, responsibility; and
- Questions C1, C3, C8, C11, C12, C13, C14, C15 and C18 have the greatest impact on Second order factor 2, employee empowerment.

The three groups of questions above show which questions are possible indicators for that specific factor.

#### ❖ **First order factor 1: Support**

Examining the questions that have an impact on support shows that it does fit into the study, according to the researcher. Feedback on work performance can have an impact on the degree to which employees feel supported by management. If employees are unsure about their performance, they can become apprehensive. It is essential to offer praise and recognise their accomplishments, even if these are small. The result is motivated employees, eager to help the company grow (Lawson, 2001:8). Current literature on this subject reinforces the idea that employees must get feedback from the organisation. By doing this, organisations will reinforce their support of the employees. The effect size is medium, with a score of .387. Being involved in racial incidents and how management responds to such incidents can also have an impact on support. Psychological and social problems will negatively affect the individual, his/her dependents and colleagues to such an extent that productivity will suffer. The earlier problems are identified and treated, the higher the rate of success. It is to the benefit of the employer to assist employees with these problems (Peters, 1999:82). By solving racial incidents at the workplace, the organisation solves problems that can have psychological and social problems for the employees. Again the employees will feel that the organisation supports them. The effect size is, however, small (.191). Employees may feel supported if members of their families have received bursaries, although

the effect size is also small (.184). Climate in the organisation provides a frame of reference on terms of which individuals make sense of organisational life (Spreitzer, 1996:489). If the organisation gives bursaries to employees' family members, they create a climate of support for their employees.

Management shows support by implementing the ideas of employees. Employees may be involved in decision-making that relates to them. They will feel they have contributed and won't feel mistreated (Lawson, 2001:8). The organisation shows their support of the employees by doing this. This question has a medium effect size of .324.

If employees have a supervisor, they feel that they are supported in what they do. Managers must help employees experience personal mastery over some challenges and problems. Managers can help workers feel more and more empowered, in order to help them develop the belief that they can succeed (Whetten, Cameron & Woods, 2000:416). Managers play a crucial role in this regard. Although the employees feel supported, it is the manager or supervisor's responsibility not to misuse this support. The effect size is, however, small (.155).

Receiving a written job description can have an impact on the degree to which employees feel supported by management. It is a more permanent form of support. Employees know then what is expected of them and can act accordingly. Empowered people have a sense of trust. They have an assurance that when they are in subordinate situations, those in power will not take advantage of them (Whetten, et al. 2000:413). If employees have a written job description, they feel that the organisation takes care of them and trusts them. Knowing they are entitled to certain perks like tea breaks, also gives them a feeling of trust. These employees respond to this support. The effect size is .216 – a medium effect. If employees know they are entitled to a lunch break every day, this reflects support from management. It shows that management has respect and treats employees in a humane fashion. Management also respects the labour law and acts accordingly by granting the employees appropriate lunch and tea breaks. The effect size is, however, small (.116).

If employees are threatened by other employees, it might have an impact on how they view support from management. The way management reacts to threats reflects the level of support which they provide. The effect size is small (.162). Knowing the mission statement of your organisation gives employees an understanding that can lead to support. Every organisation has a strategic vision. This vision must be clear, compelling and communicated to everybody in the organisation. This will give employees a sense of direction and purpose (Dess & Picken, 2000:21). Knowing that you are working towards a certain goal gives work a purpose. If the organisation shares the mission with the employees, this also shows trust. Employees then experience the support they need from the factory. The effect size is, however, small (.125).

#### ❖ **First order factor 2: Responsibility**

Only two questions had a statistical impact on this factor. Doing different tasks to those that were being done three months ago can have an impact on how employees view management, as it gives them more responsibilities and affects the way in which they view their levels of responsibility. Employees must get involved; employees must rotate their responsibilities (Weiss, 2001:3). If employees do different tasks, they feel that the organisation trusts them and gives them more responsibilities. As a result, they will also act with more responsibility. The effect size is, however, small (.179).

If employees know the mission statement, this can have an impact on their sense of responsibility towards the organisation. It also indicates that the organisation has trust in the employees as employees are shown top management's vision and strategy, and are expected to act accordingly (Quinn & Spreitzer, 1997:45). By giving responsibility to the employees, they will act with more responsibility. The effect size is, however, small (.128).

#### ❖ **Second order factor: Employee Empowerment**

This section presents questions which may be possible indicators of employee empowerment.



Receiving feedback on work performance can have an impact on employees' empowerment levels. Lawson (2001:8) is of the opinion that employees must be praised and acknowledged for their accomplishments, even if these are small. Employees will then be willing to try new tasks and challenges. The result is motivated employees, eager to help the company grow. The practical effect is a medium (.288). Having a disciplinary hearing can indicate levels of empowerment. Employees that are empowered and employees who are not might have different disciplinary measures taken against them. It is better to reinforce than to punish employees. As they learn, they will grow (Quinn & Spreitzer, 1997:46). Employees must have autonomy in the organisation, but they must also be aware of their boundaries. The practical effect of this question is small (.128). Ideas of employees that have been implemented can have an impact on their empowerment levels. Employees should be involved in the decision-making process. Employees can be involved in decision-making that relates to them (Lawson, 2001:8). It has shown that employees try harder when they receive support from management. This has a practical effect of .316.

Empowered employees want their job descriptions in written format so that they know what to do and what is expected of them. Every organisation has a strategic vision, which is both explicit and implicit. This vision must be clear, compelling and communicated to everybody in the organisation. This will give employees a shared sense of direction and purpose (Dess & Picken, 2000:21). Although the vision is not a written job description, it reinforces the idea that employees should know what to do and what their purpose is in an organisation. In this case a written job description can do that. The practical effect is small to medium (.215).

Training plays a vital role in employee empowerment. Continual training and support must be available. It will make employees feel confident in their abilities (Lawson, 2001:8). The practical value is small (.122).

When employees are given lunch breaks and tea breaks they know that management takes their needs into consideration and that they are treated fairly – an essential component of employee empowerment. Morale is an important

foundation for increasing the productivity of the workforce through motivation and empowerment (Weiss, 2001:3). Managers should praise, encourage, express approval, back employees and reassure them (Whetten, et al. 2000:46). Organisations can, with small changes, show employees they care and treat them with respect and dignity. In turn, the employee's morale is built up, which empowers them. The practical effect is however, small, (.184 and .124, respectively).

If employees are threatened by other employees, this can have a negative impact on their empowerment levels, making working conditions difficult. Empowerment does not succeed if it is seen as a threat to employees. The organisation should have a "healthy" culture that is open to employee empowerment. Employees must work in teams and not as a hierarchical structure (Badenhorst, 1999:40). Within a "healthy" organisational culture, threats between employees are not tolerated. By reducing threats, organisations create an environment of employee empowerment. The practical effect is, however, small (.112).

Knowing the organisation's mission statement is one of the dimensions of empowerment. This may have a positive impact on the employees' empowerment levels. Employees must clearly understand the goals, objectives and priorities of the organisation and be knowledgeable about its internal procedures and processes (Dess & Picken, 2000:23). By knowing this, employees will know where they fit into the overall organisation, which helps them to become empowered. The practical value is, however, small (.198).

Although the questions referred to above only indicate impact, and do not allow predictions to be made, the findings were verified by the dimensions of empowerment discussed in Chapter 2.

- **Significant indicators**
  - **Regression analysis**

Regression analysis determines which questions in Section C best verify the factors in Section B. With additional linear regression, the questions in Sections A

and C are compared to the factors in Section B. This will determine which the most significant indicators are. It is a process of elimination.

Questions C1 to C20 predict each factor. But which of these questions most affects the three mentioned factors. The effect sizes of all the questions are ranked until five remain. These five questions are regarded as having the most significant effect on that particular factor. These questions will be the indicators for that specific factor. It is only a significant effect and no predictions can be made.

#### ❖ **First order factor 1: Support**

Questions C19 and C18 were excluded due to a lack of data. The five questions that have a significant effect on this factor are C1, C8, C4, C3 and C9. They were:

- C1: Did you get feedback on your work performance in the last three months?
- C8: Have any of your ideas been implemented at work in the last three months?
- C4: Have you been involved in any racial incident at work in the last three months?
- C3: Have you had a disciplinary hearing in the last three months?
- C9: Do you have a supervisor?

The square of these five questions is .235. It is not a highly significant effect. These questions, with the exception of C3, were also identified in the T-test as the questions that have a significant effect on this specific factor.

It is therefore these five questions that are the best indicators for this specific factor.

#### ❖ **First order factor 2: Responsibility**

Questions C19 and C18 were excluded due to a lack of data. The question that has a significant effect on this factor is C17. It was: "C17: Compared to three months ago are you doing different tasks today?" The square is .027. This

question then has a very small significant effect on this factor. This question was also identified as one that validates this specific factor in the previous T-test.

Therefore this question is the best indicator for this specific factor.

#### ❖ **Second order factor: Employee empowerment**

Question C19 was excluded due to a lack of data. The five questions that have a significant effect on this factor are C1, C8, C14, C3 and C17. They were:

C1: Did you get feedback on your work performance in the last three months?

C8: Have any of your ideas been implemented at work in the last three months?

C14: Do you always get tea during your tea break?

C3: Have you had a disciplinary hearing in the last three months?

C17: Compared to three months ago are you doing different tasks today?

The square of these five questions is .189. This is a small significant effect. All these questions, with the exception of C17, were also identified as questions that best validate this factor according to the T-test.

The questions above are the significant indicators for this specific factor.

#### • **Additional linear regression**

Additional linear regression is the follow-up after the T-test and the regression analysis. The T-test showed which questions were the possible indicators for each factor. The linear regression showed which questions in Section C were the best indicators for each factor. Because the statistical significance was not that high, an additional linear regression was done. Section A was included. The results will show which questions in Section A and Section C of the questionnaire are the best indicators for the specific factors. Section A's questions have been changed so that a '0' or '1' value can be given to each question (Table 6.14). Yes is always '1' and no is always '0'. Because the answer can only be yes or no, the scoring must be '1' and '0'. Some of the questions in Section A had more than two

possible answers, like the different age groups. The groups were recoded that there were only a '0' or '1' possible answer.

**Table 6.14: Variable values**

<b>Name</b>	<b>Value</b>	<b>Label</b>
a1	0	Female
	1	Male
a2	0	Zulu
	1	Other
a3	1	Younger than 35 years
	2	Between 35 – 45 years
	3	Older than 45 years
a4	0	Married/Cohabiting
	1	Single/Divorced/Separated/Widowed
a5	1	Grade 7 and lower
	2	Grades 8 – 10
	3	Grade 11 and higher
a6	1	5 years and less
	2	Between 6 and 14 years
	3	15 years and more
a7	0	Monthly
	1	Weekly
a8	0	Learner
	1	Qualified
a10	0	Machinist
	1	General worker
New age 1	0	Age: Younger than 35 years
New age 2	1	Age: Between 35 – 45 years
New edu 1	0	Education: Grade 7 and lower
New edu 2	1	Education: Grades 8 –to 10
New ser 1	0	Service: 5 years and less
New ser 2	1	Service: Between 6 and 15 years

For the purpose of this analysis, refer to Table 6.15 (main descriptive statistics). This will consist of the biographical variables of this study. Table 6.16 shows which items are the most significant indicators for each of the factors.

**Table 6.15: Main descriptive statistics**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>		
Male	28	9.3
Female	268	89.0
N	296	98.3
<b>Home language</b>		
Other	25	8.3
Zulu	271	90.0
N	296	98.3
<b>Age</b>		
Younger than 25 years	84	27.9
Between 35 - 45 years	109	36.2
Older than 45 years	100	33.2
N	293	97.3
<b>Marital status</b>		
Single/Divorced/Separated/Widowed	196	65.1
Married/Cohabiting	99	32.9
N	295	98.0
<b>Highest educational qualification</b>		
Grade 7 and lower	124	41.2
Grades 8 – 10	95	31.6
Grade 11 and higher	77	25.6
N	296	98.3
<b>Number completed years' service at Allwear</b>		
5 years and less	83	28.1
Between 6 and 14 years	110	37.3
15 years and more	102	34.6
N	295	100.0
<b>Weekly or monthly pay</b>		
Weekly	260	86.4
Monthly	35	11.6
N	295	98.0
<b>Qualified worker or learner</b>		
Qualified	284	94.4
Learner	12	4.0
N	296	98.3
<b>Type of qualified worker</b>		
General worker	101	33.6
Machinist	123	40.9
N	284	94.4

**Table 6.16: Index of indicator variables that qualify**

Factors	Items	
Support	C1 C15 New edu 1* C9	Feedback on work performance Threatened by other employee Education: Grade 7 and lower Do you have a supervisor?
Responsibility	New age 1* C17 A4	Age: Younger than 35 years Doing different tasks Married/Cohabiting
Employee empowerment	C1 New age 1* C14 A1 C8	Feedback work performance Age: Younger than 35 years Tea during tea break Female Ideas implemented

\* These are recoded questions.

#### ❖ First order Factor 1: Support

In the following model question 19 was omitted due to a lack of data. For this model, C18 and A8 were also deleted from the analysis due to missing correlations.

The variables that best validate factor 1 are C1, C15, new edu 1 and C9. An adjusted R-square gives a .170 score. Therefore it explains 17% of variance in the sample. These questions have a statistically significant effect on factor 1, although it is not a large effect.

In this case the constant is 3.491. The five questions appear statistically as follows:

$$y = 3.491 + .587( ) - .467( ) + .305( ) - .903( )$$

(A '0' or '1' is placed inside the appropriate brackets when a respondent answers these questions.)

$y$  = score of factor 1

3.491 = constant

.587 = C1

.467 = C15

.305 = new edu 1

.903 = C9

**Table 6.17:**

**Additional Linear Model of most significant indicator variable: Support**

Variable	Value	P
Constant	3.491	.000**
Feedback	.587	.000**
Threatened	-.467	.003**
Education	.305	.013
Supervisor	-.903	0.14

\*\* Significant at 0.05 level

According to Table 6.17, feedback on work performance and being threatened by other employees both have a statistically significant effect on support. Employees feel that feedback from the organisation is a form of support. If other employees threaten them, the reaction of the organisation should show support of the threatened employees. According to this study, support can be measured at Allwear by asking employees the questions indicated in Table 6.16 ('support'). The factory should present these questions to a sample of employees every few months. These answers will indicate employee empowerment levels following from the support given to employees by Allwear's management. This is what makes indicators so valuable to an organisation. The organisation can use these indicators on an ongoing process.

Each value will affect the final score. The ideal answer will be as close to the constant of 3.491 as possible. The '0' or '1' is placed inside the appropriate brackets according to each question.



❖ **Second order factor two: Responsibility**

In the following model question 19 was omitted due to a lack of data. For this model, C18 and A8 were also deleted from the analysis due to missing correlations.

The variables that best validate factor two are New age 1, A4 and C17. An adjusted R-square gives a .090 score. Therefore it explains 9% of variance in the sample. These questions have a small significant effect on this factor.

In this case the constant is 4.522. The three questions will appear statistically as follows:

$$y = 4.522 - 3.43( ) - 2.58( ) - .262( )$$

(A '0' or '1' is placed inside the appropriate brackets when a respondent answers the questions.)

y = score of factor 2

4.522 = constant

-3.43 = new age 1

-2.55 = C17

-.262 = A4

**Table 6.18:**  
**Additional Linear Model of most significant indicator variable:**  
**Responsibility**

Variable	Value	P
Constant	4.522	.000**
Age	-.343	.010
Different tasks	-.258	.026
Married/Cohabiting	-.262	.027

\*\* Significant at 0.05 level

According to Table 6.18, only the constant has a statistically significant effect on responsibility. Although there is no statistical significance, it may be argued that employees who perform different tasks in an organisation can be seen as responsible, and their age can also have an impact. In this particular situation no conclusions can be drawn. Responsibility can be indicated at Allwear by asking the questions in Table 6.16 ('responsibility'). These questions can help the factory to determine the employees' empowerment levels according to responsibility. The answers will assist the factory in making work-related decisions about the responsibilities of the employees.

Each value will affect the final score. The ideal answer should be as close to the constant of 4.5222 as possible. A '0' or '1' is placed in the appropriate brackets according to each question.

#### ❖ **Second order factor: Employee empowerment**

In this model question 19 was omitted due to a lack of data. Questions C18 and A8 were also deleted from the analysis due to missing correlations.

The variables that best validate second order factor are C1, new age 1, C14, A1 and C8. An adjusted R-square gives a .162 score, which explains a 16.2% variance in the sample. This is a small effect.

In this case the constant is 3.024. The five questions will appear statistically as follows:

$$y = 3.024 + .329( ) - .284( ) + .566( ) - 4.51( ) + 2.47( )$$

(A '0' or '1' is placed inside the appropriate brackets when a respondent answers these questions.)

y = score of second order factor

$$.329 = C1$$

$$-.284 = \text{new age 1}$$

.566 = C14

-4.51 = 91

2.47 = C8

**Table 6.19:**  
**Additional Linear Model of most significant indicator variable:**  
**Employee empowerment**

Variable	Value	P
Constant	3.024	.000**
Feedback	.329	.001**
Age	-.284	.002**
Tea break	.566	.008
Female	-.451	.033
Ideas implemented	.247	.034

\*\* Significant at 0.05 level

According to Table 6.19, feedback on work performance and age are both statistically significant. If employees receive feedback on their work performance, this can reinforce employee empowerment, as do age. Again the questions in Table 6.16 ('employee empowerment') will assist in providing an indication of employee empowerment levels within the factory.

Each value affects the final score. The ideal answer should be as close to the constant of 3.024 as possible. A '0' or '1' is placed inside the appropriate brackets according to each question.

Table 6.16 presents the final significant indicators for this particular study. These indicators will assist Allwear to determine employee empowerment levels whenever they feel it necessary.

Although some of the scores in this chapter were low, the human factor must be taken into consideration. Because humans are so diverse, it is not surprising that people differ. Low scores are properly managed through adequate cross-checks.

In this chapter the T-test, regression analysis and additional regression analysis were used to determine the set of indicators for this study. Cross reference with literature in Chapter 2 of the study showed similarities between practice and theory.

### **6.3 CONCLUSION**

Different methods were used to determine the validity and reliability of the measuring instrument used in this study. Reliability of scale items was determined. The reliability score did not confirm unidimensionality. Validity was determined through face and content validity. A factor analysis was used as the method to determine content and construct validity.

The indicator development was conducted with a T-test and additional linear regression. For each of the three factors, indicators were identified to specify that particular factor. This chapter did arrive at a set of indicators which reflect the level of employee empowerment within an organisation.

This study will conclude with recommendations and conclusions.

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