



Are There Differences in Perception of Predictors of Satisfaction with Work Among Pharmaceutical Executives? A WarpPLS Multigroup Assessment

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Abstract

Pharmaceutical sales executives are an essential human resource workforce in medicine supply. These executives come from diverse demographic groupings, which may influence their perceptions and feelings about work engagement (WE) and employer responsiveness (EPR), and consequently influence satisfaction with work (SW). The study aimed to evaluate group differences in the hypothesized influence of WE and EPR on SW. An online questionnaire was administered to a random sample of 369 pharmaceutical executives in Nigeria. Composite-based partial least squares structural equation modeling (PLS-SEM) in WarpPLS software provided the multigroup analysis framework to investigate these hypothesized differences at $p < 0.05$. The overall model revealed adequate model fit and quality with high predictive relevance. WE positively influenced EPR ($\beta = 0.592$, $p < 0.001$, strong effect $f^2 = 0.350$) and SW ($\beta = 0.519$, $p < 0.001$, moderate effect $f^2 = 0.298$). EPR positively influenced SW ($\beta = 0.101$, $p = 0.025$, small effect $f^2 = 0.041$). Non-pharmacist respondents compared to pharmacists had a higher path coefficient in WE influencing SW ($\beta = 0.564$ vs. $\beta = 0.359$, $p = 0.035$). Group differences in gender and type of pharmaceutical company were not significant. Participants were more concerned about optimal work situations than having positive or negative feelings about work. The study suggests that non-pharmacist executives show greater adaptability and higher engagement with work, and hence were better satisfied at work.

INTRODUCTION

In the literature, much attention has been given to job satisfaction, motivation, perceived organizational support, and their impact on job productivity and organizational performance (Oamen & Omorenua, 2021; Oamen, 2021; Maan et al., 2018; Osborne & Hammoud, 2017; Al-Omari & Okasheh, 2017; Taheri et al., 2020; Duru & Shimawua, 2017). However, the impact of employee work engagement (WE) conditions influenced by perceived employer responsiveness (EPR) to providing optimal work conditions on satisfaction with work (SW) among pharmaceutical executives is a largely underexplored research

area in developing countries. EPR to providing an adequate work environment and resources in this regard refers to the perception of employees about the level and extent their employers/managers provide required resources for attaining organizational objectives. WE are a construct referring to the employer's response to the needs and working requirements of their employees. WE encompass two key elements: firstly, timely provision and adequacy of work resources such as mobility, transportation cost, detailing or marketing materials, and impactful job-specific training (Oamen, 2021; Osborne & Hammoud, 2017; Al-Omari & Okasheh, 2017; Taheri et al., 2020; Duru & Shimawua, 2017). Secondly, creating a

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work environment and culture that promotes career progression and development, healthy work and family balance, and security and longevity of job tenure (Kalliath et al., 2018; Oamen, 2021; Al-Omari & Okasheh, 2017; Taheri et al., 2020).

Literature suggests that engaged employees show higher levels of SW when the necessities of the work environment are provided. (Parvin & Kabir, 2011; Vandenabeele, 2014; Osborne & Hammoud, 2017; Maan et al., 2018). The necessities, in the context of pharmaceutical marketing organizations, include mobility, expense costs, work tools, incentives, rewards, and training (Oamen, 2021). The responsiveness of employers or management to provide an enabling work environment in an adequate and timely manner impacts how employees view employer attractiveness and consequently satisfaction with work (Nguyen et al., 2021; Awan & Tahir, 2015; Berthon et al., 2005). A study advocated the need for improved employer-employee engagement as a critical requirement to enhance satisfaction and performance (Arimie, 2019). Furthermore, although much work has been done on the subject of work environment and its impact on job satisfaction, there is no evidence to show if perception is similar across key occupational demographics such as professional training, work or company background, and gender in the relationship between EPR, and WE on SW among pharmaceutical executives using a WarpPLS multigroup modeling framework.

The use of partial least squares with WarpPLS is a useful multivariate statistical technique for exploring multiple relationships between independent or predictor and dependent or measured variables (Kock, 2010: 2011). WarpPLS software provides composite and factor-based algorithms in structural equation models (SEM) to enable researchers to make informed statistical analysis decisions (Kock, 2010: 2011).

There is a difference in perception of the effect of predictors (work engagement and perceived employer responsiveness) on satisfaction with work among subgroups of pharmaceutical executives

METHODS

The study is a cross-sectional questionnaire-based study that was administered by simple random sampling to three hundred and sixty-nine pharmaceutical sales executives across Nigeria. Participants filled out questionnaires with the assurance of anonymity and confidentiality. Inclusion criteria were for executives currently

employed with a pharmaceutical marketing company. Informed consent was obtained from participants. The targeted companies were indigenous and multinational-owned pharmaceutical marketing companies operating in Nigeria. Sample size determination was based on Kock and Hadaya's recommendation of 155 for a structural equation modeling study with a minimum significant path coefficient of 0.2 and statistical power of 0.8. (Kock & Hadaya, 2018).

The robust path analysis model in WarpPLS was used to develop the structural model. The robust path algorithm is relevant because it supports the single indicator per latent variable for both EPR and SW respectively. The multigroup analysis was computed using the pooled standard error estimation method. The minimum sample size specification for multigroup analysis in WarpPLS per sub-group is expected to be at least 10 to 50 (Kock, 2020). Criteria for sample size in this analysis were set at 50 respondents per sub-group [Kock, 2019] This ensures that collinearity problems do not develop as a result of overly small sub-sample segments. Hence, the level of experience in the industry was excluded as it did not satisfy the pre-conditions.

The study variables are Work engagement (WE), Perceived employer responsiveness (EPR), and Satisfaction with work (SW). WE were measured as a second-order latent variable derived using the WarpPLS algorithm from two first-order latent variables: work-based and implied work variables. Work-based and implied work variables were measured on a 3-point Likert scale where 5 represented good, 3 represented fair, and 1 represented poor respectively. Work-based reflective indicators are resource availability, adequacy of training activities, incentives for work done, marketing support, the impact of training, and reward for performance. The indicators for implied work factors are the security of job tenure, work-life balance, and career growth opportunities. EPR was measured on a 5-point Likert scale from 5=essential, 4=high priority, 3=medium priority, 2=low priority, and 1=not a priority. SW was measured with a 5-point Likert scale where 5=very satisfied, 4=satisfied, 3=indifferent, 2=dissatisfied, and 1=very dissatisfied. EPR and SW were represented as single indicator latent variables.

RESULTS AND DISCUSSION

Group-specific differences exist in estimated relationships, and thus, should be explored in

research to improve insights obtained. Hence, the frame of the comparison was based on several subgroups of the study population such as gender, type of company, and type of profession. Multigroup analysis examined if significant path differences exist in professional background [pharmacists vs non-pharmacists], gender [male and female], and work background [indigenous vs. multinational firms].

Figure 1. Structural model showing path coefficients and significance level

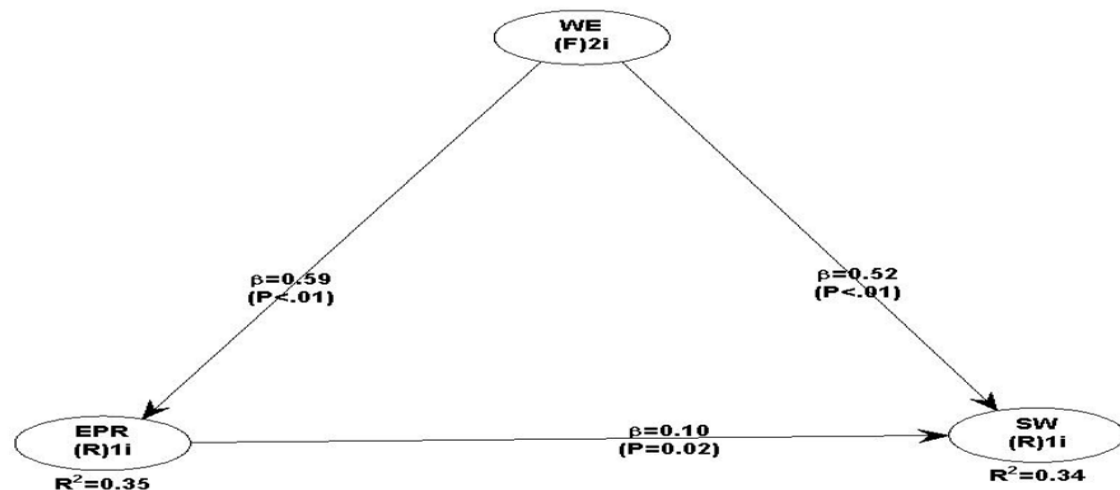


Table 1. Assessment of latent variables' quality

MEASURES	LATENT VARIABLES			CRITERIA
	EPR	SW	WE	RANGE
R2	0.350	0.339	n/a	Large effect ≥ 0.35
Adjusted R2	0.348	0.335	n/a	Large effect ≥ 0.35
Composite reliability	1.000	1.000	0.873	Greater than 0.70
Cronbach alpha	1.000	1.000	0.708	Greater than 0.70
Average variance extracted	1.000	1.000	0.774	Greater than 0.50
Full collinearity VIF	1.554	1.512	1.943	Less than 3.3
Q-squared	0.350	0.340	n/a	Greater than 0
Skewness	0.206	-0.891	-0.078	Range from -2 to +2
Kurtosis	-0.065	0.929	-0.680	Range from -7 to +7

From table 1, the assessment of latent variables showed that the fit indices supported the fit of the model to the data. R-squared values of 0.35 and 0.34 for endogenous variables which are above moderate level-based criteria set by Cohen (1988) for regression-based models [small=0.02; moderate=0.15; large=0.35] and corroborated by Hair et al (2014) and Wong (2013) recommendations (Cohen, 1988; Hair et al., 2014; Wong, 2013) This implies that at least 34 to 35% of the

variance in the endogenous latent variable is explained by the exogenous variables in the model as shown in figure 1.

The internal reliability of the model was confirmed by composite and Cronbach alpha values above the cutoff value of 0.7.

The predictive relevance of the model (Q2) was adequate (0.35 for EPR and 0.34 for SW) which is above zero: this affirms the accuracy of the prediction of the endogenous variables by the exogenous variables (Hair et al., 2014; Kock, 2015; Sarstedt et al., 2014).

Convergent validity of latent variables was established with average variance extracted above the minimum acceptable value of 0.5. SW and EPR had an average variance extracted of 1.0 because they are represented by single-item indicators. Furthermore, the full collinearity variance inflation factor of the latent variables was below the benchmark of 3.3 and hereby suggests that common method bias does not exist in the model

as well as no collinearity concerns (Kock, 2015: 2019). Normality of data was also justified as acceptable given that skewness and kurtosis values fell within -2 to +2 and -7 to + 7 respectively [Brown,2006: Kline,2016] Therefore, the measurement model is considered fit for further analysis.

Table 2. Model Quality Assessment

Parameters (Average)	Results	Significance/ expected
Path coefficient	0.403	$p < 0.001$
R2	0.344	$p < 0.001$
Adjusted R2	0.342	$p < 0.001$
Block VIF	1.539	acceptable if < 5 , ideally ≤ 3.3
Full collinearity VIF	1.670	acceptable if < 5 , ideally ≤ 3.3
Tenenhaus GoF	0.564	small > 0.1 , medium ≥ 0.25 , large ≥ 0.36
Sympson's paradox ratio	1.000	Acceptable if ≥ 0.7 , ideally = 1

In addition to the assessment of the latent variables in the model, model fit parameters were adequate for the path model. R2 measure was moderate to large and significant. The average path coefficient was significant at less than $p < 0.05$. Variance inflation factors were also below the 3.3 baselines for adequacy. Furthermore, the loadings of reflective indicators with a loading of 1.000 and formative indicators (0.880 each for work-based and implied work factors respectively) were greater than 0.7 to confirm convergent validity. The goodness of fit was large (0.564). Discriminant validity was established with the loadings of the latent variables higher than the loadings of the adjacent variables. (Kock, 2015: Sarstedt et al., 2014). The path analysis of the structural model (figure 1) using a linear composite-based partial least squares algorithm showed that statistical significance existed across the three hypothesized paths: WE positively predict EPR with a large effect ($\beta = 0.592$).

$p < 0.001$, effect size $f^2 = 0.35$) in table 2. Similarly, WE positively predicted the main dependent or endogenous variable, SW with a moderate effect size ($\beta = 0.516$, $p < 0.001$, effect size, $f^2 = 0.30$). However, EPR positively predicted SW with a small effect size ($\beta = 0.101$, $p = 0.025$, effect size, $f^2 = 0.041$) (Cohen, 1988: Pituch & Stevens, 2016). Hence, the hypotheses are supported in all three scenarios.

The findings of the study showed that; 1] Path 1: the more engaged a pharmaceutical executive at his place of work elicits or causes an increase or improvement in positive feelings of support from their employers. This finding of the study is supported by empirical studies which showed that the more employees get the necessary work tools and stable work environment, the greater the tendency for them to remain with their employers. This creates an environment for positivism and productivity. (Oamen & Omorenuwa, 2021: Arimie, 2019). Invariably, there would be less dissatisfaction, discontent, reduced turnover, and enhanced productivity (Oamen & Omorenuwa, 2021: Maan et al., 2020: Davidescu et al., 2020: Taheri et al., 2020: Parvin & Kabir, 2011). 2] Path 2: an increase in positive employee perceptions of their employers' provision of essential work conditions, elicits or causes an increase in positive work satisfaction among pharmaceutical executives. This finding suggests that the more management or human resource managers improve work conditions, the employees' perception would also improve positively. This assertion is in harmony with a plethora of empirical studies that show that fully equipped or supported employees tend to have higher levels of job satisfaction and a positive attitude to work (Awan & Tahir, 2015: Berthon et al., 2005: Nguyen et al., 2021: Taheri et al., 2020). 3] In path 3, a positively engaged pharmaceutical executive provides or shows higher levels of satisfaction with work (Raziq & Maulabakhsh, 2015: Ogueyungbo et al., 2020: Arimie, 2019).

Table 3. Path analysis of structural model

Path	β	SE	p-value	effect size (f^2)	Hypothesis
WE to EPR [1]	0.592	0.048	0.001	0.350	supported
EPR to SW [2]	0.101	0.051	0.025	0.041	supported
WE to SW [3]	0.516	0.048	0.001	0.298	supported

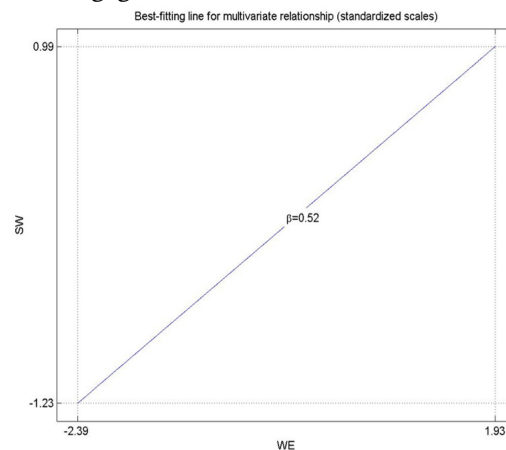
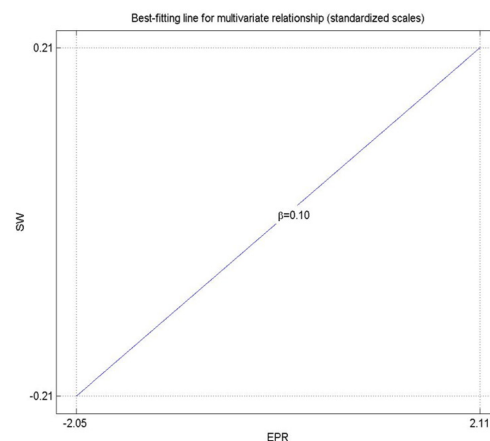
Table 4. Comparative path analysis of Subgroups

Path	Category 1	Category 2	Path diff.	SE	p-value	Hypothesis
	pharmacist	non-pharmacist				
WE to EPR	0.614	0.585	0.029	0.111	0.395	not supported
EPR to SW	0.253	0.061	0.192	0.121	0.057	not supported
WE to SW	0.359	0.564	0.205	0.113	0.035	supported
	indigenous	multinational				
WE to EPR	0.584	0.613	0.029	0.098	0.382	not supported
EPR to SW	0.068	0.160	0.092	0.107	0.196	not supported
WE to SW	0.501	0.539	0.038	0.099	0.351	not supported
	male	female				
WE to EPR	0.586	0.609	0.022	0.098	0.410	not supported
EPR to SW	0.110	0.087	0.023	0.108	0.417	not supported
WE to SW	0.542	0.461	0.081	0.099	0.207	not supported

A group analysis of the various paths in the structural model across subgroups of the profession, type of company, and gender showed that comparatively, A significant difference existed in the relationship between WE and SW among pharmaceutical executives [$\beta=0.205$, $p=0.035$] in favor of non-pharmacists [$\beta=0.564$] compared to pharmacist employees [$\beta=0.359$]. This finding suggests higher or better adaptability of non-pharmacists to work conditions compared to pharmacists engaged in pharmaceutical marketing activities. This may be in part due to less exposure to entrepreneurial and adaptability skills while in training compared to other business or management-oriented professionals (Holdford, 2017; 2021; Inegbenebor, 2007). This has implications on capacity and performance in high-pressure marketing situations in the pharmaceutical marketing space. This strengthens the need for the inclusion of entrepreneurial and social marketing courses in the pharmacy education curriculum (Inegbenebor, 2007; Holdford, 2021; 2017). As shown in Figures 2a and 2b, the linear plots showed that EPR had a lower impact on SW [$\beta=0.101$] compared to WE [$\beta=0.519$]. In other words, for every 1 unit increase in EPR, there is a 0.101 increase in SW. In the same context, for every 1 unit increase in WE, there is a corresponding 0.519 increase in the dependent variable; SW.

This study presents another interesting dimension to the discussion of satisfaction with work among pharmaceutical employees because it affirms that the perceived responsiveness of employers or managers to the needs of employees does not impact their level of satisfaction as much as the availability of the right work

environment. In other words, perception may be influenced by other factors but the existence of the right quality of work environment is a more precise indicator of employee perceptions

Figure 2a. The linear relationship between Work engagement and Satisfaction with work**Figure 2b.** The linear relationship between perceived employer responsiveness and Satisfaction with work

The study used cross-sectional data for analysis, hence the use of a longitudinal study design would capture potential changes in perception over time. The number of independent variables examined could be a limitation. There are other variables capable of predicting satisfaction with work that was not examined in the study. Hence, may affect the robustness of findings.

CONCLUSION

Employee WE, positive feelings or perceptions about employer or management, and SW in pharmaceutical marketing firms can be improved substantially when managers consciously invest resources to improve the work environment and provide stable working conditions. This is essential as the study suggests significant enhancement in positive feelings and perceptions enhance satisfaction with their jobs as well-engaged pharmaceutical executives. This has positive long-term implications for individual performance and organizational productivity. Providing the essential work conditions is more important than focusing on how they (employers) are perceived to be supportive. Through multigroup analysis, non-pharmacist executives showed greater adaptability and higher engagement with work and hence better work satisfaction. The study adds to existing research in pharmaceutical services by applying multigroup SEM methods

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