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A Longitudinal Survey of Job Satisfaction among Pharmaceutical Executives: An Unconditional Latent Growth Curve Study

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Abstract

Cross-sectional studies have been done to explore job satisfaction (JS) among pharmaceutical executives. However, limited evidence of increment or decrement in JS is provided in cross-sectional studies. Latent growth curve models provide a computational framework for evaluating changes in perception and behavior using longitudinal data. Drawing from Locke's theory of satisfaction, the study explored change in the perception of JS among pharmaceutical executives. To the best of the authors' knowledge, this is the first study to use a longitudinal design to explore the trajectory of change in JS among pharmaceutical marketing executives using unconditional latent growth curve analysis. Data were collected using an online survey questionnaire from a cohort sample of 1,023 pharmaceutical executives over 3 unequal time waves- T1 (406, June 2021) during COVID-19; and post-COVID periods-T2 (401, July 2022); and T3 (216, March 2023) using random sampling. Covariance-based structural equation modeling in EQS 6.4 was used for analysis. The model showed an acceptable fit. The mean score of JS was significant and positive (Intercept factor; $M=2.265$, $p<0.01$). The positive linear growth trend in JS was obtained (growth factor increment=4.594, $p<0.01$) at each time point. Initial satisfaction states of individual executives were not necessarily linked to changes in mean values over time. The study observed that JS has been on a positive growth trajectory since the COVID-19 pandemic. The study indicates improvement in working conditions by employers since the pandemic and/or coping strategies by employees. This study gives a simple guide to performing latent growth analysis in behavioral research.

Keywords*: Covid-19, Job satisfaction, Latent growth curve, Locke's theory of satisfaction, Longitudinal study, Pharmaceutical marketing, Structural equation modeling.*

Introduction

The pharmaceutical marketing industry remains a critical link between manufacturers and the retail end of the supply value chain. They are the interface between pharmaceutical firms and the consumer. The advent of the global COVID-19 pandemic had adversely influenced the operations and personnel in the industry [1, 2, 3]. Research has assessed the pandemic's immediate and long-term effects on the pharmaceutical sector as a whole [3, 4]. Little research exists on its effects on socio-behavioral constructs such as pharmaceutical executives' job satisfaction (**JS)**. Job satisfaction (**JS**) refers to feeling happy or content with one's job. As a behavioral concept, it measures an employee's state of satiation based on their evaluation of the benefits accrued from their jobs. Several theories of JS have been propounded such as Helzberg's two-factor theory in which factors such as remuneration, promotion, recognition, and career advancements are predictors of **JS** [5, 6]. Similarly, hygiene factors such as working culture, job security, and relationship with superiors and subordinates influence how an employee perceives his or her work environment and impact overall JS [5, 6].

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Also, Locke's value theory of JS propounds that an employee's satisfaction with his or her job is attained when expectations are matched by what is eventually obtained or expectations are met [7]. JS is a critical behavioral concept applicable to employees in the workplace and has exhaustively been largely researched in marketing, management sciences, social sciences, education, finance, and healthcare studies. In management sciences, it is established that significant links or relationships exist between **JS** and job motivation, perceived organizational support, commitment, citizenship behavior, and job performance among employees in organizations [8, 9].

Oamen & Omorenuwa (2022) affirmed that **JS** among pharmaceutical executives influences turnover intentions or desire to exit the organization [9]. Several studies have examined the impact of COVID-19 on the operations and psyche of sales executives in the pharmaceutical sector. A study by Oamen (2021a) showed that the pandemic negatively affected the operations of executives but did not adversely affect remuneration [4]. This is possibly due to the heightened need for medications globally during the pandemic. On the other hand, a follow-up study revealed that the pandemic had negative effects on the psyche and productivity of pharmaceutical executives [10].

Despite the body of knowledge generated on the subject matter, most have been conducted using the cross-sectional study design with the main limitation of not presenting evidence of change in outcomes of constructs over time [11, 12, 13]. As a result, longitudinal assessments of **JS** among pharmaceutical executives are scarce and limited mostly to the cross-sectional design. To the best of the authors' knowledge, this is the first study to use a longitudinal design to explore the time effects of the construct using an unconditional latent growth curve analysis. Latent growth curve analysis provides a robust methodology to assess the rate of change in behavioral patterns of constructs of interest. The latent growth curve is an advanced multivariate analysis that uses structural equation modeling software such as EQS [14, 15]. The objective of the study was to evaluate the rate of change in JS among pharmaceutical executives using a longitudinal research design.

Study Hypothesis

The study hypothesizes that there is a positive growth in pharmaceutical executives' **JS (H).**

Method and Materials

The sample population is the field sales and marketing executives operating in the pharmaceutical distribution industry in Nigeria. It is estimated that over 20,000 to 30,000 executives are presently employed in the country which itself is arguably the largest market for pharmaceutical products in Africa [4, 16]. The sample size was based on the established premise that the longitudinal latent growth curve models have adequate model fit and statistical power when above 100 sample points [17]. Data were randomly collected from a total of 1,023 pharmaceutical executives from 25 pharmaceutical companies in Nigeria over a span of 19 months. A total of 1,023 participants were sampled at three unequal times waves T1 (406, June 2021); T2 (401, July 2022); and T3 (216, March 2023). Informed consent was obtained from respondents before filling out the questionnaire. Co-variance-based structural equation modeling was used to run latent growth curve algorithm analysis in EQS 6.4 [14, 15, 18]. The model used for the study is an unconditional growth model because it does not involve any time-invariant variables such as gender, and socioeconomic status variables.

Measurement of Variables and Parameters

Job satisfaction: JS was measured using a single indicator- "How would you rate your level of satisfaction with your job" on a 5-point Likert scale ranging from 1 (*very low*), 2 (*low*), 3 (*indifferent*), 4 (*high*), and 5 (*very high*).

Latent growth curve parameters used were Intercept factor (F1), growth factor (F2), and

variances. Intercept factor refers to the mean or average value of the construct under evaluation at the start of the process, it provides a mean score that is used as a starting point of the growth curve. The growth factor or slope refers to the rate of change of the mean values. The growth factor is an indicator of the rate of growth or changes in the mean value of the construct over time. Variances refer to changes or differences that may exist between individuals in mean and intercept values. A significant variance in mean suggests that the mean or average values of the construct vary among individuals involved in the study. The same interpretation applies to significant variances in growth or slope factor. The covariance between growth and intercept factors provides information on the relationship existing between both parameters. A positive correlation or covariance means that individuals with higher or lower intercepts also tend to have high or low growth values respectively. A non-significant value implies that the value of the mean value does not necessarily relate to the rate of increment or decrement over time in the growth factor [14, 15, 19].

Results

Table 1. Sociodemographic Characteristics of Participants

Attributes	**Frequency (n)/%**			
	Time 1	**Time 2**	**Time 3**	**Total Count***
Gender				
Female	111 (27.8)	137 (34.2)	63 (29.2)	311 (30.4)
Male	295 (72.2)	264 (65.8)	153 (70.8)	712 (69.6)
Age (yrs.)				
20 to 30	136 (33.5)	145 (36.2)	109 (50.5)	390 (38.1)
31 to 40	235 (57.9)	225 (56.1)	98 (45.4)	558 (55.5)
41 to 50	33 (8.1)	28 (7.2)	9 (4.2)	70 (6.8)
> 50	2 (5)	2 (0.5)	0	4 (0.4)
Degree				
Higher Diploma	22 (5.4)	34 (8.5)	11 (5.1)	67 (6.5)
BSc	264 (65.8)	279 (69.6)	138 (63.9)	681 (66.6)
BPharm/PharmD	117 (28.8)	88 (21.9)	67 (31.0)	272 (26.6)
Marital Status				
Married	230 (56.7)	208 (51.9)	90 (41.7)	528 (51.6)
Single	173 (42.6)	191 (47.6)	126 (58.3)	490 (47.9)
Divorced	3 (0.7)	2 (0.50	0	5 (0.5)
Company Type				
Indigenous	249 (61.3)	258 (64.3)	124 (57.4)	631 (61.7)
Multinational	157 (38.7)	143 (35.7)	92 (42.6)	392 (38.3)
Industry Experience (yrs)				
less than 1	23 (5.7)	47 (11.7)	27 (12.5)	97 (9.5)
1 to 10	340 (83.7)	332 (80.3)	178 (82.4)	640 (62.6)
11 to 15	39 (9.6)	28 (7.0)	11 (5.1)	78 (7.6)
Greater than 15	0	4 (1.0)	0	4 (0.4)
Greater than 20	4 (1.0)	0	0	4 (0.4)
Total	**406**	**401**	**216**	**1,023**

*Total count values in the whole number

Table 1 shows the demographic attributes of pharmaceutical executives sampled across the three (3) time spans; the majority of whom are males (712) compared to females (n=311). A total of 272 are pharmacists by training while the vast majority (751) are non-pharmacists by training, involved in the survey. Executives within the 31 to 40 yrs age bracket were predominant in number (n=558). Participants working in indigenous companies (n=631) are more compared to multinational companies (n=392). Regarding industry experience in pharmaceutical marketing, most respondents fell within 1 to 10 years (n=640).

Evaluation of Model Fit

Model fit of the latent growth curve was acceptable; Bentler Bonett (normed fit index)-1.00, the goodness of fit index=0.986, standardized root mean squared residual (SRMR)=0.001 (acceptable if less than 0.08) [14]. Hence, the proposed empirical model is adequately represented by the data (that is, the model fits the data).

Table 2. Parameter Estimations of the Growth Model

Parameter	**Estimate (beta)**	**t-value**	**p-value**	**Inference**
Intercept (**F1**)	2.265	5.600	0.001	positive mean
Growth Factor (**F2**)	4.594	31.576	0.001	positive growth trend
Intercept (**F1**) <-----> Growth Factor (**F2**)	0.049	-0.164	>0.05	no significant relationship

**p<0.01, at t, is significant if the t-value is higher than 2.58, <----->=covariance sign

Table 2 shows the mean estimates of the model's key parameters- The intercept factor has a statistically significant mean score of 2.265 with a t-value higher than 2.58 (t=5.600, p<0.01). The growth factor had a mean score of 4.594 with a t-value of 31.576 and was significant at p<0.01. The mean value, path coefficients, and covariances are depicted in Figure 1.

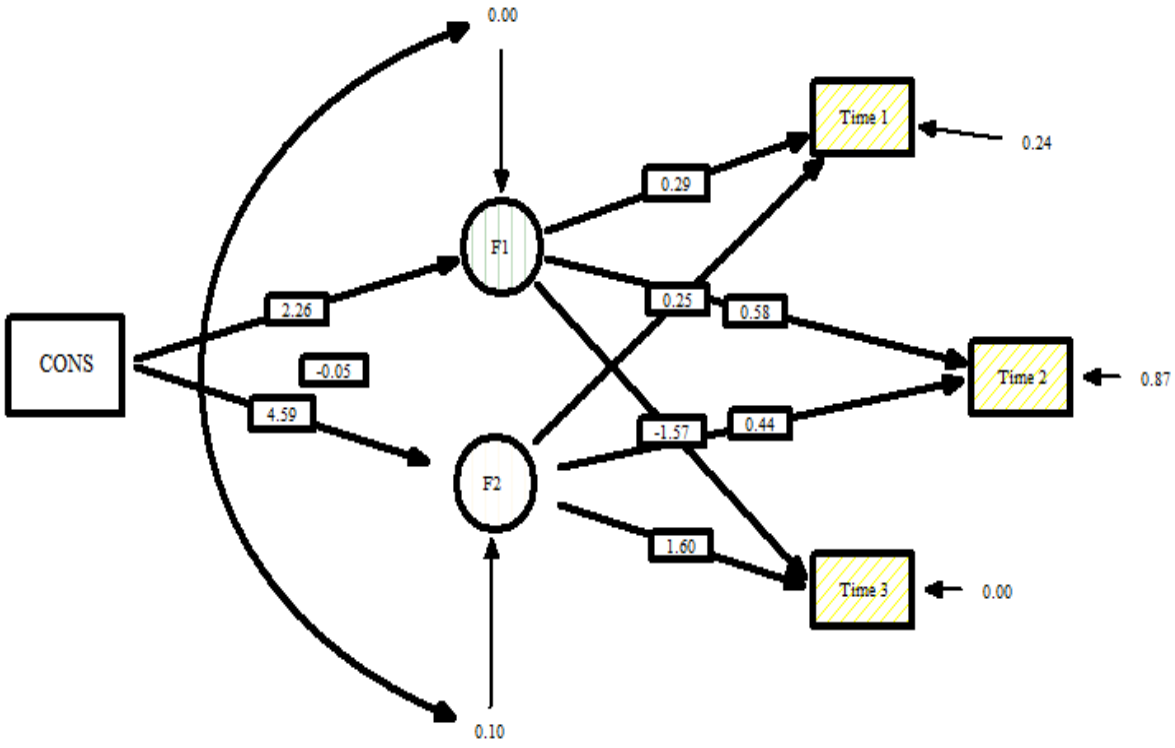

Figure 1. Latent Growth Curve Model

Figure 1 shows that the mean JS depicted by Intercept factors (F1) was 0.29 in Time 1, 0.58 in Time 2, and -1.57 in Time 3. Also, the growth factor (F2) was 0.25 in Time 1, 0.44 in Time 2, and 1.60 in Time 3. The constant depicted by CONS had an absolute value of 0.05.

Discussion

Using the theoretical framework of Locke's theory, the study assessed the trajectory of change in **JS** among pharmaceutical marketing executives using an unconditional latent growth curve analysis. Using longitudinal data, the study explored the time effects on JS of pharmaceutical executives during and post-Covid period.

From the findings of the study, the mean score (2.265) of JS tended to increase linearly by 4.594 units from time T1 to T2 (7.858 units) and 12.453 at time T3, which suggests that the level of satisfaction with work for pharmaceutical executives increased from the period of Covid pandemic to the post-era (Table 2). JS's positive growth trend or trajectory may be partly due to the Covid pandemic's resolution, which had significantly affected pharmaceutical executives' operations and psyche [10]. Furthermore, it is implied that in response to the increased demands due to the pandemic, pharmaceutical companies may have improved the working conditions of their employees in terms of improved pay, work flexibility, frequent use of remote meetings instead of physical meetings, and improved incentive or remuneration structure [11]. Conversely, it is also implied that pharmaceutical executives may have adopted coping and adaptive strategies in response to their stressful work environment. This is corroborated by studies that affirm the expression of emotional distancing from work attitude and behaviors such as organizational citizenship behavior, and job search behavior [20, 21, 22]. Therefore, the hypothesis of the study is supported (H). As shown in Table 2, the non-significant correlation between intercept and growth factors indicates that the initial satisfaction states of individual executives are not necessarily linked to change over time. Therefore, this finding implies that the level of JS at the beginning of the study does not impact or influence the rate of growth in JS. This suggests that individuals with high JS at the start of the process may not necessarily have higher levels of JS at the end of the process and vice versa. Therefore, the model does not depend on any explanatory variable such as the effect of gender and socioeconomic status as evident in conditional latent growth models.

The study contributes to knowledge in that it used the latent growth curve framework for assessing the changes or trends in the behavior and attitudes of a target population. This is useful for research studies exploring perceptions, attitudes, and behaviors in the healthcare system involving stakeholders such as patients, providers, administrators, and policymakers.

In an industry-specific sense, latent growth curve studies provide essential information for human resource managers in sales and marketing organizations to support adequate policy change that may influence desired attitudinal and behavioral change from employees. Finally, this study provides an outline to conduct a basic latent growth curve study.

Due to the nature of the study, JS was measured on a single indicator limited to only one indicator compared to a more comprehensive number of measurement items or indicators. This may support a more robust assessment of the construct. The intercept and growth factor variances were not included in the reporting for the unconditional latent growth model used for the study. Furthermore, if variances between growth and intercept factors are significant, including other explanatory variables in the latent growth model would be necessary.

Conclusion

In conclusion, the study's positive results based on Locke's theory of JS substantially

explain the possible reasons why pharmaceutical executives' perception of satisfaction with work may have been incrementally improved or attained during the three-time points. In other words, the hypothesis of the study was supported as the analysis suggested the attainment of expectations of work of pharmaceutical executives [7].

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Conflict of Interest

The author has none to declare.

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