

CHAPTER SIX
EMPIRICAL FINDINGS:
INFRASTRUCTURE FACILITIES, PHYSICAL ABILITY AND HEALTH
AND SAFETY IN THE WORKPLACE

6.1 INTRODUCTION

The previous chapter provided the first part of the empirical findings and presented the biographical information of the participants obtained from the quantitative and qualitative data as well as the findings on the first two relevant themes: *Company procedures and policies* and *Workplace opportunities*. This chapter provides the second part of the empirical findings. As indicated in Chapter Five, the quantitative and qualitative data are presented in an integrated way. The following three themes are covered in this chapter: *Infrastructure facilities*, *Physical ability* of women employed in core mining positions and *Health and safety in the workplace*. For each of the themes, descriptive statistics and frequencies are provided and discussed. Furthermore, a factor analysis was conducted on each of the themes to explore the factorial structure of these sections; these findings are also reported and discussed. Lastly, the findings on the qualitative inquiry (semi-structured interviews and focus group discussions) on each of the themes are reported.

6.2 INFRASTRUCTURE FACILITIES

Given the fact that the mining industry previously excluded women in the core business of mining, infrastructure facilities were developed to provide only for the needs of men. As a result of the requirements of the 2002 Mining Charter (revised and amended in 2010) to employ 10% women in core mining positions, mining companies were obliged to upgrade and improve their infrastructure facilities in order to accommodate women in the mining workforce. As mentioned in the literature review (see Chapter Four under 4.4.2.1), some mining companies have progressed faster than others with regard to the provision of adequate infrastructure facilities that cater for the specific needs of women; in other instances some limitations and deficiencies are still prevalent. The following indicator statements were identified and formulated to determine whether mining companies provide adequate infrastructure facilities to women working in core mining positions:

- The mining company provides canteens.
- The mining company provides adequate ablution facilities.
- The mining company provides adequate change rooms.
- The mining company provides crèches.
- The ablution facilities and change rooms in the workplace are women-friendly.
- The mining company provides facilities for women working in shifts, such as security at work and company transport.

The section to follow presents the findings on the above-mentioned indicators. Firstly, descriptive statistics and frequencies are presented, differentially in terms of the three mines included in the study. Secondly, a factor analysis was conducted to explore the factorial structure of the section; these findings are reported and discussed. Lastly, the findings on the qualitative inquiry (semi-structured interviews and focus group discussions) are revealed and discussed.

6.2.1 Descriptive statistics and frequencies

Discrepancies are evident in the data obtained from the three mines included in the study.

Copper mine

It is clear from the results detailed in Table 6.1 (a) that a large number of participants of the male (70.5–100%) and management (75–100%) target groups reacted positively on all the indicators, except for the indicator on *crèches*. Almost all the statements calculated a mean of above 2.7. However, this view is not supported by the majority of the female participants working in core mining positions. Positive responses were reported for only two of the indicators. According to the majority of the female participants, the copper mine provides *adequate change rooms* as well as *facilities for women working in shifts*. These statements calculated a mean of above 2.87 and 2.68 respectively. Negative responses were obtained for the rest of the indicators, as these statements calculated a mean of 2.5 and lower, indicating that on average, women thought that the mine does not provide adequate canteens and ablution facilities for women employed in core positions. It also became clear from the qualitative enquiry that the mine does not provide *crèche facilities*.

Phosphate mine

Positive responses were obtained from all three target groups of the phosphate mine on all the indicators (see Table 6.1 (b)). All the statements calculated a mean of above 2.7, indicating that on average, the participants thought that all facilities as mentioned in the questionnaire are adequate and in place.

Platinum mine

Discrepancies exist in the results obtained from the two target groups of the platinum mine (see Table 6.1 (c)). The male participants working in core mining positions reacted positively on almost all the indicators (calculated a mean of above 2.8), with the exception of the indicators on *canteens* and *crèches*. These statements calculated a mean of 1.7 and lower, thereby indicating that compliance in terms of these facilities is none or very limited. The responses of the female participants working in core mining positions were extremely negative. They only responded positively to one indicator. According to the participants, the mine provides *adequate change rooms*. This statement calculated a mean of 3.24. The rest of the statements calculated a mean of 2.5 and lower, which indicates that compliance in terms of these facilities is none or very limited. Although a few participants answered agree to strongly agree to the indicator on *crèche facilities*, the mining company does not provide such facilities. Furthermore, it can be deducted that on average, the female participants of the platinum mine are not satisfied with canteens, ablution facilities as well as facilities provided for women working in shifts.

From the results above it is clear that some of the mines are faring better than others with regard to the provision of adequate infrastructure facilities. Furthermore, higher scores were obtained from the male and management target groups for almost all the indicators. Much lower scores were received from the female target groups. Although the female participants from the phosphate mine reported positive responses on all the different indicators, this was not the case for the copper and platinum mines. Almost all the different indicators calculated a mean score of 2.5 and lower, indicating that compliance in terms of these facilities is none or very limited. Detailed concerns regarding infrastructure facilities, derived from the qualitative inquiry, are revealed and discussed in 6.2.3. The following section presents the factor analysis of the section *Infrastructure facilities*.

Table 6.1 (a): Participants' perceptions regarding infrastructure facilities provided to women working in core mining activities – copper mine

Does the mining company provide adequate infrastructure facilities to women working in core mining activities?		Male in core						Female in core						Management					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.	Canteens	0.0	0.0	71.4	28.6	3.29	0.47	20.7	24.1	48.3	6.9	2.41	0.91	7.1	7.1	42.9	42.9	3.21	0.89
2.	Ablution facilities	6.7	0.0	60.0	33.3	3.20	0.77	18.5	18.5	55.6	7.4	2.52	0.89	0.0	0.0	62.5	37.5	3.38	0.50
3.	Change rooms	6.3	0.0	50.0	43.8	3.31	0.79	9.7	9.7	64.5	16.1	2.87	0.81	0.0	0.0	56.3	43.8	3.44	0.51
4.	Crèches	73.3	20.0	6.7	0.0	1.33	0.62	72.7	24.2	3.0	0.0	1.30	0.53	78.6	14.3	7.1	0.0	1.29	0.61
5.	The ablution facilities and change rooms in the workplace are women-friendly	5.9	5.9	64.7	23.5	3.06	0.75	16.7	23.3	50.0	10.0	2.53	0.89	0.0	12.5	56.3	31.3	3.19	0.66
6.	The mining company provides facilities for women working in shifts, such as security at work and company transport	11.8	17.6	52.9	17.6	2.76	0.90	12.9	16.1	61.3	9.7	2.68	0.83	6.3	18.8	50.0	25.0	2.94	0.85

	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely).
	Slightly more than half (51–62.5%) reacted positively by indicating 3 (partially) and 4 (completely).
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely).
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely).
	Mean scores of 2.5 and lower were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

Table 6.1 (b): Participants' perceptions regarding infrastructure facilities provided to women working in core mining activities – phosphate mine

Does the mining company provide adequate infrastructure facilities to women working in core mining activities?		Male in core						Female in core						Management					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.	Canteens	0.0	5.9	64.7	29.4	3.24	0.56	5.6	16.7	38.9	38.9	3.11	0.90	0.0	16.7	50.0	33.3	3.17	0.72
2.	Ablution facilities	0.0	25.0	50.0	25.0	3.00	0.74	11.1	11.1	55.6	22.2	2.89	0.90	0.0	16.7	58.3	25.0	3.08	0.67
3.	Change rooms	0.0	12.5	43.8	43.8	3.31	0.70	0.0	14.3	52.4	33.3	3.19	0.68	0.0	27.3	36.4	36.4	3.09	0.83
4.	Crèches	0.0	0.0	47.1	52.9	3.53	0.51	5.0	5.0	40.0	50.0	3.35	0.81	0.0	0.0	0.0	100.0	4.00	0.00
5.	The ablution facilities and change rooms in the workplace are women-friendly	6.3	6.3	37.5	50.0	3.31	0.87	20.0	5.0	55.0	20.0	2.75	1.02	0.0	8.3	66.7	25.0	3.17	0.58
6.	The mining company provides facilities for women working in shifts, such as security at work and company transport	5.9	11.8	47.1	35.3	3.12	0.86	5.6	16.7	44.4	33.3	3.06	0.87	0.0	16.7	66.7	16.7	3.00	0.60

	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely).
	Slightly more than half (51–62.5%) reacted positively by indicating 3 (partially) and 4 (completely).
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely).
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely).
	Mean scores of 2.5 and lower were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

Table 6.1 (c): Participants' perceptions regarding infrastructure facilities provided to women working in core mining activities – platinum mine

Does the mining company provide adequate infrastructure facilities to women working in core mining activities?		Male incore						Female in core					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.	Canteens	57.1	21.4	14.3	7.1	1.71	0.99	25.0	45.0	25.0	5.0	2.10	0.85
2.	Ablution facilities	6.7	20.0	60.0	13.3	2.80	0.77	15.0	35.0	35.0	15.0	2.50	0.95
3.	Change rooms	0.0	0.0	53.8	46.2	3.46	0.52	0.0	14.3	47.6	38.1	3.24	0.70
4.	Crèches	61.5	30.8	7.7	0.0	1.46	0.66	65.0	20.0	10.0	5.0	1.55	0.89
5.	The ablution facilities and change rooms in the workplace are women-friendly	0.0	0.0	69.2	30.8	3.31	0.48	13.6	45.5	22.7	18.2	2.45	0.96
6.	The mining company provides facilities for women working in shifts, such as security at work and company transport	0.0	14.3	78.6	7.1	2.93	0.47	40.0	30.0	25.0	5.0	1.95	0.94

	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely).
	Slightly more than half (51–62.5%) reacted positively by indicating 3 (partially) and 4 (completely).
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely).
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely).
	Mean scores of 2.5 and lower were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

6.2.2 Factor analysis

A factor analysis was conducted on the six indicator statements pertaining to *Infrastructure facilities* to explore the factorial structure of the section. The results of the KMO and Bartlett's test of sphericity are presented in Table 6.2 (a).

Table 6.2 (a): KMO and Bartlett's test of sphericity

KMO and Bartlett's test of sphericity		Value
KMO		0.741
P-value of Bartlett's test of sphericity	Approx. chi-sq	141.255
	df	15
	Sig.	0.000

Source: Constructed by author (2013)

The KMO measured 0.741 and indicates that the sample size is adequate for factor analysis. The p-value of Bartlett's test of sphericity returned a value smaller than 0.05, suggesting that the correlation between statements is sufficient for factor analysis (Field, 2005:652). The results of the factor analysis are reported in Table 6.2 (b).

Table 6.2 (b): Pattern matrix^a

Infrastructure facilities			
No.	Question statement	Factor 1	Communalities
		Infrastructure facilities	
E2	Does the mining company provide adequate infrastructure facilities to women working in core mining activities?	0.748	0.560
E3	Ablution facilities	0.639	0.408
E1	Change rooms	0.589	0.347
E5	Canteens	0.583	0.340
	The ablution facilities and change rooms in the workplace are women-friendly		

Infrastructure facilities			
No.	Question statement	Factor 1	Communalities
		Infrastructure facilities	
E6	Does the mining company provide adequate infrastructure facilities to women working in core mining activities?	0.566	0.321
E4	Crèches	0.420	0.176
	Cronbach's alpha	0.75	
	Factor mean	2.69	
	Factor standard deviation	0.65	

Source: Constructed by author (2013)

6.2.2.1 Factor 1: Infrastructure facilities

Only one factor was extracted by KMO criteria (Field, 2005:652) that explains 35.85% of the total variance, in the section on *Infrastructure facilities*. The statements all loaded above 0.4 on the identified factor. Questions E2 and E3 have factor loadings of 0.748 and 0.639 respectively, while questions E1, E5 and E 6 loaded satisfactorily with a factor loading of above 0.5. Question E4 has a factor loading of above 0.4, which is still satisfactory. The communalities for all the questions are above 0.3, except for question E4, which is 0.176.

The factor mean calculated at 2.69, just above the required 2.5, which indicates that a slight majority of the participants positively agreed with the factor and its statements. The factor shows good reliability with a Cronbach's alpha coefficient of 0.75, which is above the required 0.7, and shows high reliability and internal consistency.

6.2.2.2 Comparison of the three target groups of the different mines regarding Infrastructure facilities

The descriptive statistics together with effect sizes of the different target groups regarding the section *Infrastructure facilities* are reported in Table 6.2 (c) below. Because an availability sample was used, p-values are not relevant and differences between means are examined for practical significance with effect sizes.

Table 6.2 (c): Comparison of the three target groups of the different mines regarding Infrastructure facilities

Factor	Mine	Men		Women		Management		Effect sizes	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Women vs Men	Women vs Management
Factor 1: Infrastructure facilities	Phosphate	3.27	0.51	3.06	0.58	3.26	0.44	0.37	0.34
	Copper	2.82	0.59	2.36	0.58	2.93	0.53	0.78	0.98
	Platinum	2.61	0.39	2.36	0.60			0.41	

(a) small effect: $d=0.2$, (b) medium effect: $d=0.5$ and (c) large effect: $d=0.8$

Source: Constructed by author (2013)

From Table 6.2 (c) it is evident that the effect sizes of the different target groups of the phosphate mine for the *Infrastructure facilities* factor yielded a d-value smaller than 0.5, indicating that the difference between the means of the different target groups is not practically significant. Furthermore, the d-value of the female versus male target groups of the platinum mine shows that the difference between the means of the different target groups for the *Infrastructure facilities* factor has a medium effect. A large effect is evident from the female versus male and female versus management target groups of the copper mine, as the d-value calculated at 0.78 and 0.98 respectively. It can therefore be deducted that on average, the participants of the male target group of the platinum mine as well as the male and management target group of the copper mine are more in agreement with *Infrastructure facilities* than the female target group themselves. Therefore, on average, they thought that infrastructure facilities provided to women in core mining positions are adequate, but this view is not shared by the majority of the female target group.

The quantitative results revealed that although infrastructure facilities, such as ablution facilities, change houses, canteens and transport, are provided, limitations and deficiencies in this regard are still prevalent. This view is also supported by several female employees of various mines (in South Africa) during the Annual Second Women in Mining Conference (see Chapter Four under 4.4.2.1). Mining companies need to be sensitive to the specific needs of women in terms of infrastructure facilities. The discussion below,

referring to main concerns regarding infrastructure facilities, highlights these specific needs of women.

6.2.3 Main concerns regarding infrastructure facilities

Interviews and focus group discussions conducted with the participants as well as the qualitative data derived from the open-ended sections of the questionnaire revealed the following main concerns regarding infrastructure facilities:

6.2.3.1 *Change houses and ablution facilities*

Although the mining companies have built and upgraded change houses and ablution facilities to accommodate women in core mining positions, a lack of adequate facilities still exists. This is exacerbated by increasing numbers of women employed by mining companies in order to meet the 10% target required by the Mining Charter. Some mining companies are not yet fully prepared to accommodate all these female employees. The following main concerns regarding changes houses and ablution facilities were raised by the female participants employed in core mining positions:

- Change houses are too small and do not accommodate the number of women using them.
- Only open showers are provided. Women want to be private and require showers with curtains or doors.
- Change houses and ablution facilities should be feminine, comfortable and provided with equipment that addresses the special needs of women.
- Change houses and ablution facilities should be regularly cleaned.
- Ablution facilities underground should be treated in the same way as facilities on surface. It should be women-friendly and regularly cleaned.
- Change houses and ablution facilities should be as close to the plant as possible, because women do not feel safe, especially at night.
- Ablution facilities should not be shared with men; separate facilities for men and women should be provided.
- Enough lockers should be provided.

The following quotations give an indication of women's opinions regarding the status of change houses and ablution facilities at the respective mining companies included in the study:

Copper mine

The views of the female participants working in core mining activities of the copper mine are expressed in the following quotations:

"The company try to accommodate women by building more facilities, but the facilities are not adequate yet." Electrician (Female – copper mine)

"Facilities for ladies are not adequate in all the sections." Superintendent Internal Audit (Female – copper mine)

"The change houses are too small, eight ladies use one shower. There are no toilet facilities in the plant." Operator (Female – copper mine)

"I find that the change houses are very small. There are many women at the mine. Sometimes there are 10 people in the change house, but the change house is very small and can accommodate maybe two or three people." Fitter and turner (Female – copper mine)

"Only open showers are provided. The mining company must provide doors; women want to be private when [they] shower." Geologist (Female – copper mine)

"Toilets underground need to be cleaned and must be feminine." Instrument technician (Female – copper mine)

"Facilities for ladies must be cleaner and more comfortable." Instrument technician (Female – copper mine)

"Night shift is a disaster, to be honest. I don't know where to go. There is a toilet. It's been used by the ladies during the day, but when they knock off after 16:00 they took the key. It's also risky, because you know the environment here. There are wild animals. There's lion, leopards, all sorts of things go there. Men just stand there on top and help themselves beside the truck. But you must go down. I can't go from there to here alone and next to the pit where we are working – there is no toilet for the ladies." Dump truck operator (Female – copper mine)

“Change houses and toilet facilities must be as close to the plant as possible.”
Chairperson: Women in Mining Forum (Female – copper mine)

Phosphate mine

No serious concerns regarding change houses and ablution facilities were raised by the female participants of the phosphate mine. This was confirmed by the results obtained from the quantitative data, as a large number of female participants agreed to strongly agreed with the following indicators: adequate ablution facilities (77.8%) and change rooms (85.7%) are provided, and ablution facilities and change rooms in the workplace are women-friendly (75%).

Platinum mine

The views of the female participants working in core mining activities of the platinum mine are noted in the following comments:

“... they are not enough ... they start with the small change houses, and a lot of women are coming in.” Service crew (Female – platinum mine)

“There are only two toilets for 50 or 60 women, there are only three showers. But now there are more women coming in. And there are about 50 lockers. And the other shift when they go in, the other shift goes out. So when I come in I must stand like this in the corner and try to get dressed in my PPE, because it’s time to go underground, so it’s not convenient for us. They clean it, but because there are 100 people using it, it is dirty.”
Pecker operator (Female – platinum mine)

“When we started working here, we were using the big change house, with many showers. Then they say because the men are more than you, you must go to another change house, with only two showers and one toilet and they give the big change house to the males.” Dozer operator (Female – platinum mine)

“The showers, they are not enough. There are four showers for approximately 65 to 70 women. We’ve got lockers. You put your clean clothes and your dirty clothes in there. They are not big enough.” Learner rock breaker (Female –platinum mine)

“We share the toilets with the men. Sometimes they write women’s or men’s but men always go to women’s toilets. When you knock you get the man in the toilet. There is no order. The toilets are not clean. The change rooms are poor. You go there, you get the water, tissues, papers, toilets are blocked. There are five showers, but only two are

working. And we are so many. They employ a lot of ladies, but they don't improve the facilities." General: Haulage maintenance (Female – platinum mine)

From the above it is evident that the female participants of the platinum mine are not satisfied with the current change houses and ablution facilities at the mine. They also expressed serious concerns regarding ablution facilities underground. The following main concerns were highlighted:

- There are no cleaning ladies working underground; men clean the toilets.
- The toilets are not clean and can be smelled from a distance.
- The toilets are not cleaned on a regular basis – some only once a month.
- At some shafts, men and women use the same toilet; no separate facilities for men and women exist.
- Women and men often prefer to use any dark place underground as toilet facility, rather than using the existing 'dirty' toilets.

The female participants of the platinum mine commented as follows on the status of ablution facilities underground:

"Do you call those things toilets? You can hear the smell from a distance. They put dangerous chemicals into the toilets. If you go in you won't be able to breathe, you will just smell this strong chemical." Diesel bay attendant (Female – platinum mine)

"You know there's this disposal toilets. It's fine, they can have it because there is no way they can build a toilet underground. Then they must make that this side is for women and they must have a key, because you can lock that toilet. A cleaning lady must always be there. She can keep the key and any woman who wants to go into the toilet can get the key. Because now those toilets they are not even marked that is a man or it is a woman. They are being used by everyone and for us as a woman it is so easy to get infection from the toilet than men, because we have to sit." Pecker operator (Female – platinum mine)

"They must fix the toilets underground. At the shaft I was working at and some other shafts, we find that women toilets, they are not clean. It will take maybe a month before they will clean them and there are so many people who are working at that section. If the guys find that their toilets are not clean they will go to the women toilets. So we have to go and find a dark place, sit there and do your stuff and then come back, so if you are

menstruating, it is worse. There are no cleaning ladies underground. It's men who are cleaning the toilets, but they come after I don't know how long. We did lodge complaints with the shift boss and safety department, but nothing was done. And remember men are all over underground, if you get this dark place and you try to do it then there come the lights ... It is hard. Toilets are a struggle underground. So I'm used to finding a dark place. I take someone and go to the dark place, I sit there, this other lady she watches whether someone is coming or not." Learner rock breaker (Female – platinum mine)

From the qualitative inquiry it is clear that some mining companies have progressed faster than others with regard to the provision of adequate change houses and ablution facilities. Furthermore, an additional burden is placed on mining companies conducting underground activities. These companies should pay particular attention to the specific needs of women in terms of change houses and ablution facilities. The above-mentioned findings are reinforced by research done by Zungu (2012:8) among women working in core positions of selected gold and platinum mines in Rustenburg and the Limpopo province. Research participants reported unhygienic conditions and lack of access to adequate sanitary facilities while working underground. For the successful implementation of women in core mining positions, mining companies have to be sensitive to the specific needs of women and should provide proper ablution facilities and change houses, catering for the specific needs of women (Badenhorst, 2009:61; MTS, 2011:16). The above concerns as mentioned by the research participants should be taken into account.

6.2.3.2 *Childcare facilities*

One of the mines (the phosphate mine) included in the study provides a 24-hour childcare facility, while the other two mines do not have any form of childcare facilities available. These two mines are investigating the option of providing childcare facilities. During the focus group discussions and interviews different viewpoints and opinions regarding childcare facilities were voiced.

On the one hand, the female participants positively indicated that childcare facilities will definitely assist employees and will be convenient, especially when working shifts and for single mothers. Single mothers are often the breadwinner of the family and cannot afford a private caretaker; childcare facilities will thus be more affordable. Furthermore, mothers' minds will be at ease knowing that their children are safe and taken care of, and they will be more productive at work. Childcare facilities will also assist mothers still breastfeeding if such facilities are situated nearby the premises of the mine and if they are allowed

transport and time to breastfeed. It is indicated that childcare facilities should be outside the premises of the mine, but nearby.

Positive arguments that are in favour of childcare facilities are illustrated by the following comments:

“Childcare facilities will definitely help and will be convenient. It will save time for the company as well as for the mothers. Women will know that their children are safe. The facilities must be outside the premises of the mine.” Superintendent Internal Audit (Female – copper mine)

“Childcare facilities would definitely assist women that are working in shifts.” Geologist (Female – copper mine)

“Childcare facilities would assist breastfeeding women.” Electrical engineer (Female – copper mine)

“Childcare facilities must not be on site, but nearby.” Instrument technician (Female – copper mine)

“As a woman I’d personally like to be near my child at all times, so a day care will be very important.” Geologist (Female – copper mine)

“Ja, it will assist, when you go to work with a child you just leave him at the childcare. You know it is the safest for your child. It must be nearby the working places. When there is a problem with your child you can get there.” General worker (Female – platinum mine)

On the other hand, some participants were sceptic about the idea of a childcare facility and the functioning thereof, especially in terms of breastfeeding and transport. The following concerns were raised:

- How will it benefit breastfeeding women?
- Will female employees be able to leave their work to go breastfeed their children?
- Will enough time be allowed to breastfeed?
- What about women working underground? Will they be allowed to breastfeed their children?
- How will women get to the childcare facility? Will there be transport available?

- At some mines, due to the fact that some employees live far from work, it is a continuous struggle to get to work every day. If childcare facilities would be available, it will place an additional burden on employees to get their children to the crèche.
- If family units on/nearby the premises of the mine were available, it would be much easier if the crèche could be on the same premises.
- If childcare facilities are situated on or nearby the premises of the mine, children will be exposed to hazards, such as dust and noise, due to mining activities.

The above concerns are also noted in the following comments:

“It will help a lot, especially with breastfeeding. The problem will be the transport, because we are living such a distance from work. We are using the buses. So for the kids, to bring them to the crèche, it will be a problem of the transport.” Service crew (Female – platinum mine)

“We are not the same, we don’t earn the same money and some of the women are single mothers. They can’t afford for a nanny to take care of the baby after crèche, because if you take your baby to crèche, it is going to be from 07:00 to 15:00. After 15:00 who is going to take care of the baby until 17:00 when you get home? At least if there can be an after care, or if they will subsidise us with R200 or any benefits for women, that will be very nice.” Diesel bay attendant (Female – platinum mine)

“Not 24 hours. I don’t think there will be any woman who will want their baby to sleep at the crèche.” Dozer operator (Female – platinum mine)

“It’s impossible to breastfeed at the work. The child will be sick.” General worker (Female – platinum mine)

“At the mine exactly they don’t allow children, even if you come with your child they don’t allow it. So we are saying, if there were family units and then you know at the family units there is a day care. You know when you go to work you leave your child there, when you come back you fetch your child.” Team worker (Female – platinum mine)

“When you are underground it is not easy to get to you when the child is sick. There is no network underground.” General worker (Female – platinum mine)

The majority of the female participants employed at the phosphate mine were of the opinion that the crèche is beneficial to them. Although they have to pay for the crèche themselves, the rate is reasonable and affordable. Only two issues were raised. Firstly, the crèche only takes care of children younger than six years. If they have more than one child that requires caretaking, they rather employ a private caretaker that could take care of all the children; it is more affordable. Secondly, if they do not have their own transport, they often prefer to leave their children at home with a private caretaker rather than exposing them to circumstances such as waiting at the bus stop, rain and heat. These arguments are reflected by the following comments:

“The company has a crèche, but I don’t make use of it because it only takes care of children under six years. I’ve got two kids. One goes to school so I need a full-time nanny, because when I do night shift there has to be somebody there. So I’ll rather leave the kids with a nanny, so that when the other one come back from school he has to find somebody. I wouldn’t mind bringing the small one to the crèche, but it is just that for me to get to work I use a bus, so I think it will be very difficult for me to wait at the bus stop with a small kid around four o’clock. Maybe there is wind or rain, I will rather have a full-time nanny, than standing at the bus stop with my kid. The crèche is quite nice, I wouldn’t mind, it is just that I don’t have a vehicle.” Attendant: Bush pumps and fitters (Female – phosphate mine)

“We have to pay for the crèche by ourselves. We don’t know whether they are subsidising us or not, but we have to pay. The rate is reasonable and affordable.” Attendant: Bush pumps and fitters (Female – phosphate mine)

According to the findings, it is clear that there are different views, perspectives and opinions regarding childcare facilities. Mining companies need to take all women, employed underground as well as on surface, and their specific needs into account when considering the possibility of childcare facilities. As suggested in the literature, work–life balance strategies such as offering childcare facilities or a paid allowance could assist employees in balancing their work life and home life (Jacobs & Gerson, 2004:85; Richardson & Robinson, 2008:181). Furthermore, training and support focusing on coping mechanisms for non-work-related demands such as parental training, role reorientation for couples and childcare facilities could also provide assistance to employees (De Klerk & Mostert, 2010:10). Also see Chapter Two under 2.4.3.1.

6.2.3.3 Transport facilities

The participants of the copper and phosphate mines confirmed that transport facilities (to and from the mine) are available and that they are satisfied with the transport provided. The only concern raised by the female participants of the copper mine was that they do not feel safe during the night when waiting at bus stops. This point is illustrated by the following comments:

“The concern is that the company transport collect and drop off at a given stop. Sometimes ladies must walk to the collection or drop-off place on their own at night, which make them feel not safe.” Electrician (Female – copper mine)

“Women working shifts have transport, but at bus stops. There is no security, mostly at night.” Operator (Female – copper mine)

“The standby transport delivers you at the normal bus stop and you have to walk home at night alone, sometimes at 02:00 in the morning.” Fitter and turner (Female – copper mine)

“Some women have problems, especially during night shift. They are not safe when moving from home to bus stops. Some departments don’t want to listen to their inputs.” Lab assistant (Female – copper mine)

The female participants of the platinum mine indicated that transport facilities are limited and do not exist from everywhere. Not all employees live nearby the mine, and some have to travel great distances, up to 30 to 60 km, to get to work every day. For some employees, it is a continuous struggle to find transport to get to work on time. This point is confirmed by the following comments:

“There are transport facilities, but not from everywhere. So sometimes you have to hike and then you have to wake up early every day so that you can get to work earlier. At some places there are no busses.” Diesel bay attendant (Female – platinum mine)

“We are staying far, we are travelling, we haven’t got accommodation around our company. I am staying at ... and every day I have to come by 04:00. I travel about 30 km to the mine and back home. Maybe every month I spend about R1 200 on transport. And I’m getting a salary of maybe R4 000, sometimes R5 000. It is not a lot of money.” General worker (Female – platinum mine)

From the above it can be deducted that transport is available, but that it does not always provide for the needs of employees as it is currently applied and implemented. At the

copper mine, security measures should be strengthened and sharpened and at the platinum mine, more transport opportunities should be investigated to accommodate all employees.

6.2.3.4 Housing

In general, mining communities are characterised by a lack of adequate housing facilities. Housing conditions are also very poor and a large part of the population lives in tin shacks (poorly constructed corrugated sheds) (Cronjé & Chenga, 2007:31). As indicated in Chapter Four under 4.4.2.2, these conditions often lead to different social ills and include, among others, the destruction of the social fabric of communities, substance abuse, as well as the spread of diseases, specifically HIV/Aids. Furthermore, in the past, the mining industry catered for the needs of men only and provided hostel facilities that could only accommodate men. According to the 2010 revised Mining Charter, mining companies are obliged to implement specific measures to improve the standard of housing and living conditions for mine workers (see Chapter Three under 3.2.3.6.4(e)). These measures should also be indicated in the SLPs of mining companies (RSA, 2010b:21). These measures include the following (SA, 2010a:4):

- Convert and upgrade all hostels into family units by March 2015.
- Attain the occupancy rate of one person per room by March 2015.
- Facilitate home ownership options for all mine employees in consultation with organised labour by 2014.

Although reasonable progress has been made by some mining companies in terms of the creation of decent housing and living conditions for mine workers, others still struggle to meet the requirements of the Mining Charter, as revealed by the impact assessment done by the DMR (see Chapter Three under 3.2.3.5(e)). Interviews and focus group discussions conducted with the female participants working in core mining activities of the platinum mine revealed an urgent need for housing facilities, as noted in the following comments:

“The problem is there is no accommodation for women; I stay in a shack. The mining industry first it was for men, so the hostels are for men, there are no hostels for women, so for us to find accommodation it is a struggle. Although they do have family units, there are not a lot. We need family units, not hostels. They must also provide for women that are not married.” Team worker (Female – platinum mine)

“There are only hostels for men. So they are trying to make a family unit now, those old blocks, they change it to be new blocks so that they can fit all of us in there. They are still busy.” Cleaner (Female – platinum mine)

“We need transport and housing.” General worker (Female – platinum mine)

From the sustainable development report of the platinum mine (2012:11)⁵ it is clear that addressing the critical shortage of affordable housing for employees of the mine remains a major challenge. To date, the mine has converted hostel blocks into bachelor units and family units. Furthermore, the mine introduced living-out allowances that can be utilised by employees to seek their own accommodation. This has implications of its own, as many employees do not utilise the living-out allowance for accommodation purposes, but instead use it for personal purposes. According to the report, the platinum mine has committed to providing all employees with accommodation options that are affordable and secure and that allow for a decent standard of living; however, management admit that the process will be costly and time-consuming.

The majority of the employees of the copper mine are locally sourced and have proper standard family houses. Since the mine was established, they have never had hostels. Furthermore, family units have been established, consisting of a kitchen and a number of rooms, and cater for the needs of families.

As with the copper mine, the majority of the employees of the phosphate mine are locally sourced. Therefore, limited housing is provided at minimum rent. However, the mining company does provide a housing allowance to employees. Employees are thus responsible for their own accommodation.

6.2.4 Conclusion

It is clear from the findings (quantitative and qualitative) above on the section *Infrastructure facilities* that although mining companies have improved their efforts to accommodate women in the core business of mining, limitations and deficiencies are still prevalent. Women working in the core business of mining have specific needs in terms of infrastructure facilities (ablution facilities, change houses, transport, housing, and so forth) and mining companies should be sensitive to these needs and should aim to address them as far as possible in order to create a conducive environment for female employees

⁵ The source is not fully referenced in order to protect the anonymity of the mining company.

and to ensure sustainable employment and retention of women in the core business of the mining industry.

The empirical findings on the following relevant theme, namely *Physical ability* of women employed in core mining positions, are now presented and discussed.

6.3 PHYSICAL ABILITY

As indicated in the literature review (Chapter One under 1.2), the employment of women in the core business of mining requires that women be placed into positions equivalent to those of men, such as mining and engineering. According to Schutte (2011:11), work in the mining sector is associated with difficult working conditions, and mining, especially underground, is considered one of the most physically demanding occupations. The employment of women in core mining activities has several implications for the industry as well as for the women themselves. On the one hand, the mining industry is production-driven and employees are continuously under pressure to reach production targets. Due to the physical differences that exist between women and men, women often find it difficult to perform certain work activities and tasks, which has a direct impact on production targets. On the other hand, female employees need a sound level of overall fitness to complete everyday work as well as to achieve independence and credibility in the eyes of their co-workers.

The following indicator statements were identified, by means of a thorough literature study, to determine perceptions regarding the physical ability and capability of women working in core mining activities:

- Women are physically less capable than men.
- Some mining tasks can be done only by men.
- Women have the physical ability to perform their daily tasks effectively.
- Women find it easy to work in confined spaces.
- Temperatures in the workplace are regarded as a major problem for women.
- Women should be treated differently than their male co-workers in the workplace.

Indicator statements were also included to determine whether women feel confident in performing their respective work activities, such as operating a locomotive, winding

engine, conveyor belt, winch and shift as well as using heavy and/or vibrating power tools. The viewpoints of male co-workers and management in this regard were also verified. Furthermore, questions were included to determine whether specific equipment, tools and work units are banned from use by women at the mines included in the study.

The section to follow presents the quantitative results as well as the qualitative findings on the section *Physical ability*. Firstly, descriptive statistics and frequencies are presented, differentially in terms of the three mines included in the study. Secondly, the results of the factor analysis are reported and discussed. Lastly, the findings of the qualitative inquiry (semi-structured interviews, focus group discussions as well open-ended sections of the questionnaire) are presented and analysed.

6.3.1 Descriptive statistics and frequencies

This section provides the descriptive statistics and frequencies on the following themes: Perceptions of the physical ability of women working in core mining activities; Perceptions of women's performance and position in core mining activities; and Equipment, tools and work units.

6.3.1.1 *Perceptions of the physical ability of women working in core mining activities*

Indicators were included to determine the perceptions of the three target groups, men and women employed in core mining positions as well as management, of the physical ability and capability of women employed in core mining positions. It is evident from tables 6.3 (a–c) that the data obtained from the three target groups across the three mines yielded different results.

Agreement in responses was found for the following indicators: *Women are physically less capable than men* and *Some mining tasks can be done only by men*. The majority of the participants across the three mines agreed to strongly agreed with these statements. These reversed statements calculated a mean of 2.5 and higher for almost all target groups, indicating that the mining companies need to take note of these findings. These findings are supported by the literature review, which suggests that gender differences exist in terms of physical work capacity, aerobic capacity as well as physical strength (George *et al.*, 2004:34). These aspects should be taken into account when appointing women in certain core positions at mines. According to Badenhorst (2009:59), an employee should not be employed in a job or conduct tasks for which he or she is not

medically fit or does not have the physical and functional capabilities. Badenhorst (2009:70) suggests that a programme (see Chapter Four under 4.4.4.1) be established to ensure that minimum medical requirements are met by employees.

It was also indicated by the majority of the participants across the three mines that *Women should not be treated differently than their male co-workers in the workplace*, with the exception of the female participants of the phosphate mine. This reversed statement calculated a mean of 2.4 and lower, indicating that on average, the participants thought that women should not be treated differently in the workplace. The qualitative responses yielded different results, as indicated in 6.3.4.

Discrepancies in the results of the three mines were found for the following indicators:

Nearly all the female participants working in core mining positions of the three mines (copper mine: 97%; phosphate mine: 90%; platinum mine: 86.4%) positively indicated that they do have *the physical ability to perform their daily tasks effectively*. More than two-thirds of the management participants of the copper (68.8%) and phosphate (66.7%) mines voiced the same sentiment. This view was also supported by 93.3% of the male participants working in core mining positions of the platinum mine and 52.9% of those in the phosphate mine. The majority of the male participants of the copper mine (56.3%) reacted negatively to this indicator. Detailed concerns regarding the physical ability of women employed in core positions are discussed further in 6.3.3.

Only a limited number of participants of the copper and phosphate mines positively indicated that *women find it easy to work in confined spaces*. This statement calculated a mean of 2.5 and lower for all the target groups and could indicate a problem area for these mines. This view was not supported by the men and women working in core mining positions of the platinum mine, as the majority do not regard confined spaces as difficult for women to work in. An explanation could be that employees of the platinum mine are used to working in confined spaces due to the nature of the mine and its underground mining activities. The phosphate mine is an open-cast mine and most of the underground activities of the copper mine do not take place in confined spaces.

The majority of the female participants across the three mines (copper mine: 66.6%; phosphate mine: 72.2%; platinum mine: 70%) do not regard temperature as a major problem for women in the workplace. This view is supported by all (100%) management participants of the phosphate mine as well as 60% of the male participants of the platinum mine. The management participants of the copper mine reported a split opinion and the

majority of the male participants of the copper and phosphate mines reacted negatively to this indicator.

On average, it can be deducted that the participants (men and women working in core positions as well as management) agreed that women are physically less capable than men and that some mining tasks can be done only by men. Furthermore, working in confined spaces is regarded as difficult conditions for women to work in. When appointing women in core mining positions, it is important that mining companies consider these aspects and appoint women in positions that they are capable of doing, as also suggested by Badenhorst (2009:59).

Table 6.3 (a): Participants' perceptions regarding the physical ability of women working in core mining activities – copper mine

Physical ability		Male in core						Female in core						Management					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.®	Women are physically less capable than men	0.0	0.0	50.0	50.0	3.50	0.52	9.4	34.4	46.9	9.4	2.56	0.80	0.0	18.8	43.8	37.5	3.19	0.75
2.®	Some mining tasks can be done only by men	0.0	6.3	31.3	62.5	3.56	0.63	12.5	28.1	43.8	15.6	2.62	0.91	6.3	6.3	37.5	50.0	3.31	0.87
3.	I (women) have the physical ability to perform my (their) daily tasks effectively	0.0	56.3	25.0	18.8	2.63	0.81	0.0	2.9	52.9	44.1	3.41	0.56	6.3	25.0	56.3	12.5	2.75	0.77
4.	I (women) find it easy to work in confined spaces	6.3	68.8	12.5	12.5	2.31	0.79	15.6	31.3	37.5	15.6	2.53	0.95	18.8	68.8	6.3	6.3	2.00	0.73
5.®	Temperatures in the workplace are regarded as a major problem for women	6.3	37.5	37.5	18.8	2.69	0.87	13.3	53.3	23.3	10.0	2.30	0.84	18.8	31.3	37.5	12.5	2.44	0.96
6.®	Women should be treated differently than their male co-workers in the workplace	37.5	31.3	25.0	6.3	2.00	0.97	28.1	46.9	21.9	3.1	2.00	0.80	37.5	50.0	12.5	0.0	1.75	0.68

®	Reversed statement
	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Slightly more than half (51–62.5 %) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Mean scores of 2.5 and lower (2.5 and above for reversed statements) were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

Table 6.3 (b): Participants' perceptions regarding the physical ability of women working in core mining activities – phosphate mine

Physical ability		Male in core						Female in core						Management					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1. ®	Women are physically less capable than men	0.0	18.8	50.0	31.3	3.13	0.72	21.1	36.8	36.8	5.3	2.26	0.87	0.0	25.0	58.3	16.7	2.92	0.67
2. ®	Some mining tasks can be done only by men	6.3	12.5	25.0	56.3	3.31	0.95	5.3	31.6	36.8	26.3	2.84	0.89	0.0	16.7	58.3	25.0	3.08	0.67
3.	I (women) have the physical ability to perform my (their) daily tasks effectively	11.8	35.3	35.3	17.6	2.59	0.94	0.0	10.0	50.0	40.0	3.30	0.66	0.0	33.3	66.7	0.0	2.67	0.49
4.	I (women) find it easy to work in confined spaces	35.3	41.2	11.8	11.8	2.00	1.00	16.7	38.9	33.3	11.1	2.39	0.92	0.0	50.0	50.0	0.0	2.50	0.53
5. ®	Temperatures in the workplace are regarded as a major problem for women	0.0	29.4	41.2	29.4	3.00	0.79	27.8	44.4	22.2	5.6	2.06	0.87	10.0	90.0	0.0	0.0	1.90	0.32
6. ®	Women should be treated differently than their male co-workers in the workplace	47.1	17.6	23.5	11.8	2.00	1.12	9.5	33.3	33.3	23.8	2.71	0.96	8.3	58.3	33.3	0.0	2.25	0.62

®	Reversed statement
	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Slightly more than half (51–62.5 %) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Mean scores of 2.5 and lower (2.5 and above for reversed statements) were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

Table 6.3 (c): Participants' perceptions regarding the physical ability of women working in core mining activities – platinum mine

Physical ability		Male in core						Female in core					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1. ®	Women are physically less capable than men	0.0	25.0	25.0	50.0	3.25	0.86	13.6	31.8	45.5	9.1	2.50	0.86
2. ®	Some mining tasks can be done only by men	6.7	13.3	40.0	40.0	3.13	0.92	0.0	27.3	40.9	31.8	3.05	0.79
3.	I (women) have the physical ability to perform my (their) daily tasks effectively	0.0	6.7	80.0	13.3	3.07	0.46	0.0	13.6	40.9	45.5	3.32	0.72
4.	I (women) find it easy to work in confined spaces	20.0	13.3	46.7	20.0	2.67	1.05	5.3	31.6	57.9	5.3	2.63	0.68
5. ®	Temperatures in the workplace are regarded as a major problem for women	0.0	60.0	33.3	6.7	2.47	0.64	10.0	60.0	25.0	5.0	2.25	0.72
6. ®	Women should be treated differently than their male co-workers in the workplace	33.3	20.0	20.0	26.7	2.40	1.24	25.0	40.0	30.0	5.0	2.15	0.88

®	Reversed statement
	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Slightly more than half (51–62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Mean scores of 2.5 and lower (2.5 and above for reversed statements) were regarded as 'low'; and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

The following section provides the results regarding perceptions of women's performance and position in core mining activities.

6.3.1.2 *Perceptions of women's performance and position in core mining activities*

As already indicated, the Mining Charter requires that 10% of the mining workforce should be women. These women should be employed in core mining positions, such as mining, geology and engineering. Questions were included in the questionnaire to determine:

- which work activities form part of female participants' job descriptions;
- whether women feel confident in performing these activities;
- perceptions of male co-workers and management of women's confidence in performing core mining activities, such as the operating of heavy machinery as well as the use of heavy and/or vibrating power tools;
- whether specific equipment and tools are banned from use by women; and
- in which sections of the mine women are mainly employed.

The results are presented below. Figure 6.1 reflects the activities that the female participants reported that formed part of their work activities.

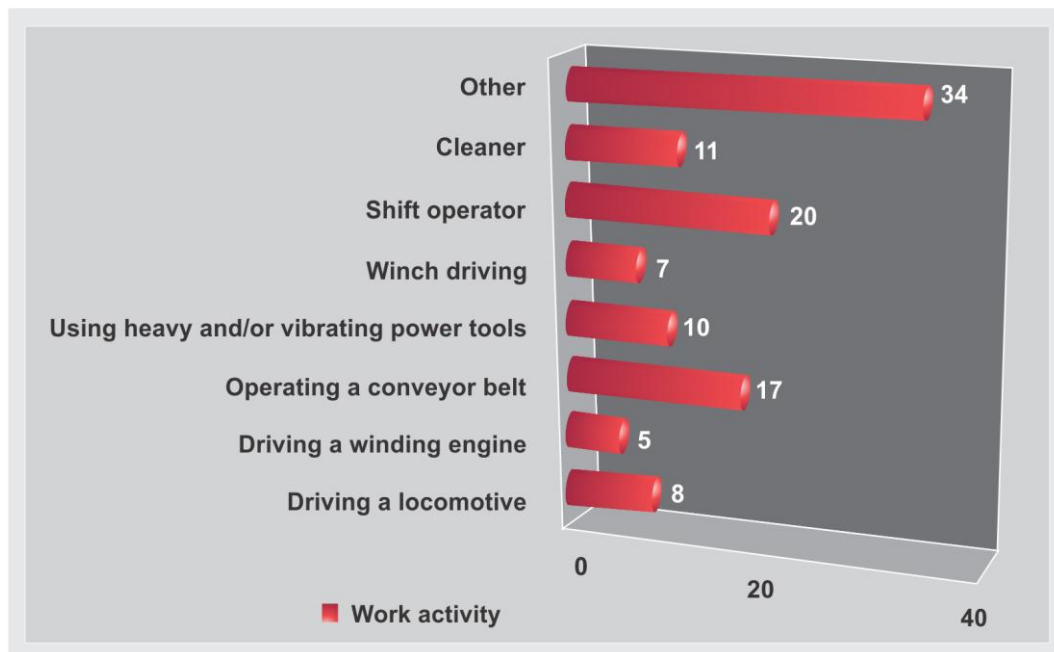


Figure 6.1: Work activities of female research participants

Source: Constructed by author (2013)

In the open-ended section of the questionnaire, the participants also indicated that the following roles form part of their work activities:

- Operator
- Dump truck operator
- Electrician
- Winder electrician
- Geologist
- Boilermaker
- Driving forklifts
- Engineer.

It is therefore clear that the female participants are involved in various core activities and it can be assumed that they are in the position to reflect on challenges, physical as well as psychological, that they face in the workplace.

Figure 6.2 below gives an indication of whether the female participants employed in core mining positions expressed confidence in performing their daily work activities. It is clear that the majority of the women across all three mines (copper mine: 67.9%; phosphate mine: 57.9%; platinum mine: 68.4%) reacted positively by indicating that they do feel confident in performing their respective work activities. Only a few participants (copper mine: 3.6%; phosphate mine: 15.8 %; platinum mine: 15.8 %) indicated that they do not feel confident at all. It can therefore be deducted that on average, the female participants employed in core mining positions meet the requirements of their job descriptions and are confident in performing their respective work activities.

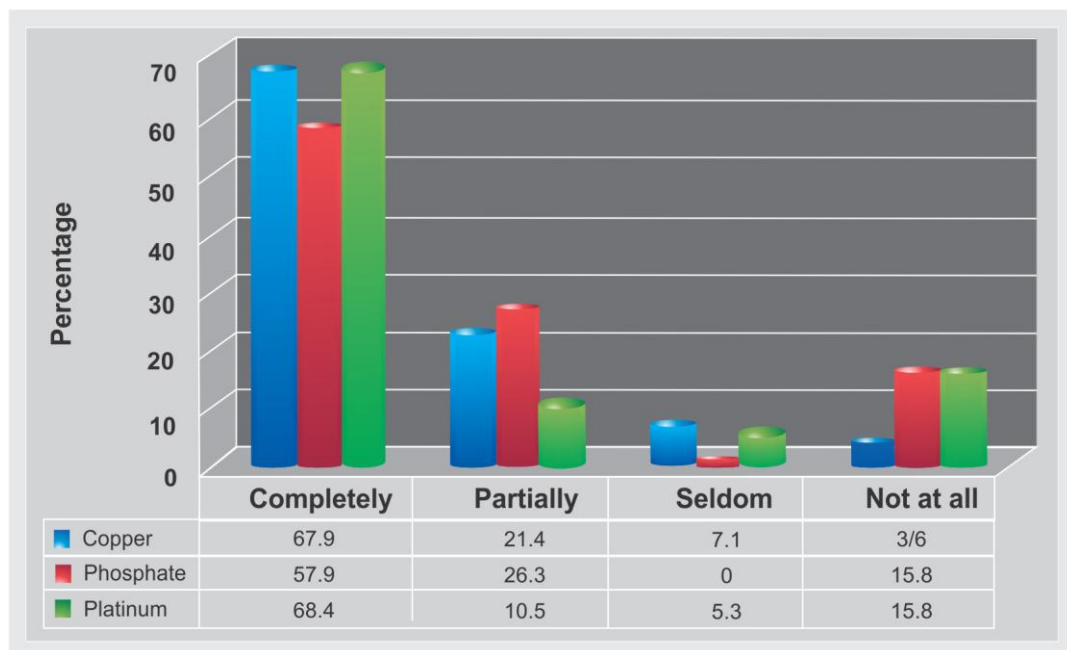


Figure 6.2: Female participants' perceptions regarding their confidence to perform work activities

Source: Constructed by author (2013)

The male and management participants were asked to give their opinions on whether women feel confident in performing the following core activities:

- Driving a locomotive
- Driving a winding engine
- Operating a conveyer belt
- Using heavy and/or vibrating power tools

- Driving a winch
- Operating a shift.

The results reported in Table 6.4 (b) show that the majority of the participants of the management target group thought that women are confident in performing all mentioned activities, with the exception of using heavy and/or vibrating power tools. The positive responses calculated a mean of above 2.8, while the negative responses calculated a mean of 1.94 (for responses of the copper mine) and 2.45 (for responses of the phosphate mine).

The majority of the male participants agreed that women are confident when driving a locomotive and operating a conveyer belt and shift (calculated a mean of above 3) (see Table 6.4 (a)). They also agreed that women do not show confidence when using heavy and/or vibrating power tools (calculated a mean of below 2.2). Different views were reported for the rest of the activities. More than 60% of the male participants of the copper and platinum mines thought that women are confident when driving a winding engine; this view was not supported by the male participants of the phosphate mine. Furthermore, more than 70% of the male participants reported that women show confidence when driving a winch; however, this view is not supported by the participants of the platinum mine.

Although discrepancies are evident in the data obtained from the two target groups, it is clear that none of the target groups thought that women are confident when using heavy and/or vibrating power tools. This view is also supported by the findings from the qualitative inquiry. The ability and capability of women to perform work activities that require strength and stamina remain a major issue in the mining industry, as indicated by quantitative results and suggested by the literature review (see Chapter Four under 4.4.4.1). Specific concerns regarding the physical ability of women are discussed further in 6.3.3).

Table 6.4 (a): Participants' perceptions regarding women's confidence in performing core mining activities – views of male co-workers

Do you think women are confident in performing the following activities?		Copper mine						Phosphate mine						Platinum mine					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.	Driving a locomotive	0.0	12.5	75.0	12.5	3.00	0.52	0.0	17.6	52.9	29.4	3.12	0.69	0.0	0.0	57.1	42.9	3.43	0.51
2.	Driving a winding engine	6.3	6.3	68.8	18.8	3.00	0.73	15.4	38.5	23.1	23.1	2.54	1.05	0.0	40.0	40.0	20.0	2.80	0.77
3.	Operating a conveyer belt	0.0	18.8	56.3	25.0	3.06	0.68	0.0	5.9	41.2	52.9	3.47	0.62	0.0	7.1	64.3	28.6	3.21	0.58
4.	Using heavy and/or vibrating power tools	31.3	68.8	0.0	0.0	1.69	0.48	23.1	46.2	15.4	15.4	2.23	1.01	40.0	60.0	0.0	0.0	1.60	0.51
5.	Driving a winch	12.5	12.5	62.5	12.5	2.75	0.86	0.0	21.4	57.1	21.4	3.00	0.68	46.7	20.0	33.3	0.0	1.87	0.92
6.	Operating a shift	0.0	11.8	70.6	17.6	3.06	0.56	0.0	0.0	64.3	35.7	3.36	0.49	0.0	6.3	68.8	25.0	3.19	0.54

	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely).
	Slightly more than half (51–62.5%) reacted positively by indicating 3 (partially) and 4 (completely).
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely).
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely).
	Mean scores of 2.5 and lower were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

Table 6.4 (b): Participants' perceptions regarding women's confidence in performing core mining activities – views of management

Do you think women are confident in performing the following activities?		Copper mine						Phosphate mine					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.	Driving a locomotive	0.0	13.3	66.7	20.0	3.07	0.59	0.0	8.3	75.0	16.7	3.08	0.51
2.	Driving a winding engine	0.0	26.7	53.3	20.0	2.93	0.70	0.0	0.0	77.8	22.2	3.22	0.44
3.	Operating a conveyer belt	0.0	25.0	56.3	18.8	2.94	0.68	0.0	0.0	91.7	8.3	3.08	0.29
4.	Using heavy and/or vibrating power tools	37.5	37.5	18.8	6.3	1.94	0.93	18.2	27.3	45.5	9.1	2.45	0.93
5.	Driving a winch	6.3	25.0	50.0	18.8	2.81	0.83	0.0	8.3	83.3	8.3	3.00	0.43
6.	Operating a shift	0.0	13.3	73.3	13.3	3.00	0.53	0.0	8.3	83.3	8.3	3.00	0.43

	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely).
	Slightly more than half (51–62.5 %) reacted positively by indicating 3 (partially) and 4 (completely).
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely).
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely).
	Mean scores of 2.5 and lower were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

6.3.1.3 *Equipment, tools and work units*

Questions were included in the questionnaire to determine whether any equipment, tools and work units are banned from use by women. It is evident from the results displayed in the figures below that great uncertainty exists regarding this issue across all three mines. Although a significant number of participants (between 35.5 and 68.8%) indicated that no equipment and tools are banned from use by women, a substantial number (between 16 and 47%) reported that they are unsure (see Table 6.5). The participants showed more certainty about the question whether any work units are banned from use by women, as the majority of the participants indicated that no work units are banned from use by women (see Table 6.5).

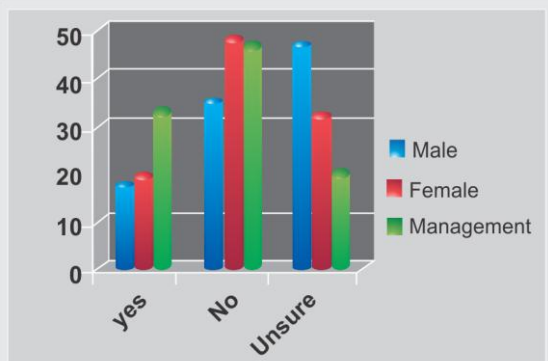
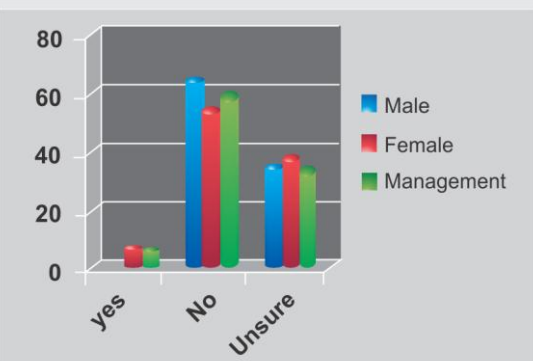
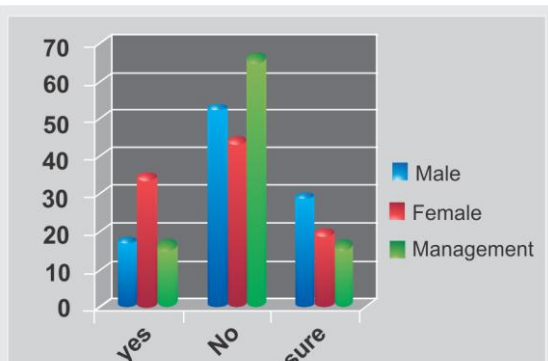
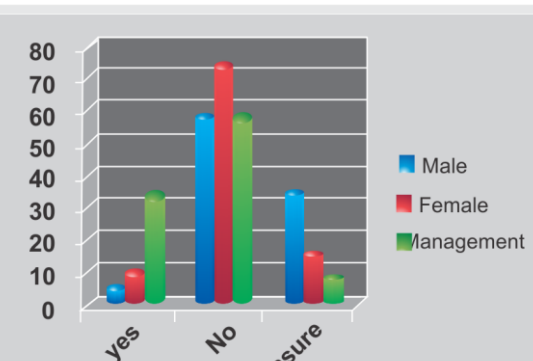
The data obtained from the qualitative inquiry (semi-structured interviews and focus group discussions) as well as the open-ended sections of the questionnaire revealed that women are employed in all sections at the mines, underground as well as on surface, and fulfil positions such as that of engineers, geologists, electricians, artisans, fitters, boilermakers and operators of heavy machinery. They are also involved in technical and mechanical mining operations. However, pregnant women are not allowed to enter work areas in which they could be exposed to radiation. The participants also indicated that no mining equipment and tools are banned from use by women, with the exception of the load haul dump machine (LHD). Initially, when female employees operated the machine, many complaints were lodged due to vibration caused by the machine. The female participants indicated that vibration caused by the LHD had a negative impact on their health and interfered with their menstruation cycle. Women were not allowed to operate the LHD anymore.

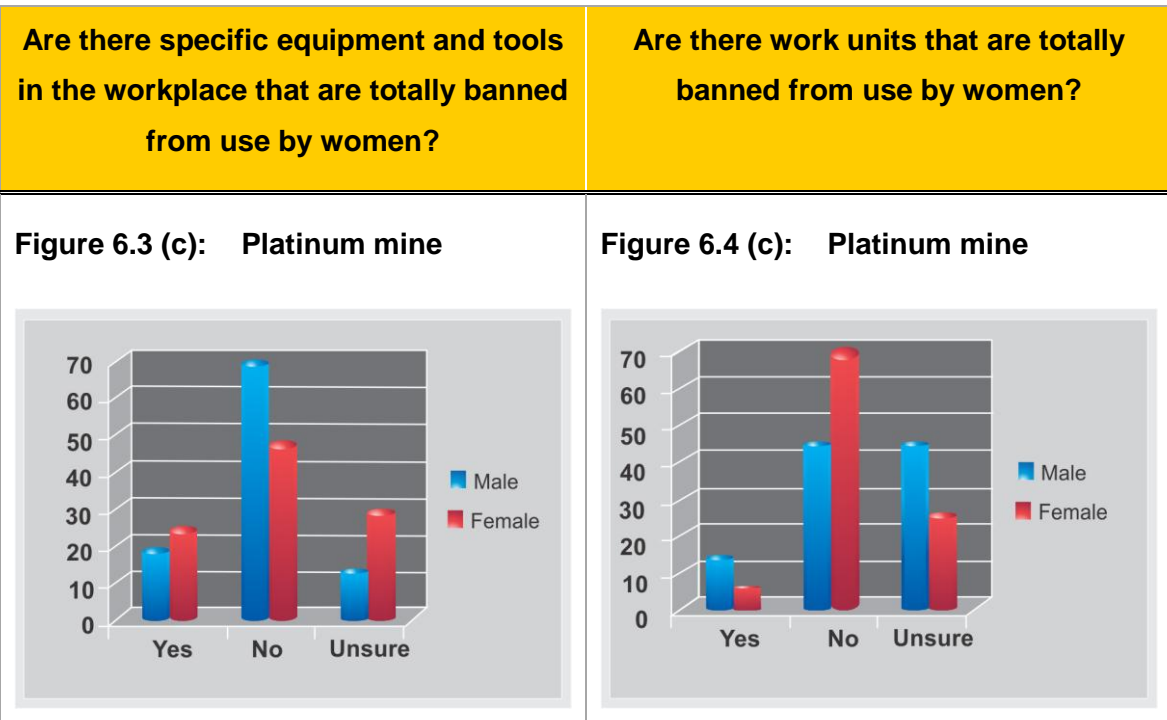
Although female employees are employed as rock drill operators and winch operators, the female participants reported that these pieces of equipment are too difficult for women to operate, because they are too heavy. Furthermore, the participants from the management target group of the phosphate mine indicated that they have experienced problems in the past when women operated rubber dozers. Vibration caused by the machine had a serious impact on women's health and also interfered with their menstruation cycle, as noted in the following comment:

“Another challenge that we are having, and we have tested it with a couple of mines, a very sensitive thing, people don't want to talk about it, is the operators of the dozers. What happens, because that dozer drills like this the whole time, it interferes with females' monthly period. Seriously, and that is why some people don't understand why they don't

want to appoint ladies as dozer operators. There are complaints, they go to medical doctors, the doctors have picked it up, it seriously disturbed them, it makes them seriously sick, you can check at a couple of mines we have done our homework, they experience the same problem. They rather put them in the track dozer and not in the rubber dozer, because the rubber dozer is the one that vibrates the whole time. I have had four cases of ladies who had medical problems with regard to that and we had to move them around to the track dozers instead of the rubber dozers.” Human resource manager (Female – phosphate mine)

Table 6.5: Equipment, tools and work units banned from use by female employees

Are there specific equipment and tools in the workplace that are totally banned from use by women?	Are there work units that are totally banned from use by women?																																
<p>Figure 6.3 (a): Copper mine</p>  <table><caption>Data for Figure 6.3 (a): Copper mine</caption><thead><tr><th>Response</th><th>Male</th><th>Female</th><th>Management</th></tr></thead><tbody><tr><td>yes</td><td>18</td><td>20</td><td>35</td></tr><tr><td>No</td><td>38</td><td>50</td><td>48</td></tr><tr><td>Unsure</td><td>48</td><td>35</td><td>20</td></tr></tbody></table>	Response	Male	Female	Management	yes	18	20	35	No	38	50	48	Unsure	48	35	20	<p>Figure 6.4 (a): Copper mine</p>  <table><caption>Data for Figure 6.4 (a): Copper mine</caption><thead><tr><th>Response</th><th>Male</th><th>Female</th><th>Management</th></tr></thead><tbody><tr><td>yes</td><td>5</td><td>8</td><td>5</td></tr><tr><td>No</td><td>65</td><td>55</td><td>60</td></tr><tr><td>Unsure</td><td>35</td><td>40</td><td>35</td></tr></tbody></table>	Response	Male	Female	Management	yes	5	8	5	No	65	55	60	Unsure	35	40	35
Response	Male	Female	Management																														
yes	18	20	35																														
No	38	50	48																														
Unsure	48	35	20																														
Response	Male	Female	Management																														
yes	5	8	5																														
No	65	55	60																														
Unsure	35	40	35																														
<p>Figure 6.3 (b): Phosphate mine</p>  <table><caption>Data for Figure 6.3 (b): Phosphate mine</caption><thead><tr><th>Response</th><th>Male</th><th>Female</th><th>Management</th></tr></thead><tbody><tr><td>yes</td><td>18</td><td>35</td><td>18</td></tr><tr><td>No</td><td>55</td><td>45</td><td>68</td></tr><tr><td>Unsure</td><td>30</td><td>20</td><td>18</td></tr></tbody></table>	Response	Male	Female	Management	yes	18	35	18	No	55	45	68	Unsure	30	20	18	<p>Figure 6.4 (b): Phosphate mine</p>  <table><caption>Data for Figure 6.4 (b): Phosphate mine</caption><thead><tr><th>Response</th><th>Male</th><th>Female</th><th>Management</th></tr></thead><tbody><tr><td>yes</td><td>5</td><td>10</td><td>35</td></tr><tr><td>No</td><td>60</td><td>75</td><td>60</td></tr><tr><td>Unsure</td><td>35</td><td>15</td><td>10</td></tr></tbody></table>	Response	Male	Female	Management	yes	5	10	35	No	60	75	60	Unsure	35	15	10
Response	Male	Female	Management																														
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Response	Male	Female	Management																														
yes	5	10	35																														
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Unsure	35	15	10																														



Source: Constructed by author (2013)

The following section presents the results of the factor analysis on the section *Physical ability*.

6.3.2 Factor analysis

A factor analysis was conducted on the six statements (see 6.3) pertaining to the section *Physical ability* (of women working in core mining positions) to explore the factorial structure of the section. The results of the KMO and Bartlett's test of sphericity are presented in Table 6.6 (a).

Table 6.6 (a): KMO and Bartlett's test of sphericity

KMO and Bartlett's test of sphericity		Value
KMO		0.629
P-value of Bartlett's test of sphericity	Approx. chi-sq	79.003
	df	15
	Sig.	0.000

Source: Constructed by author (2013)

The KMO measured 0.629 and indicates that the sample size is still adequate for factor analysis; however, values between 0.5 and 0.7 are regarded as mediocre (Field, 2005:640). According to Field (2005:640), factor analysis is likely to be inappropriate for values smaller than 0.5. The p-value of Bartlett's test of sphericity returned a value smaller than 0.05, suggesting that the correlation between statements is sufficient for factor analysis (Field, 2005:652). The results for the factor analysis are reported in Table 6.6 (b).

Table 6.6 (b): Pattern matrix^a

Physical ability					
	Question statement	Factor 1	Factor 2	Factor 3	Communalities
		Capability	Effectively	Differential	
F2 ®	Some mining tasks can be done only by men	0.732			0.537
F5 ®	Temperatures in the workplace are regarded as a major problem for women	0.523			0.300
F1 ®	Women are physically less capable than men	0.435			0.710
F3	I (women) have the physical ability to perform my (their) daily tasks effectively		0.679		0.488
F4	I (women) find it easy to work in confined spaces		0.561		0.312
F6 ®	Women should be treated differently than their male co-workers in the workplace			0.226	0.049
	Cronbach's alpha	0.68	0.54		
	Factor mean	2.74	2.77	2.19	
	Factor standard deviation	0.68	0.69	0.99	

® Reversed statement

Source: Constructed by author (2013)

Three factors were extracted by Kaiser's criteria (Field, 2005:652) that explain 39.92% of the total variance, in the section on *Physical ability*. All statements have satisfactory factor loadings of above 0.3, except Statement 6, which loaded at 0.226. Statement 6 (reversed) refers to the treatment of women in terms of their physical ability and capability in the workplace and is very relevant and important to the factor, and was therefore retained.

6.3.2.1 *Factor 1: Capability*

Questions F1, F2 and F5 loaded on Factor 1, *Capability*. All three statements loaded satisfactorily with a factor loading of above 0.4. The communalities for these statements are above 0.3.

The factor mean calculated at 2.74, which indicates a tendency to agree with the statements contained in the factor. It can therefore be deducted that on average, the participants agreed that women are physically less capable than men, that some mining tasks can be done only by men and that temperatures in the workplace are not regarded as a major problem for women.

The *Capability* factor shows a Cronbach's alpha coefficient of 0.68, which could be regarded as an acceptable reliability. According to Field (2005:668), the Cronbach's alpha could realistically be below 0.7.

6.3.2.2 *Factor 2: Effectively*

Questions F3 and F4 loaded on Factor 2, the *Effectively* factor. Both statements have factor loadings of above 0.5. The communalities for these statements are above 0.3.

The factor mean calculated at 2.77, which indicates a tendency to agree with the statements contained in the factor. Thus, on average, the participants tended to agree that women have the physical ability to perform their daily tasks effectively and that they do not have a problem with working in confined spaces.

The *Effectively* factor shows a Cronbach's alpha coefficient of 0.54, which could be regarded as a relatively low reliability. This was probably caused by the low number of statements, namely two in the factor, as suggested by Field (2009:675).

6.3.2.3 Factor 3: Differential

Only one question loaded on Factor 3, the *Differential* factor. This statement has a factor loading of 0.226. The factor mean calculated at 2.19, and because the statement is reversed, it does not point towards a problem area. It can be deducted that on average, the participants agreed that women should not be treated differently than their male co-workers in the workplace. This is positive in the sense that this is not the view of the majority of the male and management participants, but also of the majority of the female participants working in core mining positions.

6.3.2.4 Factor correlation matrix

The Pearson correlations between the extracted factors for the section *Physical ability* are reported in Table 6.6 (c) below.

Table 6.6 (c): Factor correlation matrix

No.	Factors: Physical ability	1	2	3
1.	Factor 1: Capability	1.000	-0.313	-0.275
2.	Factor 2: Effectively	-0.313	1.000	0.116
3.	Factor 3: Differential	-0.275	0.116	1.000

Source: Constructed by author (2013)

Factors 2 and 3 have a correlation coefficient of approximately 0.3 with Factor 1, which indicates that *Effectiveness* and *Differentiality* are related to *Capability*. There is, however, a small correlation between the *Effectively* factor and the *Differential* factor.

6.3.2.5 Comparison of the three target groups of the different mines regarding Physical ability

The descriptive statistics together with effect sizes of the different target groups regarding the section *Physical ability* are reported in Table 6.6 (d) below.

Table 6.6 (d): Comparison of the three target groups of the different mines regarding Physical ability

Factor	Mine	Men		Women		Management		Effect sizes	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Women vs Men	Women vs Management
Factor 1: Capability	Phosphate	3.18	0.64	2.39	0.70	2.68	0.37	1.12	0.41
	Copper	3.25	0.55	2.49	0.66	2.98	0.74	1.16	0.67
	Platinum	2.90	0.54	2.65	0.53			0.47	
Factor 2: Effectively	Phosphate	2.29	0.79	2.83	0.61	2.58	0.42	-0.67	-0.39
	Copper	2.47	0.64	2.99	0.63	2.38	0.53	-0.80	-0.96
	Platinum	2.81	0.57	3.02	0.58			-0.36	
Factor 3: Differential	Phosphate	2.00	1.12	2.71	0.96	2.25	0.62	-0.64	-0.49
	Copper	2.00	0.97	2.00	0.80	1.75	0.68	0.00	-0.31
	Platinum	2.38	1.20	2.16	0.90			0.18	

(a) small effect: $d=0.2$, (b) medium effect: $d=0.5$ and (c) large effect: $d=0.8$

Source: Constructed by author (2013)

The d -value of the female versus management (phosphate and copper mine) and female versus male (platinum mine) target groups indicates that the difference between the means of the different target groups for the *Capability* factor has a medium effect. However, the effect sizes of the female versus male target groups of the phosphate and copper mine are larger than 0.8, indicating that the difference between the means of the different target groups has a large effect and is practically significant. It can therefore be deducted that on average, the participants of the male and management target groups of the three mines are more in agreement with the *Capability* factor and the statements contained in the factor than the female target group themselves.

The effect sizes of the female versus male target groups of the platinum mine for the *Effectively* factor yielded a d-value smaller than 0.5, indicating that the difference between the means of the different target groups is not practically significant. Furthermore, the d-value of the female versus male and female versus management target groups of the phosphate mine for the *Effectively* factor shows that the difference between the means of the target groups has a medium effect. A large effect is evident from the female versus male and female versus management target groups of the phosphate mine for the *Effectively* factor, as the d-values calculated at 0.80 and 0.96 respectively. It can therefore be understood that on average, the participants of the female target group of the phosphate and copper mines are more in agreement with the *Effectively* factor and the statements contained in the factor than the participants of the male and management target groups of these mines.

The effect sizes of the female versus male target groups of the copper and platinum mine and the female versus management target groups of the copper mine for the *Differential* factor yielded a d-value smaller than 0.5, indicating that the difference between the means of the different target groups are not practically significant. The d-value of the female versus male and female versus management target groups of the phosphate mine for the *Differential* factor shows that the difference between the means of the target groups has a medium effect. Therefore, on average, the participants of the female target group of the phosphate mine are more in agreement with *Differential* than the participants of the male and management target groups of the mine. It can therefore be deduced that the female participants of the phosphate mine thought that women should be treated differently than their male co-workers in the workplace.

The next section discusses perceptions and major concerns regarding the physical ability and capability of women employed in core mining positions.

6.3.3 Perceptions and major concerns regarding the physical ability and capability of women employed in core mining positions

This section reports and discusses the findings of the qualitative enquiry (semi-structured interviews and focus group discussions as well as open-ended sections of the questionnaire) regarding the physical ability of women employed in core mining activities. The perceptions of the three target groups, male and female participants working in core mining activities as well as participants fulfilling management positions, are revealed.

6.3.3.1 Perceptions and major concerns of management

From the interviews and focus group discussions held with the participants appointed in management positions, it became clear (through various perceptions) that although job reservations do not exist and women are employed in all sections at the mines, women do not have the physical strength and ability to be employed in all core mining positions. According to the participants, it is important to consider job specifications and requirements when appointing women in positions that require physical strength. It often happens that women are appointed in core mining positions without having the physical ability to cope with the requirements of the positions; male employees have to assist and support their female colleagues to do their jobs properly. This often leads to frustration on the side of male co-workers and contributes to a negative attitude towards women in mining. Male co-workers are often unwilling to assist female colleagues because they feel women are appointed in these positions, they are receiving equal salaries and therefore they have to do their jobs on their own. The following quotations provide an indication of some participants' opinions with regard to the physical ability of women employed in core mining positions:

"You know I think it's about the company's recruitment and selection procedures and plans. Every human being has his own strengths and weaknesses. There are women that are stronger than men and there are men stronger than women. It is important when a position/job becomes available to look at the requirements of this position/job and then evaluate how you will determine whether candidates are physically strong enough to fill this position. In the past, we have often made mistakes with the appointment of women by not looking at the requirements of the position/job. We appointed thin, fragile women who could not cope with the requirements of the position/job. The male colleagues then often have to assist women who are not physically strong enough to do their jobs and they then become easily frustrated and annoyed with their female colleague." Senior production manager (Female – phosphate mine)

"Women do not always have the physical ability to perform their jobs well; it depends on the kind of job. Women must be employed in jobs that they are physically fit for and in jobs that they meet the requirements." Supervisor (Male – copper mine)

"It depends on the type of work they do. For example, women find it difficult to do mechanical type of work that requires physical strength. On the other hand, women perform well if they do work that requires little or no physical hard labour. But as soon as

they start to do heavy work or work that need some physical strength or power, they cannot do it.” Supervisor (Male – copper mine)

“Sometimes the mine employs women in specific positions that require physical strength that some women do not have. For example, at the plant it is sometimes necessary to pick up and move heavy objects, such as extracting machines and pumps, that weigh approximately 15 to 20 kg. Women cannot pick up or move the machine from the ground to the table to work on it. This implies that she often has to work on the ground. Sometimes, the men do the work for her and she stands and watch the men while they work. I had five women who had worked with me, ‘appies’ [employees in apprenticeship], and only one was able to do the physical hard work.” Supervisor (Male – copper mine)

“Male employees often believe that if women are employed in a certain position they must do the work on their own. Sometimes they don’t want to assist women even if they suffer to do the physical hard work.” Supervisor (Male – copper mine)

According to the participants of the management target group of the respective mines, the following tests are done before women are appointed in core positions to determine whether they will be fit enough for the physical side of the work:

Copper mine

A pre-employment medical test is done before women are employed; however, the mining company does not conduct health risk assessments for women in order to ensure that appropriate jobs are assigned to appropriate women. No test is done to determine the physical ability/fitness of women. Women are given the chance to become physically fit in the workplace. No heat tolerance screening is done, because the mine is very well ventilated with an average temperature of approximately 27 °C.

Phosphate mine

All employees undergo medical tests at the clinic before they are appointed in positions at the mine.

Platinum mine

At the platinum mine all new recruits undergo assessments to ensure that they are healthy and able to work in conditions that apply to their jobs. They also undergo a basic medical assessment. According to management, women who wish to work in core mining positions often lack the required physical or functional capability and upper-body strength.

Women who fail the initial assessments are provided with individual exercise programmes to improve their cardiovascular health. This initiative has contributed towards higher pass rates (rising from 30% to between 50 and 55%) (2012:16).⁶

The following section discusses the perceptions and major concerns of male co-workers regarding the physical ability and capability of women employed in core mining positions.

6.3.3.2 Perceptions and major concerns of male co-workers

The questionnaire distributed to the male employees working in core mining positions made provision for a section in which the participants could indicate whether they are working with women in their sections. As indicated in Figure 6.5 below, a vast majority of the male participants across all three mines (copper mine: 68.8 %; phosphate mine: 100%; platinum mine: 75%) confirmed that they are working with women in their respective sections. It can therefore be deducted that on average, the male participants have a good understanding of the problems regarding the deployment of women in core mining positions as well as physical ability matters and constraints.

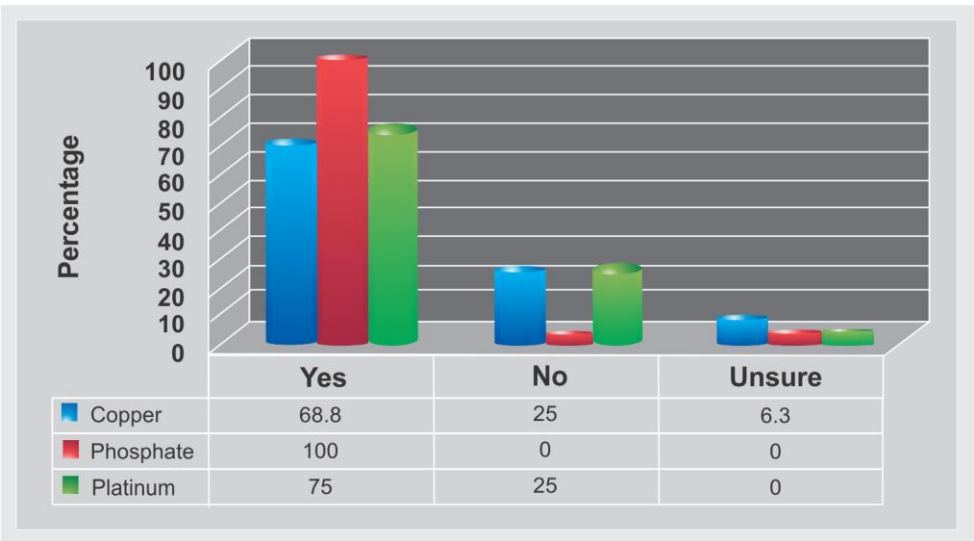


Figure 6.5: Number of male participants working with women in their sections

Source: Constructed by author (2013)

⁶ The source is not fully referenced in order to protect the anonymity of the mining company.

From the interviews and focus group discussions held with the male employees working in core mining positions, the following issues regarding the physical ability of women were raised:

6.3.3.2.1 Physical strength

It was clearly indicated by the male participants that women often lack physical strength when performing certain work activities. It was noted that women are able to perform light duties, but experience difficulties when operating heavy machinery and lifting heavy objects, as also revealed by the quantitative results (see 6.3.1.2). Furthermore, it was indicated that women often do not have the stamina to perform certain work activities. According to the male participants, women's bodies are not made to perform hard physical mine work. The following comments illustrate these points:

"Women can't do everything that men do." Instrument technician (Male – copper mine)

Women's bodies are not made to drive machines, for example the load-haul-dump machine. They must go home and take care of the children." Instrument technician (Male – copper mine)

"Some work women can do, and some not. Some heavy objects they cannot lift. They find it difficult to work in confined spaces. It is not all the women who can use the safety harness to work at heights. Some of the duties at my section, I just do it by myself, because I see that they find it tough." Lab attendant (Male – phosphate mine)

"When [it comes] to physical ability, I don't think they have that power to work as a man, because most of the [work is] underground. You need physical strength, so if you don't have that strength you won't make it to do that job correctly, because some of them you can see that she is trying, but she doesn't have the power to do that." Electrical assistant (Male – platinum mine)

"We are 13 generals, four are women. When coming to lifting of heavy objects, the guys do the work. Women assist in bringing the correct size spanners when installing rails, collecting of hammers, and picking up simple things." Team leader: Haulage maintenance (Male – platinum mine)

"If I have to instruct somebody to pick up say 40 kg weight, I cannot expect a woman to do that. So I'll rather tell the woman to pick up 30 kg and a man to pick up 40 kg. So we start taking things slowly until the body adjust. They can do the same jobs. The only thing is

their bodies must adjust first. They must just get the proper training and coaching as well. That is one thing that is important. As time goes on they will adjust. But if you give her everything at once, it is not going to work. Like say for example if you tell a woman to go pick up a stick or maybe to transport 30 sticks at once, obviously her body is not going to take that load. But if you ask her to maybe to transport 2 sticks, or maybe say 10 sticks a day, then she is going to adjust. Sticks, it's like a round pole – the sticks that we are using to support the ground, underground.” Electrical foreman (Male – platinum mine)

“The distance to walk underground from one place to another, it is too far for them, their bodies get tired. There's no solution. They are employed and they must do the work.” Electrical foreman (Male – platinum mine)

6.3.3.2.2 Production targets

As already mentioned, the mining industry is production-driven and highly depends on the reaching of production targets. According to the male participants, the inclusion of women in a mining team has a severe impact on productivity, as they feel that women are not physically able and capable to fully pull their weight in the team and they often lack physical strength and stamina. The male participants reported that they often prefer to work solely with men in a team due to the fact that mine work should always be done against time in order to reach production targets. If certain tasks are not performed well, it causes delays. Furthermore, it is indicated that pregnancy could also affect the productivity of the team. When pregnant, women are not allowed to perform certain work activities; they are employed elsewhere in the company. The company does not always appoint another team member in the place of the pregnant woman. The team has to rely on fewer workers to complete the same tasks. This also has a severe impact on the reaching of production targets. It is also indicated that women tend to talk too much instead of doing their work. These points are confirmed by the following responses:

“Last week I was talking to this other supervisor in the plant. He told me that in his shift, he prefers to have a male than to have a female, because he knows when he has 10 males he can do his job quicker. If he has nine men and only one woman he knows there will be some delays, because there are some jobs that a woman cannot do. This is one of the challenges.” Instrument technician (Male – copper mine)

“You know sometimes the reason why men help women to do their job, it's because of time or because of the work we are doing. Maybe it's too much for us and we must knock off, maybe at 14:00. So women are not so much strong, so we must make it snappy. So

they must sit down there so that we can do it, because we want to make it snappy so that we can knock off. Because if she comes and work with us, we will take time to finish the job.” Electrical assistant (Male – platinum mine)

“We do not need many women at the plant, only about two or three. Women talk too much and they gossip. The job should run in order for the company to move forward and to grow. The company must provide for our families to follow.” Plant operator (Male – phosphate mine)

6.3.3.2.3 Assistance to women

The male participants indicated that they often have to support and assist female employees when they do not have the physical strength to perform their work. Some male participants said that they are willing to assist women who are willing to work, but they are negative towards women who do not show a willingness to do their work that they were appointed for. Others get agitated when they have to assist women or do/complete their work for them. They assume that when female employees have completed the necessary induction courses and attended the necessary training, they have the ability to perform the work activities that they are appointed for. They also indicated that women should not be treated differently in the workplace. They use the term “fifty-fifty”. This implies that women and men are equal and therefore the work must also be done on an equal basis. These points are noted in the following comments:

“From my experience: When the work gets tough, the woman move to one side and let the men do the work.” Instrument technician (Male – copper mine)

“Sometimes they struggle and require assistance. You see women do not have much power and mining jobs at the plant require power. Sometimes they ask for help.” Plant operator (Male – phosphate mine)

“The supervisors motivate us to assist women if they need assistance. They tell us to help each other. They tell us that the mine is the bus that you drive, if you do not take care of the bus you won’t be able to arrive at your destiny. If I see a woman struggle, I feel I should help her. We have no problem working with women at the mine.” Plant operator (Male – phosphate mine)

“Some women are trying their best, but it is just that they don’t have that physical ability. Those women we try to assist, because we can realise that these people are trying their

best. But there are some that are always complaining.” Construction gang: Supervisor (Male – platinum mine)

“Men do get agitated when they have to assist women. We have to speak to them and convince them that these are women.” Production supervisor (Male – platinum mine)

6.3.3.2.4 Reaction during crisis situations

Due to the fact that mine work is associated with high risk for accidents, male employees often prefer to work with men because they feel that men can act faster in crisis situations, as was pointed out by one of the participants:

“Women are not faster than men. For example, when there is a fire on top of the plant, something is burning, the woman cannot pick up the fire extinguisher and rush to the fire, but the man can easily do that.” Lab attendant (Male – phosphate mine)

6.3.3.2.5 Attitude

It was indicated by the participants of the platinum mine that the male co-workers often experience problems with women's attitude. Although they acknowledge that some women are willing and capable to do the work that they are appointed for, others want to be 'treated like ladies' in the workplace. The following quotations provide an indication of the participants' opinions in this regard:

“Women are always complaining. They want us to treat them special, but they don't want to do the work. They complain that the work it is too heavy. And underground, there is no easy job there. Everything is very hard. There are so many chances of accidents there. There are so many injuries that can happen.” Production supervisor (Male – platinum mine)

“Some women they want to be treated like ladies; [...] we don't have such a kind of chance to treat them like ladies, because we are always in a hurry. Underground everything is done against time and against production – the mining company wants production the whole time. Even if we are cleaning the haulage, it is not hard work, but they also cry. They want to do nothing. The ladies they want to be treated like glass, eggs. The production of the mine won't go anywhere.” Team leader: Haulage maintenance (Male – platinum mine)

“When you are employed here, you must go to the trainers where you are going to learn everything you are going to use underground, so meaning that if they had gone there they

are able to do that job. They act as if they haven't got trained for such a kind of job. Everyone must be trained when they reach the mine.” Rail maintenance (Male – platinum mine)

6.3.3.2.6 Husbands or boyfriends

The male participants of the platinum mine reported that they are often confronted by husbands and boyfriends when their wives and girlfriends are given jobs that require physical strength, as noted in the comment below:

“There was this other guy at the station. He came to me straight and asked me why do I give his girlfriend a hard job. So do you see what is this thing causing? Men are complaining to us or maybe they want to fight us.” Team leader: Haulage maintenance (Male – platinum mine)

From the above it is clear that male co-workers face unique challenges regarding the deployment of women in core mining positions. Regular diversity training and workshops could create awareness for diversity issues and could create and foster a work environment in which people's differences can be respected (also see Chapter Four under 4.4.6.4). The following section discusses perceptions and major concerns regarding women employed in core mining positions in terms of their physical ability and capability.

6.3.3.3 Perceptions and major concerns regarding women employed in core mining positions

Although the female participants indicated that they have the physical ability to do their jobs well, they admitted that the work is tough and not easy to perform, especially underground. It was also reported that on average, the women are willing and able to perform their jobs well; however, the women admitted that they do not always have the physical strength, power and stamina required for specific positions. They reported that some male co-workers are willing to assist them, while others are unwilling and would rather watch them suffer than be of assistance. Women want to prove themselves and often neglect their bodies to do their jobs well. The following quotes provide an indication of the female participants' opinions regarding the physical ability of women employed in core mining positions and the constraints experienced:

“I don't have the steam to work at the position that I am working at. I am not strong enough. The job of mine is too hard. We are sweating underground.” General: Haulage maintenance (Female – platinum mine)

“The loco is like a train, nè? It’s hard to operate. The steering wheel and everything is hard. The brakes. And to be on it every day, yô, it is hard. When you go on period you have some pains. Your back it pains. And that thing, it vibrates. I’m on it eight hours every day.” Loco-operator (Female – platinum mine)

“Ja, it’s not easy for myself. I’m operating a dozer machine. I have to go to them to organise for the diesel for the machine. And I’m putting that diesel by myself, they don’t do anything, they just watch.” Dozer operator (Female – platinum mine)

“We are able to do whatever [men] can do, but we don’t have the same strength as men.” Diesel bay attendant (Female – platinum mine)

“Yes, I have the physical ability to do my work on my own. It’s just, I have to make a plan to go out on my own. I find that some of the male workers are using power to do the job and I find that I have to come with a plan to make it simple.” Fitter and turner (Female – copper mine)

“Sometimes I find that I have to do the job very fast, which is when it impacts on my health, because it is a heavy job and I am a woman. I’m getting too much tired and some people say if you get tired like this you might damage some of your body parts, because it is heavy job.” Fitter and turner (Female – copper mine)

“We are women. We are less capable than men. We are trying our best, but, it’s just, the strength is not the same as the men’s. You are going to work and you need to rest and some of the jobs you can’t rest. If you rest they are going to say, ‘no, it’s going to go down, you have to work until we are finished’. So it’s getting stressful sometimes, because you feel ‘no, I can’t do this anymore’, but they say ‘no, you have to do it, you have to do it’. So that’s why sometimes you collapse. It happened to me once. Sometimes you are getting so tired and they are pushing one to achieve the outcome. So yes, it is hard labour.” Operator (Female – copper mine)

“The work is really hard and need manpower. Like you need to open valves, you can’t open valves with nails. You find your hands are so painful, then you call a man to come help you, then they say ‘ja, this is why we don’t want women, because they can’t even open that’. But sometimes I try to prove a point that I can also do that, even though my hands are painful.” Attendant: Bush pumps and fitters (Female – phosphate mine)

“As long as you work underground, you work hard. It is hard, but you know that a woman is not like a man. If there is a challenge you go for it. We go for any challenge at all. So we managed to do that.” Loco-operator (Female – platinum mine)

From the section above it can be deducted that the women employed in core positions find it extremely difficult to perform mine work that requires physical strength and stamina. This is also reinforced by the quantitative results, as discussed in 6.3.1.2. However, it was noted by the participants that they could be employed in positions that require light duty. Furthermore, it is important to consider job specifications and requirements when appointing women in positions that require physical strength. It is also advised that relevant medical and physical tests be done to ensure that women are appointed in specific posts or positions of which they meet the requirements, as also suggested by Badenhorst (2009:70).

6.3.4 Perceptions of treatment of women in the workplace

The questionnaire made provision for the participants to respond to the question whether women should be treated differently in the workplace. As indicated in 6.3.1.1 (quantitative results), the majority of the participants across all three mines reported that women should not be treated differently in the workplace. However, the qualitative enquiry (focus group discussions, semi-structured interviews and open-ended sections of the questionnaire) brought split opinions in this regard to the fore. Some participants indicated that all employees, regardless of gender, should be treated equally in the workplace. Furthermore, they believe that if women were found competent, pass the medical tests, meet the requirements of job specifications, are appointed in certain core mining positions and receive equal pay there is no reason why they should be treated differently in the workplace. Others voiced the opinion that women should be treated differently depending on circumstances. These participants suggested that the following aspects should be taken into consideration: physical strength and stamina, appropriate and suitable language usage, family responsibilities of female employees and physiological aspects related to the female body, such as menstruation, pregnancy and birth. The following quotations are examples of the participants' (all three target groups) opinions in favour of equal treatment of all employees, regardless of gender, in the workplace:

Viewpoints of female participants in core mining positions:

“Jobs at the mines are not designed for women or men, so if you are working at the mine we should be equal.” Geologist (Female – copper mine)

“Unless proven otherwise by the medical doctor, all employees should be treated the same and not by gender.” Winder electrician (Female – copper mine)

“They must treat us equal, so that we can be able to achieve the goals of our company.” Operator (Female – phosphate mine)

“We have to be treated equally because everybody knew his or her job description before signing the company’s contract.” Locomotive driver (Female – phosphate mine)

“We are all capable of doing the same things even though as women we don’t have the same speed and strength as men.” Process controller (Female – phosphate mine)

“We work as a team. So there is no need for special treatment.” Diesel attendant (Female – platinum mine)

Viewpoints of male participants in core mining positions:

“Women have the same ability than men, so there is no need to be treated differently.” Fitter (Male – copper mine)

“The respect must be there, that is so. But women in mining preferred the job, so they should be treated the same.” Electrician (Male – copper mine)

“One applies for work that you are willing to do. With the type of work comes the associate environment.” Onsetter (Male – copper mine)

“They were found competent to perform prescribed tasks before engaging them, for example medical tests. They were found ‘fit’, why treat them different?” Dozer operator (Male – phosphate mine)

“If they are capable to perform their entitled job, they must be treated the same as men, because we are at the workplace to make production. No special treatment, as we earn the same salary for the same post.” Reclaimer attendant (Male – phosphate mine)

“If we do treat them different, that will be discrimination, and that we don’t want in our industry.” Safety officer (Male – platinum mine)

Viewpoints of participants in management positions:

“In the workplace you cannot operate to two different standards. If you do not treat employers the same, it will lead to problems in the section.” Supervisor (Male – copper mine)

“Apart from the fact that women are built differently to men, they should receive the same treatment as their co-workers.” Mining specialist (Male – copper mine)

“Women should be treated the same, as they are earning the same as their male counterparts.” Technical training officer (Male – copper mine)

“This should be against the Employment Equity Act and gender discrimination. No preferential treatment to a certain group/gender.” Supervisor (Male – copper mine)

“If we refer to job equality, the women and men should be treated the same.” Manager (Male phosphate mine)

“If the job requires you to do a certain task or tasks, and you accept that position, then you should do what is required.” Production manager (Male – phosphate mine)

The following quotations provide motivations for why women should be treated differently in the workplace:

Viewpoints of female participants in core mining positions:

“If I just came back from maternity, I can’t be running around and if I gave birth that should be taken into consideration.” Operator (Female – copper mine)

“Not necessarily treated differently because we earn the same salary, but to consider the fact that women are physically less capable than men.” Dump truck operator (Female – copper mine)

“Women have to strike a balance between family and work. Consideration must be taken in terms of allowing them flexible working hours.” Electrician (Female – copper mine)

“Sometimes they must treat as differently, for example places with high temperature and confined spaces is not right for women.” Fitter and turner (Female – phosphate mine)

“If a woman is pregnant or in her periods, she should be treated differently.” Operator (Female – phosphate mine)

“Women get easily tired, so when you work with men they must not pressure you to work like them.” Crusher operator (Female – phosphate mine)

“Women are not stronger than men, especially when operating those vibrating dump trucks. It’s not good for women.” Hoist driver (Female – phosphate mine)

Viewpoints of male participants in core mining positions:

“You can’t talk to women like you talk to men. That is totally different.” Boilermaker (Male – copper mine)

“Women should be treated differently, especially when working with heavy material.” Stoker attendant (Male – phosphate mine)

“Women must be treated differently, especially in the case of hard labour, and their strength should be taken into consideration as compared to men.” Winch operator (Male – platinum mine)

“There are jobs that they cannot perform strength wise and they are mentally unfit to work underground.” Engineer (Male – platinum mine)

“They should be treated as mothers of our children, even at work.” Construction helper (Male – platinum mine)

“They cannot do all the work men can do, but they can operate machines. They take better care of machines than men do. If you give women the same task to do as men, within the same time frame, they will not be able to cope.” Technical evaluating administrator (Male – platinum mine)

Viewpoints of participant’s in management positions:

“Women can’t do all the work that a man can do like lifting stuff.” Supervisor: Underground (Male – copper mine)

“Natural communication and language have to be suitable and appropriate.” Information resources manager (Male – phosphate mine)

“Not all women have the physical abilities than men have.” Manager SHEQ (Male – phosphate mine)

“Women need more assistance and support in physically demanding jobs.” Senior manager: Technical support service (Male – phosphate mine)

“Catch 22. On the one side, all are equal. On the other side, special arrangements must be made to cater for women. Therefore they should be treated differently.” Senior manager: Production (Female – phosphate mine)

6.3.5 Conclusion

It is evident from the quantitative results as well as the qualitative findings that on average, the participants thought that women are physically less capable than men and that some mining tasks can be done only by men. Furthermore, it was indicated by the majority of the participants that women experience difficulties in performing mine work that requires physical strength and stamina. Although it was indicated that women are employed in all sections at the three mines and that no tools and equipment are banned from use by women, women find it extremely difficult to use heavy and/or vibrating power tools and to operate the following heavy machinery: LHDs, rubber dozers, rock drills and winches. These findings are reinforced by the literature, which suggests that some of the work tasks in mines are difficult to perform due to the physical differences that exist between women and men (Wynn, 2001:33). In addition, due to women’s smaller physical work capacity and physical strength, they may experience undue physiological strain when performing prolonged and strenuous physically demanding tasks (George *et al.*, 2004:34). In light of these issues, the suggestion made by the participants of the management target group was that job specifications and requirements be considered when appointing women in positions that require physical strength. The necessary medical and physical tests should also be done before women are appointed in positions that require physical strength in order to not compromise the health and safety of the employee and co-workers (Badenhorst, 2009:59).

Although it was indicated by a large number of participants that women should not be treated differently than their male co-workers in the workplace, the following aspects should be taken into consideration: physical strength and stamina, appropriate and suitable language usage, family responsibilities of female employees and physiological aspects related to the female body, such as menstruation, pregnancy and birth. These aspects have a visible impact on the physical performance of women in the workplace. Furthermore, regular diversity training and workshops could create a work environment in which people’s differences (in terms of gender) could be respected.

The next section presents and discusses the empirical results and findings on the section *Health and safety in the workplace*.

6.4 HEALTH AND SAFETY IN THE WORKPLACE

Work in the mining sector is categorised as high-risk work and falls into the category of perceived hazardous occupations. “Mining involves hard physical labour under conditions of extreme discomfort, deafening noise, intense heat and humidity and cramped space” (Zungu, 2011:8). Mine workers often experience anxiety and tension due to the high risk of potential hazards and danger. The MHSA enforces and promotes the health and safety of persons employed in the mining sector. Great emphasis has been placed on the reduction of mining-related deaths, injuries and diseases.

The following indicator statements were identified by means of a thorough literature study to determine perceptions regarding the health and safety of women working in core mining positions:

- Women feel safe at work.
- It is dangerous for women to work underground in the mining company.
- It is safe for women to work the night shift.
- The safeguards (protective clothing, masks, etc.) provided by the company are adequate.
- Protective clothing that women are obliged to wear is woman-friendly, in other words, designed keeping women in mind.
- Pregnant women are provided with alternative employment where they are not exposed to hazardous or dangerous circumstances.
- Alternative employment is provided for women during early motherhood and breastfeeding.
- The mining company is actively involved in HIV/Aids-awareness programmes.
- The mining company works to mitigate and combat HIV/Aids in the mining industry.
- The mining company makes provision for rehabilitation in case of accidents at work.

The next section presents the findings on the above-mentioned indicator statements. Firstly, descriptive statistics and frequencies are presented, differentially in terms of the

three mines included in the study. Secondly, a factor analysis was conducted to explore the factorial structure of the section; these findings are also reported and discussed. Lastly, the findings of the qualitative inquiry (semi-structured interviews and focus group discussions) are presented and discussed.

6.4.1 Descriptive statistics and frequencies

Similar results were obtained for almost all the different indicators, across all three mines, on the section *Health and safety in the workplace* (see tables 6.7 (a–c)). Almost all the indicators calculated a mean of above 2.5 across all three target groups of the three mines, indicating that compliance with these statements is satisfactory. It can therefore be deduced, according to quantitative results, that on average, the participants are satisfied with the way the mining companies included in the study apply and implement health and safety measures in the workplace. The only negative responses were reported for the following indicator statements:

It is dangerous for women to work underground in the mining company. This statement is regarded as a reversed statement and is not a negative response per se. A vast majority of the participants across all three target groups of the three mines positively indicated that working underground is not dangerous for women.

It is safe for women to work the night shift. A worrisome response was obtained from more than half of the female participants (55%) of the phosphate mine, which indicates that it is not safe for women to work the night shift. Positive responses were reported from all the other target groups of the three mines.

Alternative employment is provided for women during early motherhood and breastfeeding. Discrepancies were prevalent in the data obtained from the three mines, as well as between the different target groups. Positive responses were received from the participants of the platinum mine. A split opinion is evident from the data obtained from the female target group of the copper mine. Half of the female participants (50%) reacted positively and half (50%) negatively to the indicator, while slightly more than half of the participants from the management target group (62.5%) agreed to strongly agreed that alternative employment is provided during early motherhood and breastfeeding. The majority of the male (85.7%) and female (68.4%) participants working in core mining activities of the phosphate mine supported this view, while more than half of the participants from the management target group (54.5%) reacted negatively to the indicator.

A comprehensive discussion of health and safety concerns is provided in 6.4.3. The next section presents the results of the factor analysis.

Table 6.7 (a): Participants' perceptions regarding health and safety in the workplace – copper mine

Health and safety issues		Male in core						Female in core						Management					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.	I (Women) feel safe at work	0.0	17.6	70.6	11.8	2.94	0.56	0.0	5.9	73.5	20.6	3.15	0.50	0.0	18.8	62.5	18.8	3.00	0.63
2. ®	It is dangerous for women to work underground in the mining company	17.6	47.1	23.5	11.8	2.29	0.92	24.2	48.5	18.2	9.1	2.12	0.89	31.3	37.5	31.3	0.0	2.00	0.82
3.	It is safe for women to work the night shift	0.0	11.8	58.8	29.4	3.18	0.64	12.5	15.6	59.4	12.5	2.72	0.85	0.0	12.5	68.8	18.8	3.06	0.57
4.	The safeguards (protective clothing, masks, etc.) provided by the company are adequate	0.0	0.0	52.9	47.1	3.47	0.51	9.7	6.5	61.3	22.6	2.97	0.84	0.0	6.3	68.8	25.0	3.19	0.54
5.	Protective clothing that women are obliged to wear is woman-friendly, in other words, designed keeping women in mind	0.0	11.8	52.9	35.3	3.24	0.66	9.1	24.2	51.5	15.2	2.73	0.84	0.0	25.0	50.0	25.0	3.00	0.73
6.	Pregnant women are provided with alternative employment where they are not exposed to hazardous or dangerous circumstances	0.0	11.8	41.2	47.1	3.35	0.70	0.0	12.5	50.0	37.5	3.25	0.67	0.0	6.3	50.0	43.8	3.38	0.62

Health and safety issues		Male in core						Female in core						Management					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
7.	Alternative employment is provided for women during early motherhood and breastfeeding	6.3	6.3	62.5	25.0	3.06	0.77	18.8	31.3	37.5	12.5	2.44	0.95	6.3	31.3	50.0	12.5	2.69	0.79
8.	The mining company is actively involved in HIV/Aids-awareness programmes	0.0	0.0	35.3	64.7	3.65	0.49	0.0	0.0	35.3	64.7	3.65	0.49	0.0	0.0	43.8	56.3	3.56	0.51
9.	The mining company works to mitigate and combat HIV/Aids in the mining industry	0.0	0.0	47.1	52.9	3.53	0.51	0.0	3.1	56.3	40.6	3.38	0.55	0.0	0.0	43.8	56.3	3.56	0.51
10.	The mining company makes provision for rehabilitation in case of accidents at work	0.0	0	58.8	41.2	3.41	0.51	3.1	18.8	62.5	15.6	2.91	0.69	0.0	6.3	43.8	50.0	3.44	0.63

®	Reversed statement
	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Slightly more than half (51–62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Mean scores of 2.5 and lower (2.5 and above for reversed statements) were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

Table 6.7 (b): Participants' perceptions regarding health and safety in the workplace – phosphate mine

Health and safety issues		Male in core						Female in core						Management					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.	I (Women) feel safe at work	0.0	18.8	62.5	18.8	3.00	0.63	4.8	23.8	47.6	23.8	2.90	0.83	0.0	0.0	91.7	8.3	3.08	0.29
2.	It is dangerous for women to work underground in the mining company	15.4	61.5	15.4	7.7	2.15	0.80	20.0	33.3	26.7	20.0	2.47	1.06	28.6	71.4	0.0	0.0	1.71	0.49
3.	It is safe for women to work the night shift	7.1	14.3	57.1	21.4	2.93	0.83	30.0	25.0	25.0	20.0	2.35	1.14	0.0	8.3	66.7	25.0	3.17	0.58
4.	The safeguards (protective clothing, masks, etc.) provided by the company are adequate	0.0	0.0	70.6	29.4	3.29	0.47	0.0	31.6	42.1	26.3	2.95	0.78	0.0	0.0	66.7	33.3	3.33	0.49
5.	Protective clothing that women are obliged to wear is woman-friendly, in other words, designed keeping women in mind	0.0	29.4	64.7	5.9	2.76	0.56	15.0	25.0	35.0	25.0	2.70	1.03	0.0	8.3	50.0	41.7	3.33	0.65
6.	Pregnant women are provided with alternative where they are not exposed to hazardous or dangerous circumstances	0.0	16.7	66.7	16.7	3.00	0.60	10.0	15.0	40.0	35.0	3.00	0.97	0.0	25.0	58.3	16.7	2.92	0.67

Health and safety issues		Male in core						Female in core						Management					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
7.	Alternative employment is provided for women during early motherhood and breastfeeding	0.0	14.3	71.4	14.3	3.00	0.55	10.5	21.1	52.6	15.8	2.74	0.87	0.0	54.5	45.5	0.0	2.45	0.52
8.	The mining company is actively involved in HIV/Aids-awareness programmes	0.0	0.0	31.3	68.8	3.69	0.48	0.0	0.0	52.4	47.6	3.48	0.51	0.0	0.0	33.3	66.7	3.67	0.49
9.	The mining company works to mitigate and combat HIV/Aids in the mining industry	0.0	0.0	62.5	37.5	3.38	0.50	0.0	9.5	57.1	33.3	3.24	0.62	0.0	0.0	41.7	58.3	3.58	0.51
10.	The mining company makes provision for rehabilitation in case of accidents at work	0.0	5.9	76.5	17.6	3.12	0.49	4.8	0.0	66.7	28.6	3.19	0.68	0.0	0.0	45.5	54.5	3.55	0.52

®	Reversed statement
	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Slightly more than half (51–62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Mean scores of 2.5 and lower (2.5 and above for reversed statements) were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

Table 6.7 (c): Participants' perceptions regarding health and safety in the workplace – platinum mine

Health and safety issues		Male in core						Female in core					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.	I (Women) feel safe at work	0.0	20.0	46.7	33.3	3.13	0.74	4.8	19.0	38.1	38.1	3.09	0.89
2. ®	It is dangerous for women to work underground in the mining company	37.5	43.8	18.8	0.0	1.81	0.75	19.0	57.1	19.0	4.8	2.09	0.77
3.	It is safe for women to work the night shift	14.3	21.4	50.0	14.3	2.64	0.93	30.0	20.0	30.0	20.0	2.40	1.14
4.	The safeguards (protective clothing, masks, etc.) provided by the company are adequate	6.7	20.0	53.3	20.0	2.87	0.83	4.8	23.8	52.4	19.0	2.86	0.79
5.	Protective clothing that women are obliged to wear is woman-friendly, in other words, designed keeping women in mind	13.3	20.0	53.3	13.3	2.67	0.89	10.0	30.0	45.0	15.0	2.65	0.88
6.	Pregnant women are provided with alternative employment where they are not exposed to hazardous or dangerous circumstances	0.0	26.7	26.7	46.7	3.20	0.86	4.8	14.3	47.6	33.3	3.09	0.83
7.	Alternative employment is provided for women during early motherhood and breastfeeding	0.0	20.0	33.3	46.7	3.27	0.79	5.0	15.0	50.0	30.0	3.05	0.83

Health and safety issues		Male in core						Female in core					
		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
8.	The mining company is actively involved in HIV/Aids-awareness programmes	6.7	0.0	40.0	53.3	3.40	0.83	0.0	9.5	38.1	52.4	3.43	0.68
9.	The mining company works to mitigate and combat HIV/Aids in the mining industry	6.7	0.0	46.7	46.7	3.33	0.82	0.0	10.0	65.0	25.0	3.15	0.59
10.	The mining company makes provision for rehabilitation in case of accidents at work	13.3	6.7	46.7	33.3	3.00	1.00	0.0	16.7	66.7	16.7	3.00	0.59

®	Reversed statement
	A vast majority of the participants (above 62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Slightly more than half (51–62.5%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Half of the participants (50%) reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Less than half of the participants reacted positively by indicating 3 (partially) and 4 (completely). The opposite applies to reversed statements.
	Mean scores of 2.5 and lower (2.5 and above for reversed statements) were regarded as 'low' and indicate that compliance with the specific statement is none or very limited.

Source: Constructed by author (2013)

6.4.2 Factor analysis

A factor analysis was conducted on the 10 statements listed in the questionnaire. The results of the KMO and Bartlett's test of sphericity are presented in Table 6.8 (a).

Table 6.8 (a): KMO and Bartlett's test of sphericity

KMO and Bartlett's test of sphericity		Value
KMO		0.650
P-value of Bartlett's test of sphericity	Approx. chi-sq	243.933
	df	45
	Sig.	0.000

Source: Constructed by author (2013)

The KMO measured 0.650 and indicates that the sample size is still adequate for factor analysis. According to Field (2005:640), factor analysis is inappropriate for values smaller than 0.5; however, values between 0.5 and 0.7 are regarded as mediocre. The p-value of Bartlett's test of sphericity returned a value smaller than 0.05, suggesting that the correlation between statements is sufficient for factor analysis (Field, 2005:652). The results for the factor analysis are reported in Table 6.8 (b).

Table 6.8 (b): Pattern matrix^a

Health and safety in the workplace						
No.	Question statement	Factor 1	Factor 2	Factor 3	Factor 4	Communalities
		Work environment	Motherhood	HIV/Aids programme	Personal protection	
G2 ®	It is dangerous for women to work underground in the mining company	-0.891				0.759
G1	I feel safe at work	0.389				0.551
G10	The mining company makes provision for rehabilitation in case of accidents at work	0.427				0.623

Health and safety in the workplace						
No.	Question statement	Factor 1	Factor 2	Factor 3	Factor 4	Communalities
		Work environment	Motherhood	HIV/Aids programme	Personal protection	
G7	Alternative employment is provided for women during early motherhood and breastfeeding		0.809			0.679
G6	Pregnant women are provided with alternative employment where they are not exposed to hazardous or dangerous circumstances		0.686			0.657
G8	The mining company is actively involved in HIV/Aids-awareness programmes			0.935		0.850
G9	The mining company works to mitigate and combat HIV/Aids in the mining industry			0.856		0.725
G5	Protective clothing that women are obliged to wear is woman-friendly, in other words, designed keeping women in mind				0.827	0.750
G4	The safeguards (protective clothing, masks, etc.) provided by the company are adequate				0.718	0.634
G3	It is safe for women to work the night shift				0.651	0.522
	Cronbach's alpha	0.51	0.51	0.79	0.61	
	Factor mean	2.78	3.00	3.45	2.83	
	Factor standard deviation	0.41	0.67	0.54	0.64	

® Reversed statement

Source: Constructed by author (2013)

Four factors were extracted by Kaiser's criteria (Field, 2005:652) that explain 67.50% of the total variance, in the section on *Health and Safety in the workplace*. The statements all loaded above 0.3 on the four identified factors.

6.4.2.1 Factor 1: Work environment

Questions G1, G2 and G10 loaded on Factor 1, *Work environment*. Questions G2 loaded heavily on the factor with a factor loading of above 0.891. Questions G1 and G10 loaded satisfactorily with a factor loading of above 0.3. The communalities for these statements are above 0.5.

The factor mean calculated at 2.78, which indicates a tendency to agree with the statements contained in the factor. It can therefore be deducted that on average, the participants agreed that it is not dangerous for women to work underground in the respective mining companies, that women employed in core mining positions feel safe at work and that the mining companies included in the study make provision for rehabilitation in case of accidents at work.

The *Work environment* factor has a Cronbach's alpha coefficient of 0.51, which could be regarded as a relatively low reliability. This was probably caused by the low number of statements – three in the factor (Field, 2009:675).

6.4.2.2 Factor 2: Motherhood

Questions G6 and G7 loaded on Factor 2, *Motherhood*. Both statements have factor loadings of above 0.6. The communalities for these statements are above 0.6.

The factor mean calculated at 3.00, which indicates a tendency to agree with the statements contained in the factor. Therefore, on average, the participants tended to agree that alternative employment is provided for women during early motherhood and breastfeeding and that pregnant women are provided with alternative employment where they are not exposed to hazardous or dangerous circumstances.

The *Motherhood* factor has a Cronbach's alpha coefficient of 0.51, which could be regarded as a relatively low reliability. This was probably caused by the low number of statements – two in the factor (Field, 2009:675).

6.4.2.3 Factor 3: HIV/Aids programme

Questions G8 and G9 loaded heavily on Factor 3, *HIV/Aids programme*. Both statements have factor loadings of above 0.8. The communalities for these questions are above 0.7.

The factor mean calculated at 3.45, which indicates a tendency to agree with the statements contained in the factor. According to the results, it seems that mining

companies are actively involved in HIV/Aids-awareness programmes and that mining companies work to mitigate and combat HIV/Aids in the mining industry.

The *HIV/Aids programme* factor has a Cronbach's alpha coefficient of 0.79, which is above the required 0.7, and shows high reliability and internal consistency.

6.4.2.4 Factor 4: Personal protection

Questions G3, G4 and G5 loaded on Factor 4, *Personal protection*. All statements have factor loadings of above 0.6. The communalities for these questions are above 0.5.

The factor mean calculated at 2.83, which indicates a tendency to agree with the statements contained in the factor. According to the results, the majority of the participants were in agreement that protective clothing that women are obliged to wear is woman-friendly, in other words designed keeping women in mind, the safeguards (protective clothing, masks, etc.) provided by the company are adequate and it is safe for women to work the night shift.

The *Personal protection* factor has a Cronbach's alpha coefficient of 0.61, which could be regarded as an accepted reliability (Field, 2009:675).

6.4.2.5 Factor correlation matrix

The Pearson correlations between the extracted factors for the section *Health and safety in the workplace* are reported in Table 6.8 (c) below.

Table 6.8 (c): Factor correlation matrix

No.	Factors: Health and safety in the workplace	1	2	3	4
1.	Factor 1: Work environment	1.000	-0.025	0.173	0.200
2.	Factor 2: Motherhood	-0.025	1.000	0.146	0.142
3.	Factor 3: HIV/Aids programme	0.173	0.146	1.000	0.322
4.	Factor 4: Personal protection	0.200	0.142	0.322	1.000

Source: Constructed by author (2013)

Factors 1 and 2 have a correlation coefficient smaller than 0.3, while factors 3 and 4 have a correlation coefficient greater than 0.3, indicating that there is a strong relationship between *HIV/Aids programme* and *Personal protection*. However, Factor 1 has a small correlation with factors 2, 3 and 4. A small correlation also exists between Factor 2 and factors 3 and 4.

6.4.2.6 Comparison of the three target groups of the different mines regarding Health and safety in the workplace

The descriptive statistics together with effect sizes of the different target groups regarding the section *Health and Safety in the workplace* are reported in Table 6.8 (d) below.

Table 6.8 (d): Comparison of the three target groups of the different mines regarding Health and safety in the workplace

Factor	Mine	Men		Women		Management		Effect sizes	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Women vs Men	Women vs Management
Factor 1: Work environment	Phosphate	2.81	0.31	2.90	0.49	2.99	0.46	-0.19	0.17
	Copper	2.88	0.44	2.72	0.30	2.81	0.30	0.37	0.31
	Platinum	2.61	0.50	2.73	0.43			-0.23	
Factor 2: Motherhood	Phosphate	3.00	0.42	2.88	0.76	2.71	0.54	0.16	-0.22
	Copper	3.21	0.64	2.84	0.65	3.03	0.53	0.55	0.29
	Platinum	3.22	0.73	3.05	0.74			0.23	
Factor 3: HIV/Aids programme	Phosphate	3.53	0.43	3.36	0.53	3.63	0.48	0.33	0.51
	Copper	3.59	0.48	3.53	0.46	3.56	0.51	0.12	0.06
	Platinum	3.34	0.75	3.28	0.62			0.09	
Factor 4: Personal protection	Phosphate	2.97	0.39	2.67	0.77	3.28	0.49	0.39	0.79
	Copper	3.29	0.51	2.79	0.59	3.08	0.54	0.84	0.49
	Platinum	2.75	0.59	2.63	0.73			0.17	

(a) small effect: $d=0.2$, (b) medium effect: $d=0.5$ and (c) large effect: $d=0.8$

Source: Constructed by author (2013)

From Table 6.8 (d) it follows that the effect sizes of the different target groups for all three mines for the *Work environment* factor yielded a d-value smaller than 0.5, indicating that the difference between the means of the different target groups is not practically significant. This is also the case for the *Motherhood* factor as well as the *HIV/Aids programme* factor, with the exception of the female versus male target groups of the copper mine and the female versus management target groups of the phosphate mine, which d-values indicate a medium effect. Although the means calculated above 2.5, it is clear that on average, the participants of the male target group of the copper mine is more in agreement with *Motherhood* than the female target group themselves. Furthermore, the management target group of the phosphate mine is more in agreement with *HIV/Aids programme* than the female target group.

The effect sizes of the female versus male target groups of the phosphate and platinum mines for the *Personal protection* factor calculated a d-value smaller than 0.5, indicating that the difference between the means of the different target groups is not practically significant. The d-value of the female versus management target groups of the copper mine shows that the difference between the means of the different target groups for the *Personal protection* factor has a medium effect. A large effect is evident from the female versus male target groups of the copper mine and the female versus management target groups of the phosphate mine, as the d-values calculated at 0.84 and 0.79 respectively. It can therefore be deducted that on average, the participants of the male and management target group of the copper mine as well as the management target group of the phosphate mine are more in agreement with *Personal protection* than the female target group themselves.

It is evident from the discussion above that the quantitative data revealed only positive results regarding health and safety of women working in core mining positions. However, the findings of the qualitative inquiry revealed some limitations and deficiencies. These will be put to the order in the next section.

6.4.3 Health and safety concerns regarding women working in core mining positions

This section presents the findings of the qualitative inquiry, derived from interviews and focus group discussions as well as open-ended sections of the questionnaire. Although the participants indicated that the mines take all measures to ensure a safe environment and, in general, they do feel safe at work, the following main concerns were raised:

6.4.3.1 *Personal protective equipment*

Although great progress had been made regarding the provision of PPE that is designed with women in mind, deficiencies and limitations are still prevalent. The following were indicated:

Different views were obtained regarding the preference for one-piece or two-piece overalls. Some women prefer a one-piece overall because they feel safer wearing it when working with men, especially underground. Others indicated that they prefer two-piece overalls, especially when working underground, due to the fact that it is much easier when using toilets underground, and they then do not need to take off all mining equipment, such as the safety belt, headlamp, battery and rescue pack.

Viewpoints in favour of a one-piece overall are illustrated in the following comments:

“I prefer a one-piece overall, it is more comfortable.” Geologist (Female – copper mine)

“This one piece is safer than the two-piece, because we are working with men.” Dozer operator (Female – platinum mine)

Quotations below entail viewpoints in favour of a two-piece overall:

“We only receive one-piece overalls, except the engineering people, they receive two-piece overalls. We prefer two-piece overalls, but not white in colour.” Learner rock breaker (Female – platinum mine)

“Yes, we prefer two-piece, because underground you have to go to the loo, you have to pull off all of your clothes, where as if it is a two-piece, only the trouser and the top is on top, so you don’t have to pull off everything and put it aside.” Service crew (Female – platinum mine)

Some mining companies still provide overalls (shirts and trousers), shoes and gloves that are not women-friendly and are designed with men in mind. The female body differs from the male body; therefore overalls, shoes and gloves designed for men do not secure a perfect and comfortable fit. Women also indicated that they prefer overalls that are not white in colour. The following responses reflect women’s need for protective clothing that are designed with women in mind:

“Women, you know, have got curves and we are wearing men’s clothes. Sometimes it is difficult for you to know the correct size. Because it is male size, you find when you order

overalls they are too big. When you order the small it is too small. They must provide women overalls. We heard there would be female overalls, but we don't know when." Lab attendant (Female – phosphate mine)

"Shirts are designed with men in mind. The buttons are too far from each other, causing the shirt to open up. The mine can definitely do better in terms of designing PPE for women." Electromechanical engineer (Female – copper mine)

"Shirts are not designed with women in mind and the gloves are too big. Management tries to close the gaps and some PPE issues have already been solved. PPE has been redesigned and women are also provided with two-piece overalls." Chairperson: Women in Mining Forum (Female – copper mine)

"At first, they gave us one piece, but now we get two-piece. But we don't have pockets. They give you these small bags to put your stuff. That is not nice, because maybe you have a light cold and you want to put tissues in it." General worker (Female – platinum mine)

"It's a problem to get the correct size shoes, especially small sizes." Senior geologist (Female – copper mine)

"Shoes and trousers not designed to fit women" Chemical engineer (Female – copper mine)

A need was voiced to receive more overalls. The participants indicated that they should receive at least two overalls every six months. They also expressed a need for jackets. The following comments were made in this regard:

"Your only get one overall and wait for six months to get another one. We need at least two overalls. You now if this one is dirty, at some shafts they steal them. If you take your overall to wash it, the following day you won't find it." Team worker (Female – platinum mine)

"We don't have a jacket. It is cold now. Only the officials that are staying on surface received jackets. We need that jacket." Loco-operator (Female – platinum mine)

Some female participants were not satisfied with the respirators provided at one of the mines included in the study. This point is illustrated by the following comment made by one of the female participants:

“I’m not satisfied with the respirator that is provided to use in the plant. It sometimes feels [as if] I cannot inhale enough oxygen.” Electrician (Female – copper mine)

From the above it is evident that women have unique needs in terms of PPE provided. Ill-fitting PPE can affect the way women are protected as well as the way in which they are able to perform their jobs. Therefore, PPE needs to be developed with women in mind, in order to not compromise the health and safety of employees (Badenhorst, 2009:62).

6.4.3.2 *Pregnancy*

From the interviews and focus group discussions it became clear that different views exist on female employees’ experiences regarding treatment by management of the various mining companies before, during and after pregnancy (early motherhood and breastfeeding). The data also show that treatment within the same mining company differs. Some of the participants indicated that they were treated well from the moment they disclosed their pregnancies and they were employed in alternative positions that require light duty. If employed underground, they were moved to work on the surface. Others indicated that they were not treated well at all and were not given light duty; they had to ask to be moved to work on the surface.

The following comments were made by participants who were satisfied with the way they were treated during their pregnancies:

“When I disclosed my pregnancy I was taken to surface to work there.” Development dispatch (Female – copper mine)

“When I disclosed my pregnancy, the mining company treated me well. They gave me light duty.” Attendant: Bush pumps and fitters (Female – phosphate mine)

“The minute that you find you are pregnant you have to tell your supervisor. If where you are working is not safe for you they will take you and put you in a place that is safe for you.” Operator: Operations (Female – phosphate mine)

“I told them I couldn’t work the way I used to work, because I get some pains when I am working. They gave me light duty. I was sweeping the floor and dusting. I continued working in shifts.” Attendant sample preparer (Female –phosphate mine)

“They did put us on surface immediately and give us light duty.” Diesel bay attendant (Female – platinum mine)

The following quote express the opinion of a participant that was not treated well during her pregnancy:

“The mine did not accommodate me when I fell pregnant. I went through hell ... I’m the only one working with men in my shift. There are 21 men and I’m the only woman. I used to be ordered to work where it was not even safe. There is a lot of gas and dust. While I was pregnant no one ever considered that I was. I told my supervisor and everybody knew up to the manager that I was pregnant. From the very first month I was pregnant, the first trimester is the most difficult time of pregnancy, I was ordered ‘to go to hell and back’. That was when it was very much tough. I fainted the other day when they forced me to work and I told them that I’m not feeling great today ... Unfortunately my supervisor and I are not getting along very well. That’s the person who was pressurising matters. The man kept on pushing that I must keep on working. I keep on working until I fainted. I couldn’t do my work anymore. I think I stayed away for a week because I was trying to recover and regain strength. We need a lot of energy to work. And we are using steels, we are using some sort of jack hammers. We use all sorts of heavy stuff so I had to recover, because I knew when I got back I was still going to work. When I came back, the very same person who ordered me to work until I fainted, he told me to work upstairs on a gaseous place. When I was about five or six months pregnant I went to my superintendent and then I set my foot down that I no longer want to work there. I also had support from other women. We had some kind of a meeting with the manager, with our superintendent. He is the one who understood all the procedures and our grievances. And then he placed me in a place where there is no gas, no dust.” Reverb operator (Female – copper mine)

According to the participants from the management target group of the copper and phosphate mines, women are removed from working conditions that could have an effect on their pregnancies, for example underground and with x-ray machines and related radioactivity. Provisions are made for female employees as per the MHSA.

As indicated in Chapter Four under 4.4.4.2, pregnant employees are strongly protected under South African legislation, including the Constitution of South Africa, Section 9 (3); the EEA, Section 6; and the BCEA, sections 25 and 26 (RSA, 1996:1245; RSA, 1997:14; RSA, 1998:7). In addition, the Code of Good Practice on the Protection of Employees during Pregnancy and after the Birth of a Child provides guidelines to employers on how to protect pregnant and post-pregnant employees (also see Chapter Four under 4.4.4.2). Furthermore, Badenhorst (2009:60) suggests a risk-assessment flow (see Chapter Four, Figure 4.1) to ensure that pregnant and/or breastfeeding female employees are not exposed to significant risk in the workplace.

6.4.3.3 Dust

Dust was indicated as a main concern among the participants. According to the female participants, dust affects their lungs, eyes and ears. The male participants indicated that women often get a rash from working in dusty areas and sometimes they need to take the next working day off to recover. The female participants felt that the mining company could do more to reduce dust in the working environment. They suggested that dust masks be improved and that water be used to reduce dust in dusty working environments. Examples of the effect of dust are illustrated in the following comments:

“I’m a pecker operator. I’m breaking the rocks with this other machine; I’m just standing there and the machine is operating, but the thing is, it’s dusty, you can even smell it, it’s not good, especially for my lungs. So if they can improve the dust mask, it will definitely help.” Pecker operator (Female – platinum mine)

“If they can water down the dust it will definitely help. You see there are solutions for things. They can do something about it.” Diesel bay attendant (Female – platinum mine)

6.4.3.4 Vibration

The female participants indicated that working environments entailing vibration as well as the operating of heavy vibrating equipment and machines, such as locomotives, winding engines, rubber dozers and dump trucks, are not good for women, even if they are not pregnant. It was indicated that vibration equipment tends to effect their menstruation cycle. Furthermore, it was indicated that vibration during pregnancy can enhance miscarriages.

6.4.3.5 High risk for accidents

As indicated in the literature review, the mining industry is a high-risk working environment (see Chapter Four under 4.4.5). Women are now forming part of the mining workforce and are not used to the dangerous work environment and often get scared when accidents occur. The following quotations provide an indication of the participants’ perceptions of mining as a dangerous environment:

“As women we are very scared. But you get used to it to work underground. Maybe sometimes you think maybe the rock will fall down ... Even the cage, just to go down. I remember the first time, I was crying. Sometimes the cage get stuck with you in the air for

20 minutes or 40 minutes. Just hanging there. Not knowing whether you are going to ... go down or go up.” Loco-operator (Female – platinum mine)

“Sometimes when there is an accident you get scared. Sometimes when you have to go to work the following day, you get scared to go back ... Because once it does that, one mistake if the cable cuts off, you can be dead. So sometimes it is scary.” General worker (Female – platinum mine)

6.4.3.6 Night shift

Some female participants indicated that they do not feel safe when working shifts. Sometimes only one or two women are working with many men during shifts. Although security services are present at the main gates, a need was voiced for more security in each section/shaft. A need was also detected to lighten up areas that are dark during the night. The following comments illustrate these points:

“Ladies do not feel safe when working night shifts.” Superintendent Internal Audit (Female – copper mine)

“I do work night shift. The only problem that I have is when I come to work. I have to go to the bus stop alone and when I raise my problem sometimes they don’t want to listen to me. They usually say when you make an immediate application you were aware that you are going to work shifts, so it’s for you to see how you manage.” Dump truck operator (Female – copper mine)

“Security must be put in place for every section to secure safety, not just in front of the gate.” Operator (Female – phosphate mine)

6.4.4 Conclusion

The quantitative results on the section *Health and safety in the workplace* reported positive results from all three mines and the different target groups for almost all the different indicators. Four factors (*Work environment, Motherhood, HIV/AIDS programme and Personal protection*) were identified and the mean for each of the factors calculated above 2.6, indicating that compliance with the statements contained in the factors is satisfactory. Although the quantitative results presented positive results, the qualitative findings revealed loopholes. The main concerns were raised on the following aspects: PPE provided, treatment during pregnancy, effects of dust and vibration and security during the night shift. Although the mining companies have improved their efforts to

promote health and safety in the workplace, the health and safety of mine workers remain a major challenge. As indicated in the literature review, a holistic approach to risk management, which includes consideration of gender implications and ergonomic factors, is needed if the participation of women is to be sustained in mining (Hermanus, 2007a:537). Also see Chapter Four under 4.4.5.

6.5 CHAPTER SUMMARY

This chapter provided the empirical findings on the following three themes, *Infrastructure facilities*, *Physical ability* and *Health and safety in the workplace*. The qualitative and quantitative data were presented in an integrated way, according to relevant thematic issues. For each of the themes, descriptive statistics and frequencies were provided and discussed. Furthermore, a factor analysis was conducted on each of the themes to explore the factorial structure of these sections; these findings were reported and discussed. Lastly, the findings of the qualitative inquiry (semi-structured interviews and focus group discussions) were presented and discussed.

The section on *Infrastructure facilities* revealed major limitations and deficiencies. Quantitatively, higher scores were obtained from the male and management target groups for almost all the indicators. The female target group reported much lower scores. It was also evident that on average, the female participants of the phosphate mine were more satisfied with infrastructure facilities provided than those of the copper and platinum mines. Almost all the different indicators for these two mines calculated a mean of 2.5 and lower, indicating that compliance in terms of these facilities is none or very limited. The qualitative findings revealed specific needs in terms of *Infrastructure facilities*, such as adequate change houses and ablution facilities that provide for the needs of women, childcare facilities, housing and adequate transport facilities. Mining companies should be sensitive to these needs and should aim to provide a conducive environment for women, as far as possible, in order to ensure the sustainable employment and retention of women in the core business of the mining industry.

The section on *Physical ability* provided quantitative results and qualitative findings regarding *perceptions of the physical ability of women working in core mining activities; perceptions and viewpoints regarding women's confidence in performing certain work activities at mines; equipment, tools and work units banned from use by women; and the treatment of women in the workplace*. In terms of the *physical ability of women working in core mining positions*, it was indicated by a vast majority of the participants across all

three mines that women find it difficult to perform mine work that requires physical strength and stamina, such as the use of heavy and/or vibrating power tools and the operating of heavy mining equipment (LHDs, rubber dozers, rock drills and winches). Furthermore, the findings revealed that women are employed in all sections of the mines and fulfil positions such as that of engineers, geologists, electricians, artisans, fitters, boilermakers and operators of heavy machinery. The majority of the female participants reported that they are confident in performing their respective work activities; however, it was indicated by the male and management participants that women do not show confidence when using heavy and/or vibrating power tools. The findings of the qualitative inquiry revealed specific concerns of male co-workers as well as participants of the management target group regarding the physical ability of women. It was suggested by the management participants that job specifications and requirements be considered when appointing women in positions that require physical strength. Three factors were identified: *Capability*, *Effectively* and *Differential*. The *Capability* and *Effectively* factors calculated a mean of above 2.5, indicating that the majority of the participants agreed with the statements contained in the factors. The *Differential* factor calculated a mean of 2.19, indicating that the majority of the participants thought that women should not be treated differently in the workplace.

In terms of the section on *Health and safety in the workplace*, the quantitative results revealed only positive results across all three mines. The four factors (*Work environment*, *Motherhood*, *HIV/Aids* programme and *Personal protection*) identified calculated a mean of above 2.6, indicating that compliance with the statements contained in the factors is satisfactory. The qualitative findings revealed specific concerns on the following aspects: PPE provided, treatment during pregnancy, effects of dust and vibration and security during the night shift.

The next chapter presents and discusses the empirical findings related to *Workplace relations* and *General issues regarding the deployment of women in core mining positions*