THE IMPACT OF INCENTIVE SCHEMES ON EMPLOYEE PRODUCTIVITY IN THE SOUTH AFRICAN WORKPLACE

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Abstract

The aim of this article is to determine the impact that various incentive schemes have on employee productivity in the South African workplace. A firm-based model is used to estimate the dimensional relationships (different skill levels, gender-mix, firm size, firm-sponsored training incentives) of the incentive scheme-employee productivity link. The main conclusions of the study are, firstly, that finance-based incentive schemes (especially performance-linked bonus schemes) have a greater positive impact on employee productivity for the higher-skilled segment, secondly, that non-financial incentives (especially consultative committee incentive schemes) have a greater positive impact on employee productivity for the lower-skilled segment, and, finally, that greater female participation in the workplace and the awarding of incentive schemes is important if general employee productivity is to be enhanced.

Keywords

Employee productivity, finance-based incentive schemes, non-financial incentive schemes, firm-based estimation model, dimensional relationships, skill levels, gender-mix, labour

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1. INTRODUCTION

The aim of the article is to determine the impact that various incentive schemes have on employee productivity in the South African workplace. The study considers two broad categories of incentive scheme practice - namely, those incentive schemes that have a strong financial element attached to them and incentive schemes that are in the main non-financial. In order to estimate the different dimensional relationships (employee heterogeneities, different skill levels, employee participation practices, participation of the two gender groups, firm-sponsored training, different firm sizes, geographical differences and technical advancement) of the incentive scheme-employee productivity link, the study incorporated individual firm-based data in the estimation process. The manufacturing industries of Gauteng and Mpumalanga Provinces were used as case studies.

This article is a further contribution to the important employee productivity debate in South Africa. The research forms part of a broader individual research project in which the impact of various aspects of employee dynamics on employee productivity is estimated, quantified and explained. In this regard the impact of HIV/AIDS on employee productivity (van Zyl & Lubisi, 2009), the impact of employee remuneration dispersion on employee productivity (van Zyl, 2010), the productivity effect of part-time employees (van Zyl, 2011), the geographical and industry differences on remuneration gap-enhanced employee productivity levels (van Zyl, 2012), relative employee productivity contribution of different age-skill categories (van Zyl, 2013), the impact of employee training externalities on employee productivity (van Zyl, 2013) and the impact of employee diversity on productivity (van Zyl, 2014) have been researched and published. Limited economic-focus research has been published for developing economies (such as the South African workplace) on the relationship between incentive schemes and employee productivity.

2. LITERATURE REVIEW

The majority of published research results indicate i) a positive relationship between the implementation of incentive schemes and employee productivity, ii) that the manner in which these incentive schemes are implemented has a significant impact on employee productivity and iii) that the magnitude of the impact of the different kinds of incentive schemes on employee productivity differs (Abdusalam, Faki & Dardow, 2012, Bandiera, Barankay & Rosul, 2009; Ben-Ner & Jones, 1995; Black & Lynch, 2001; Blasi & Kruse, 2006; Conyon & Freemsn, 2004; Dessein & Santos, 2006; Damiani & Ricci, 2013; Franceschelli, Galiani & Gulmez, 2010; Gielen, Kerkhofs & van Ours, 2009; Gera & Gu, 2004; Hodgkinson, 2002; Jones, Kalmi, Kato & Mäkinen, 2008; Kato, 2006; Kato, Lee & Ryu, 2012; Poutsma, Blasy & Kruse, 2012).

The most prominent non-financial incentive schemes covered in the existing literature are employee involvement programmes, job rotation, self-managed teams, firm-sponsored training, employee flexibility, management committees and shop-floor committees, while the prominent finance-based incentive schemes are stock ownership, bonuses and profit-sharing schemes. In order to explain the impact that an incentive scheme might have on employee productivity, impact differences between the various incentive schemes and a wide variety of the dimensions relationships of the link between incentive schemes and employee productivity are covered in the existing literature. The dimensions are broadly grouped into two categories, namely those dimensions that are employee-related and those dimensions that are firm- or industry-related.

The dimensions that are employee-related concerns employee heterogeneities, skill levels and employee participation practices (Abdusalam et al., 2012; Bandiera et al., 2009; Damiani et al., 2013; Franceschelli et al., 2010; Hodgkinson, 2002; Kato et al., 2002; Pompei, Damiani & Ricci, 2013; Ude & Coker, 2012), while those dimensions that are firm- or industry-related concern specific firm and industry characteristics, the complementarity of incentive schemes, the structure of employee-management relations, inter-industry competition, technical innovations, increasing uncertainty within firms and industries, information and communication technology and the differences between financial and non-financial incentives (Aoki, 1990; Ben-Ner et al., 1995; Black et al., 2001; Brynjolfsson & Hitt, 2000; Dessein et al., 2006; Damiani et al., 2013; Gielen et al., 2009; Ichniowski, Shaw & Prennaschi, 1997; Poutsma et al., 2012).

In terms of employee heterogeneity, different skill levels and the implementation of the different kinds of incentive schemes, the research literature indicates that i) non-financial incentive schemes have a greater positive impact on the productivity levels of lower-skilled employees, while finance-based incentive schemes have a greater positive employee productivity impact for higher-skilled employees (Abdulsalam et al., 2012), ii) males are in general the main beneficiaries of incentive schemes, and for this reason such schemes have a greater impact on employee productivity spill-over effects (Hodgkinson, 2002), iii) the awarding of incentive schemes to non-permanent employees is limited and the impact on employee productivity in this regard is insignificant (Kato, et al., 2012), iv) incentive schemes that are linked to continuous firm-sponsored training (which acts as a commitment device) have a significant positive impact on employee productivity (Damiani et al., 2013), v) the adoption of performance-linked incentive schemes are positively related to higher employee skill levels and in this regard the presence of higher-skilled employees increases the probability of the adoption of individual-based financial incentive schemes (Pompei et al., 2013), vi) a significant positive correlation between employee motivation and the adoption of incentive schemes was found to be prevalent in workplaces that are more gender and racially diverse (Ude et al., 2012), vii) team-type incentive schemes are less preferable due to the fact that these kind of schemes are prone to 'free-riding' effects that are the result of an adverse selection process in which lower-skilled employees are teamed up with higher-skilled employees (Bandiera et al., 2009), viii) there is an increasing tendency for bigger firms to specifically link the kinds of incentive schemes (such as profit-sharing schemes and stock options) to firm performance (Jones et al., 2008) and ix) the adoption of non-financial social incentives (such as additional social infrastructure for employees) tends to ease the concerns over 'free-riding' (Franceschelli et al., 2010).

In terms of the impact of firm and industry characteristics, the complementarity of the different incentive schemes, the structure of employee relations and the impact of inter-industry competition, technical innovations and firm uncertainty on the incentive scheme-employee productivity relationship, research results indicate that i) firms that rely on greater levels of employee participation in decision making would tend to adopt greater levels of incentive schemes (Dessein et al., 2006), ii) organisational structures within firms and industries determine the kind of incentive schemes that are adopted and also indirectly the magnitude of the impact on employee productivity (Blasi et al., 2006), iii) complementarities of workplace practices dictate the simultaneous introduction of non-financial and financial incentive schemes and in this regard the introduction of the incentive schemes will ultimately impact on firm strategy, firm structure and employee-productivity (Dessein et al, 2006), iv) labour-management relationships adopted within firms and between industries differ and the introduction of particular incentive schemes and the ultimate impact on employee productivity

will depend on the kind of labour-management regime that is adopted within a particular firm (Black et al., 2001), v) employee-management structures that are more unionised tend to adopt group incentive schemes (these group incentive schemes have a limited impact on employee productivity due to the problem of 'free-riding' and the specific adoption of performance-related incentive schemes are in general not linked to firm-specific characteristics, as larger firms tend to adopt a higher level of performance-related incentive schemes that have a greater impact on employee productivity) (Gielen et al., 2009), vi) the positive correlation between firm size and performance-related incentive schemes is in the main explained by the fact that the cost of implementing these kinds of incentive schemes for bigger firms is spread over a larger number of employees (Damiani et al, 2013), and vii) increases in inter-industry competition do enhance the adoption of performance-linked incentives in order to increase the level of employee productivity (greater levels of technical innovation and increasing firm uncertainty result in a reduction of the implementation of performance-linked incentives) (Damiani et al., 2013).

By far the majority of the estimation models in the literature that estimate the incentive scheme-employee productivity relationship are in the main one-dimensional. In most of these models the impact of a specific variable (or dimensional relationship) on the incentive scheme-employee productivity relationship is estimated. Jones et al. (2008) developed a unique estimation model (adapting a form of a Cobb-Douglas production technology) that simultaneously caters for the impact of i) finance-based and non-finance-based incentives schemes on employee productivity and ii) the various dimensional relationships of the incentive scheme-employee productivity link. For the purpose of this study an adapted version (that will include the specific dimensions of the South African workplace) of the Jones et al. (2008) model is used.

3. RESEARCH DESIGN

3.1 Research approach and method

The research design comprises the

- identification of the different dimensional relationships of the incentive scheme-employee productivity link to be included in the estimation model,
- specification of the estimation model that would capture the impact of the different incentive schemes and the dimensional relationships on the incentive scheme-employee productivity link,
- compilation of firm-based data sets for the proxy firms in the manufacturing sectors of Gauteng and Mpumalanga Provinces, the statistical validation of the required sample of firms and the incentive schemes data collected from the proxy firms,
- estimation process and
- interpretation of the estimation results.

3.2 Model specification

The methodology of the adapted Jones et al. (2008) model as it is applied in this particular study is explained in the following few paragraphs. The estimation model is a Cobb-Douglas format of production technology.

$$Y_i = f(K_i; L_i; v_i; \sigma_i) \quad \textbf{(1)}$$

where Y_i represents employee productivity as proximate by real annual sales; K_i is the real capital stock; L_i is the average number of employees; v_i is the vector that includes the different incentive schemes, the multi-skill training (ITC) variable, the different skill levels, the gender variable, the firm-size variable; σ_i is the vector for unknown parameters)

In order to estimate the incentive scheme-employee link for the various dimensions of this relationship equation (1) is converted into a log-linear format.

$$LnY_i = \beta_1 + \beta_2 LnK_i + \beta_3 LnL_i + \beta_v Lnv_i + \beta_\sigma Ln\sigma_i) \quad \textbf{(2)}$$

where LnY_i represents employee productivity as proximate by real annual sales; β_2 is the parameter estimate of the real capital stock (K_i); β_3 is the parameter estimate for the firm's mean number of employees (L_i); β_v is the parameter estimate for the vector (v_i) that includes the different incentive schemes, multi-skill training (ITC) variable, different skill levels, gender variable, firm-size variable; $\beta\sigma$ is the parameter estimate for the vector that represents the unknown parameters (σ_i))

Pooled ordinary-least-squared (OLS) estimations are done for each firm in the sample in terms of i) the general impact of finance-based and non-financial incentives on employee productivity and ii) more specifically the impact of each dimensional relational impact variable (skill levels, gender, size of the firm and multi-skill training (ITC) spending) on the incentive scheme-employee productivity relationship. The dimensional relations that are estimated for each geographical area are, i) the incentive scheme-firm size-skill level dimension, ii) the incentive scheme-firm size-gender dimension, iii) the incentive scheme-gender-mix dimension, iv) the incentive scheme-gender dimension and v) the incentive scheme-skill level dimension.

Proxies for finance-based incentives are performance bonuses, profit-sharing and stock options. All these proxies are treated as binary variables (1 if the firm has a finance-based incentive scheme and 0 if the firm has no finance-based incentive scheme). Proxies for non-financial incentive schemes are flexible job design, job rotation and management committees. In the model these proxies are also treated as binary variables (1 if the firm has non-financial incentive schemes and 0 if the firm has no non-financial incentive schemes).

In order to differentiate between the different skills levels in the estimation process the International Standard Classification (ISCO-08) is used (van Zyl, 2013). Category A constitutes the more skilled employee segment, while category B constitutes the less skilled employee segment. In terms of the different skill levels two aspects are considered in the estimation process, namely: firstly, the impact of incentive schemes on employee productivity when different skill levels are considered and, secondly, the impact that increasing firm-sponsored training (enhancing skill levels in order to meet the challenges of increasing advancement in technology) will have on employee productivity. Multi-skill training (ITC) is used as a proxy for firm-sponsored training in this instance. It is also assumed in the estimation model that higher-

skilled employees (category A) are concentrated in senior-management positions while less-skilled employees are concentrated in non-managerial positions.

In order to differentiate between the different firm sizes the following benchmark is used: firms that have 100 and more employees are treated as bigger firms and firms with fewer than 100 employees are regarded as smaller firms (van Zyl, 2014).

In order to approximate the impact of the gender-mix on the incentive scheme-employee productivity relationship, the following classification categories are used: a less than 30% participation share of females and a more than 30% participation share of females in the workforce (van Zyl, 2014).

3.3 Data collection process

In order to cater for a geographical impact on the incentive scheme-employee productivity relationship the study differentiated between a high GGP province and a lower GGP province. Given the availability of firm-based data Gauteng Province is used to represent the higher GGP geographical area and Mpumalanga Province is used to present the lower GGP geographical area. The manufacturing industries of these two provinces are used as case studies based, firstly, on the importance of the manufacturing industry in the gross geographical product (GGP) of these two provinces and, secondly, on the availability of firm-based data.

Contact information on firms was supplied by the Manufacturing Sector Education and Training Authority (MERSETA), the Department of Labour and the Chamber of Business. In order to adhere to statistical validation requirements, an adequate sample size of firms and a representative spread of firms in the various sub-sectors of the two manufacturing industries are required. The sample responses and the sectorial spread of 83 firms in Gauteng and 57 firms in Mpumalanga were found to be statistically significant.

The sample period was the calendar years of 2009 to 2013. For each individual firm in the sample, data was collected on real annual sales, the total number of employees, the number of employees in each skill category (categories A and B), the value of real capital stock, the gender spread in each skill category, the amount of firm-sponsored funding of training and the kinds of finance-based and non-financial incentive schemes employed by a firm.

A summary of the sample statistics is listed in annexure A. For both the Gauteng and Mpumalanga provinces there are i) more category B employees than category A employees, ii) more male employees than female employees and iii) more male and female employees employed in category B occupations than in category A occupations. Gauteng Province exceeds Mpumalanga Province in all categories of employment. A large percentage of firms in the sample (bigger and smaller firms) applied one or other form of a performance-linked incentive scheme and this is more prominent in the bigger firm category than in the smaller firm category (83% versus 65% respectively in Gauteng Province and 57% versus 47% respectively in Mpumalanga Province). The adoption of profit-sharing incentive schemes by firms in the sample in both provinces tends to be much smaller than the performance-bonus incentive schemes for both the bigger and smaller firm categories (34% versus 12% respectively in Gauteng Province and 27% versus 9% respectively in Mpumalanga Province). A very small percentage of firms in the sample in both provinces adopted a stock-option incentive scheme (5% versus 2% respectively for bigger and smaller firms in Gauteng Province and 4% and 1% respectively for bigger and smaller firms in Mpumalanga Province). In the non-financial incentive scheme category, firms in the sample (for bigger and smaller firms and for both provinces) tend to opt more for the adoption

of employee participatory committee systems (68% versus 65% respectively for bigger and smaller firms in Gauteng Province and 63% versus 59% respectively for bigger and smaller firms in Mpumalanga Province).

Flexible job design was the second most adopted non-financial incentive scheme (47% and 32% respectively for bigger and smaller firms in Gauteng Province and 41% and 31% respectively for bigger and smaller firms in Mpumalanga Province). Job rotation seems to be the less implemented non-financial incentive scheme for both the bigger and smaller firm category (17% and 11% respectively for bigger and smaller firms in Gauteng Province and 16% and 9% respectively for bigger and smaller firms in Mpumalanga Province). Bigger firms tend to allocate more ITC incentive funding than the smaller firm category (this is applicable to both provinces).

4. THE ESTIMATION RESULTS

The estimation results for the incentive schemes-employee productivity relationship for the two geographical areas are listed in Tables 1, 2 and 3. The parameter estimates reflect the average estimates for each of the dimensional relationships of the incentive schemes-employee productivity link in each geographical area.

The parameter estimates for the various finance-based incentive schemes indicate a positive impact on employee productivity (with the exception of profit-sharing and stock option incentive schemes for category B employees and a stock option incentive scheme for female employees).

For larger firms in both geographical areas the magnitude of the positive impact of finance-based incentive schemes on employee productivity is more prevalent when compared to smaller firms. Within both firm sizes (larger and smaller) the magnitude of the positive impact on employee productivity is greater for category A employees and the male gender group.

In terms of the impact of the gender-mix on the finance-based incentive schemes-employee productivity relationship the parameter estimates indicate a greater positive impact if female participation in the workplace increases.

TABLE 1: Estimates for the dimensional relationships of the finance-based incentive schemes-employee relationship

Financial-based incentives (dummy variable 0/1)	*Pooled OLS estimates Gauteng*	*Pooled OLS estimates Mpumalanga*
Finance-based incentive schemes larger firms category A employees	0.701 (0.13)	0.599 (0.10)
Finance-based incentive schemes larger firms category B employees	0.303 (0.15)	0.291 (0.11)
Finance-based incentive schemes smaller firms category A employees	0.572 (0.11)	0.403 (0.10)
Finance-based incentive schemes smaller firms category B employees	0.288 (0.11)	0.201 (0.11)
Finance-based incentive schemes bigger firms	0.618	0.567

males	(0.18)	(0.10)
Finance-based incentive schemes bigger firms females	0.477 (0.17)	0.406 (0.18)
Finance-based incentive schemes smaller firms males	0.496 (0.19)	0.433 (0.19)
Finance-based incentive schemes smaller firms females	0.312 (0.12)	0.301 (0.19)
Finance-based incentive schemes less than 30% female participation	0.233 (0.11)	0.210 (0.17)
Finance-based incentive schemes more than 30% female participation	0.279 (0.19)	0.249 (0.17)
Performance bonus category A employees	0.673 (0.12)	0.599 (0.14)
Performance bonus category B employees	0.054 (0.010)	0.098 (0.011)
Performance bonus male employees	0.712 (0.12)	0.634 (0.11)
Performance bonus female employees	0.697 (0.14)	0.576 (0.15)
Profit-sharing category A employees	0.243 (0.09)	0.095 (0.05)
Profit-sharing category B employees	-0.967 (0.13)	-0.233 (0.16)
Profit-sharing male employees	0.245 (0.09)	0.051 (0.09)
Profit-sharing female employees	0.199 (0.11)	0.012 (0.05)
Stock options category A employees	0.074 (0.03)	0.062 (0.02)
Stock options category B employees	-0.682 (0.17)	-0.266 (0.12)
Stock options male employees	0.056 (0.03)	0.011 (0.01)
Stock options female employees	-0.325 (0.07)	-0.175 (0.03)

Source: Author's analysis

*(the standard errors are significant at a 10% confidence level and are in parentheses)

For category A employees the performance bonus incentive scheme (for firms in both the geographical areas) has the biggest positive impact on employee productivity and for both gender groups a performance-linked bonus incentive scheme generates a higher positive impact on employee productivity than the other two finance-based incentive schemes. For the category B employees, in both geographical areas, the impact of a performance-linked bonus incentive scheme on employee productivity is still positive, albeit at a smaller magnitude than category A employees.

The parameter estimates for both the profit-sharing and stock option incentive schemes provide a mixed picture. The parameter estimates are positive or negative depending on the dimensional relationship that is being estimated. In general, the positive parameter estimates for both category A and B employees (in both geographical areas) are smaller in magnitude than those of performance-linked bonus incentive schemes. Stock options have a limited positive impact on employee productivity for category A employees and the male gender group. For category B employees and the female gender group the stock option incentive-employee relationship is negative. In terms of the gender-mix participation in the awarding of finance-based incentive schemes the parameter estimates indicate a greater contribution to employee productivity when female participation in finance-based incentive schemes is increased.

The sign and magnitude of the estimates for the finance-based incentive scheme-employee productivity relationship confirms the importance of finance-based incentive schemes for higher-skilled employees (Abdulsalam et al., 2012), the importance of performance-linked financial incentive schemes (Jones et al., 2008), the importance of a greater gender spread participating in the awarding of finance-based incentive schemes (Ude et al., 2012), the fact that the magnitude of the positive link between finance-based incentive schemes and employee productivity is more prevalent for bigger firms (Dessein et al., 2006) and that geographical differences in the sign and magnitude of the finance-based incentive scheme-employee productivity relationship are in real terms very small (Black et al., 2001).

TABLE 2: Estimates for the dimensional relationships of the non-financial incentive schemes-employee relationship

Non-financial incentives (dummy variable 0/1)	*Pooled OLS estimates Gauteng*	*Pooled OLS estimates Mpumalanga*
Non-financial incentive schemes larger firm category A employees	0.252 (0.11)	0.231 (0.11)
Non-financial incentive schemes larger firm category B employees	0.571 (0.11)	0.515 (0.11)
Non-financial incentive schemes smaller firm category A employees	0.201 (0.17)	0.198 (0.19)
Non-financial incentive schemes smaller firm category B employees	0.516 (0.16)	0.497 (0.11)
Non-financial incentive schemes bigger firms males	0.491 (0.21)	0.437 (0.20)
Non-financial incentive schemes bigger firms females	0.518 (0.11)	0.486 (0.22)
Non-financial incentive schemes smaller firms males	0.432 (0.19)	0.401 (0.17)
Non-financial incentive schemes smaller firms females	0.503 (0.17)	0.471 (0.22)
Non-financial incentive schemes less than 30% female participation	0.432 (0.11)	0.399 (0.12)
Non-financial incentive schemes more than	0.489	0.426

30% female participation	(0.17)	(0.11)
Flexible job design category A employees	0.177 (0.13)	0.168 (0.11)
Flexible job design category B employees	0.189 (0.013)	0.175 (0.15)
Flexible job design male employees	0.171 (0.14)	0.165 (0.11)
Flexible job design female employees	0.305 (0.15)	0.273 (0.15)
Job rotation category A employees	-0.077 (0.02)	-0.033 (0.03)
Job rotation category B employees	0.155 (0.11)	0.115 (0.10)
Job rotation male employees	0.092 (0.03)	0.013 (0.01)
Job rotation female employees	0.013 (0.02)	0.103 (0.08)
Committees category A employees	0.023 (0.01)	0.076 (0.02)
Committees category B employees	0.603 (0.11)	0.534 (0.14)
Committees male employees	0.298 (0.04)	0.208 (0.03)
Committees female employees	0.133 (0.05)	0.255 (0.10)

Source: Author's analysis

*(the standard errors are significant at a 10% confidence level and are in parentheses)

The parameter estimates for the various non-financial incentive schemes indicate a positive impact on employee productivity (with the exception of job rotation for category A employees).

For larger firms in both geographical areas the magnitude of the positive impact of non-financial incentive schemes on employee productivity is more prevalent than that of smaller firms. Within both firm sizes (larger and smaller) the magnitude of the positive impact on employee productivity is greater for category B employees and the female gender group.

As was the case with finance-based incentive schemes, the positive magnitude of the parameter estimates of the gender-mix on the non-financial incentive scheme-employee productivity relationship increases as female participation in the workplace increases. This is more prevalent for the non-financial incentive schemes.

For category B employees the consultative committee incentive scheme (for firms in both the geographical areas) has the biggest positive impact on employee productivity when compared to the flexible job design and job rotation incentive schemes. The magnitude of the positive impact of the consultative committee incentive scheme on employee productivity for category A employees is very small. For the male gender group the consultative committee incentive scheme generates a much higher positive impact on employee productivity than it does on the female gender group.

The parameter estimates for the flexible job design incentive scheme, for both geographical areas, indicate a positive impact on employee productivity. This positive relationship is

especially prevalent for category B and female employees. In terms of the three non-financial incentive schemes, the flexible job design incentive scheme has the strongest positive impact on employee productivity for female employees.

The parameter estimates for the job rotation incentive scheme indicate the lowest positive impact of all three non-financial incentive schemes on employee productivity (for both the geographical areas). This is true for category B employees and for both the male and female gender groups. In terms of category A employees the relationship between the job rotation incentive and employee productivity is negative.

The sign and magnitude of the estimates for the non-finance-based incentive scheme-employee productivity relationship confirm, firstly, the importance of non-financial incentive schemes for lower-skilled employees (Franceschelli et al., 2010), secondly, the importance of consultative committees as a non-financial incentive scheme, especially for lower-skilled employees (Kato, 2006), thirdly, the existence of gender differences in terms of the effectiveness of individual non-financial incentive schemes (Brynjolfsson et al., 2000), fourthly, the importance of a greater gender spread in the awarding of non-financial incentive schemes (Conyon et al., 2004), and, finally, that the magnitude of the positive link between non-financial incentive schemes and employee productivity is more prevalent in bigger firms and that the impact of geographical differences on the sign and magnitude of the non-financial incentive scheme-employee productivity relationship is in real terms very small (Black et al., 2001; Damiani et al., 2013; Dessein et al., 2006).

TABLE 3: Dimensional relationship estimates for the ITC incentive funding-employee productivity relationship

	Pooled OLS estimates Gauteng	*Pooled OLS estimates Mpumalanga*
ITC category A employees	0.129	0.188
	(0.07)	(0.09)
ITC category B employees	0.311	0.296
	(0.06)	(0.09)
ITC bigger firms	0.513	0.484
	(0.06)	(0.06)
ITC smaller firms	0.313	0.291
	(0.09)	(0.05)
ITC male employees	0.213	0.185
	(0.04)	(0.05)
ITC female employees	0.227	0.181
	(0.05)	(0.06)

Source: Author's analysis

*(the standard errors are significant at a 10% confidence level and are in parentheses)

For the dimensional relationships of the ITC spending-employee productivity link the parameter estimates are all positive. The positive impact of ITC spending is, firstly, more prevalent for category B employees (for both geographical areas) and for bigger firms; secondly, the magnitude of the positive impact is similar for both male and female gender groups; and, thirdly, the geographical differences of the parameter estimates are very small.

The results confirm the importance of the implementation of continuous firm-sponsored training as an incentive if employee productivity is to be enhanced (Diamani et al., 2013 and Pompei et al., 2013).

5. SUMMARY AND CONCLUSION

The aim of the article was to determine the impact that various incentive schemes have on employee productivity in the South African workplace.

The results of this particular study are a confirmation of the important positive impact that the effective implementation of incentive schemes has on employee productivity in the South African workplace. In this regard the results are in most cases similar to those research results for developed countries. The estimation results also indicate that geographical differences and the differences in the size of the firms are in real terms not significant. The trend of the dimensional aspects of the incentive scheme-employee productivity relationship is similar for the different geographical areas and the different firm sizes. Differences do occur when different skill levels and gender differences are taken into consideration in the estimation of the dimensional relationships of the incentive scheme-employee productivity link.

Differences between the research results outlined in the literature review and this particular study do occur on the level of the importance of the different non-financial incentive schemes, especially for the lower-skilled category of employees. In developed economies more importance is attached to non-consultative committee incentive schemes, while the estimation results for the South African workplace clearly indicate a greater positive impact on employee productivity when consultative committee incentive schemes are adopted. Furthermore, from the estimation results it is also evident that in order to enhance employee productivity through the implementation of incentive schemes, i) a greater gender spread in the South African workplace is required and ii) an increase in female participation in the lower-skilled employee segment would necessitate the adoption of a more flexible job design incentive scheme (given the dynamics of lower-skilled female participation in the South African workplace). International research results highlighted the trend that performance-linked incentive schemes and firm-sponsored ITC incentive schemes are more widely implemented and in this regard the estimation results of this particular study confirm this trend (especially for the higher-skilled segment of the South African workforce).

Further extensions of this particular study are possible, including the impact of i) industry differences and ii) organisational structures within firms on the incentive scheme-employee productivity relationship.

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ANNEXURE A: SUMMARY OF THE SAMPLE STATISTICS

	Gauteng		*Mpumalanga*	
Variable	*Mean*	*Standard deviation*	*Mean*	*Standard deviation*
Ln(Yi)	19.11	1.89	11.26	1.76
Ln(Ki)	15.27	1.85	9.37	1.59
Ln(Li)	6.87	1.32	3.12	1.11
Total Category A employees	1.46	0.75	0.77	0.28
Total Category B employees	3.98	1.03	2.75	0.66
Total male employees	3.12	0.61	2.43	0.35
Total female employees	1.56	0.47	1.01	0.14
Male Category A	1.07	0.23	0.79	0.13
Male Category B	2.35	0.58	1.75	0.27
Female Category A	0.31	0.03	0.16	0.01
Female Category B	0.79	0.04	0.75	0.02
Performance bonus bigger firms	0.83	0.11	0.75	0.12
Performance bonus smaller firms	0.65	0.09	0.47	0.07
Profit-sharing bigger firms	0.34	0.03	0.27	0.02
Profit-sharing smaller firms	0.12	0.01	0.09	0.01
Stock options bigger firms	0.05	0.01	0.04	0.01
Stock options smaller firms	0.02	0.008	0.01	0.004
Flexible job design bigger firms	0.47	0.12	0.41	0.11
Flexible job design smaller firms	0.32	0.09	0.31	0.06
Job rotation bigger firms	0.17	0.05	0.16	0.03
Job rotation smaller firms	0.11	0.01	0.09	0.005
Committees bigger firms	0.68	0.03	0.63	0.04
Committees smaller firms	0.65	0.05	0.59	0.02
ITC spending bigger firms	1.98	0.16	1.25	0.17
ITC spending smaller firms	0.76	0.10	0.52	0.01