Computation of value and range of the Industry Performance Index for Final Cross-Functional determinants: Is the coming new era of sales without a Salesman?

Dr.Sumit Saha
Registrar & Associate Professor,
Dayanand Sagar Business School (DSBS),
Bangalore, Karnataka, India
Email:sahasumit@gmail.com

Abstract

Purpose – Sales for products or services are happening online or offline. But the question is can we foresee a new era of sales without a salesman? Many companies are running short of qualified manpower. New generations are not willing to come into the sales field. So this is a burning situation to understand the variables which can force companies to establish their robust mechanism to make sales and generate revenue with minimal or no salesperson.

Design/methodology/approach –A new scale is created and validated after confirmatory factor analysis deleting the outliers by the 'Mahalanobis Distance Test'. Onyx is used to create the model to reach the measurable scale of identified factors that influence the salesperson's performance.

Findings –The model gives us a clear indication of the factors and the departments; as an organizational head, one can fine-tune to improve their internal performance, which will lead to the minimal or no requirement of a salesperson for making sales.

Research limitations/implications –in this study, the internal reliability test conducted and any irregular variance like sales down for earthquakes, tsunamis, pandemics, recession etc, are not considered.

Originality/Value – The created scale became a measurement tool for industry performance measurement. Management will be well-equipped to understand the business situation with respect to the industry. This will help to identify exactly which department needs more focus or changes to be done in case improvement is required as per the above-created scale. This will lead to minimal or no requirement for a salesperson to make sales to a company.

Keywords-Cross-functional Factors, Confirmatory Factor Analysis, Exploratory Factor Analysis, Onyx, Principal Component Analysis, Scale Development and Validation, Sales Performance.

Introduction:

Sales is an important and integral part of any company; without that, any company will fail. But the main problem is getting a qualified salesperson and the young generation. Now the question is, is this possible to identify the cross-functional factors and individual variables which affect sales? If it is possible, as an organization, if they can fix or correct those factors, then ideally, there will not be any problem with making sales without or with the minimal salesperson's involvement. Companies can completely run their sales process online or through technology. Only minimal heads will be required to maintain corporate relationships where human interaction is required. To start with the research, researchers are willing to identify the cross-functional variables which affect most IT/ ITes companies.

Literature Review:

A salesperson is only the direct link between the customer and the company (Krishnan B et. al., 2002, and Churchill et al., 1985) in his "the determinants of salesperson performance", showed the antecedents of performance based on the meta-analysis (the work based on the previous work done already by the previous researchers) for the period 1918- 1982 year (76 years of previously available research work and the secondary data). Researchers suggested five influencing factors for a salesperson's job behaviour, different categories like role perceptions, aptitude, organizational factors, personal factors, motivation and skill level, in considering three different moderators (Walker et al. 1977 Churchill et al., 1985).

Many managers now focus on customer satisfaction (Szymanski et. al., 2001). Mohan V. Tatikonda et. al. (2001) shows the organizational process factors are linked to achieving operational outcome targets for cost, quality, and development capabilities (Mohan V. Tatikonda et. al., 2001). Quareshi Khanam Tahira opined that marketing understanding and approaches completely depend on the customer's requirements and opinion. Rentz et. al. (2002) argued that a higher number of researchers focused on selling skills after Churchill et al. (1985) research. Researchers focused more on improving salespeople's selling skills to improve sales performance. Rentz et. Al (2002) presented a regression model (RA) & scale on selling skills based on the sales report and literature. Surely, the Human Resource department plays an important role in the Salesperson's performance (Rentz et. al., 2002). Churchill et al. (1985) scientific analysis based on the previously available data (meta-analysis), covered the research literature from the year of 1918 to 1982, to gain insights of sales-performance determinants of the past 25 years across empirical research models.

Willem Verbeke et. al. (2011) focused on literature, and analyzed correlations between antecedents, and provided a Structural Equation Model (SEM) to identify the effects of proper sales determinants on sales performance. But the model was the basic model made-up based on secondary research and not predominantly on primary research.

Cross-selling service provides a very important impact on service sales performance (Yu, Ting, de Ruyter et. al, 2018). Organizations face increasing complex customer requirements (Grewal et al., 2015; Tuli, Kohli, & Bharadwaj, 2007; Ulaga& Kohli, 2018). The factors affecting salesforce performance in urban and rural areas are the main driver for any company's success (Neema Geeta et. al., 2015). Different Cross-functional indicators like reasonable sales target setting, branding, company image, technical support, legal teams involvement, team accountability, pre-sales, branding, marketing, incentive achievement, product knowledge and many others may effect the performance and the core problems that hold salespeople back from hitting their targets. This is clear that the sales function is undergoing an undoubted transformation from an immature form to more secure and distinct stages of sales process (Thomas w Leigh et. al., 2001). Today's matured IT industry from 90's back office image is a result of many external/ internal factors (S. Annapoorna et. al., 2009).

Selling helps an organization achieve its business goals. It also enhances the knowledge of internal and external environments, such as, customers, distributors, suppliers etc. The sales team only can achieve these roles effectively when it receives support from other departments. All sales team roles are interdependent, and the success of one

depends upon of the others. Other than significant footprints in the areas like Transcription services, Document processing, Data entry, Data warehousing, BPO, and IT helpdesk services, today India has excelled the expectation in IT, Consulting, application developments, Enterprise resource planning, and Telecom services (Ritam Dixit, 2012).

A salesman is the only link between the organization and its customers (Krishnan B et. al., 2002). "Sales performance" is the revenue generated by any company through the sales team. This also leads to the sales and revenue impact due to the performance/ non-performance of cross-functional departments like marketing, collection, pre-sales etc. These are the factors which influence sales performance, including salespersons' performance. The performance of the salesforce is one of the key areas of sales but this may not be driven by the different mindset from the marketing point of view (Neema Geeta et. al., 2015).

It is not the sales teams' inability but mainly to focus on these supportive cross-functional non-sales force factors influencing the effective and profitable sales process (Saha, S. and Kar, S. (2021a).

This study does not focus on the ability of a salesperson's selling capability, behaviours, aptitude etc. Neither this research identifies the Salesperson's own selling skills nor improves so. A more confident salesperson in his knowledge of company product and service offerings will have more confident and positive customers, which helps the organization in the long run (Krishnan B et. al., 2002).

The cross-functional team effectiveness framework confirms the absence of certain factors' that enable' cross-functional team functions (Sarah Holland, Kevin Gaston and Jorge Gomes, 2000).

This research clearly tries to identify the impact of cross-functional sales performance factors, which negatively or positively affect the overall organization's sales performance and growth.

Less than 53% of salespeople globally achieve their targets. Most sales teams are over-dependent on a few "rock stars" to meet their quota. Selling is as much a science as it is an art. The future belongs to organizations, teams and salespeople who add deep value to their customers and leverage technology to drive efficiency and effectiveness. The research put insights towards identifying core problems that hold sales teams back.

Sales Performance = F (Cross-functional factors)

No doubt sales are the backbone of any company and an important function. But the sales team also requires a lot of cross-functional team support to win a deal. From lead generation to closing, in each and every stage sales team needs support from other team members. Hence, this is important to understand the ill support extended by different teams to the sales team so that the concerned person from the company can take proactive and suitable action.

A total of 33 indicators/ variables have been analyzed on the available data which leads to a fruitful conclusion for the study (Saha, S. and Kar, S. (2021a).

With the emergence of new challenges from the industry, in fact, we can remember Porter's five force model (Porter, M. E. ,1985), there has been a resurgence in the effort to study the importance of sales performance in a different way. In today's era sales performance is not only limited to the sales team but also importantis given to various cross-functional departments and the factors like marketing, sales operations, collection, strategy, HR etc.

A clear understanding of the sales performancefactors and how these vary across different contexts is essential for both sales and marketing managers (Churchil et al.,1985). In fact, this is also important to the ceo of the companies to make informed decisions.

Research has previously been conducted on quality, skills, value, price, role conflict, cognitive aptitude, goal orientation, motivation, salespersons skill development, training, demographics, incentives, work-life balance, leader power, team accountability etc.

Leon Mann et. al., (1998) did field experiments seldom produce clear and strong findings. A longer intervention period like 6-8 months could be better.

Analyzing the findings from different previous studies can advance the understanding of the customer satisfaction effect and other several issues, Szymanski et. al.

(2001);researcher also discussed subsequently from selected studies' qualitative analysis factors and not quantitative ones. This may be considered a critical evaluation of Szymanski's study and research by this researcher.

Convenient sampling was used by Quareshi Khanam Tahira for his study. It limits the generalization of the findings. In this study, a researcher might also check the role of brand image on sales. Also, it could be interesting to examine the relationship between quality dimensions like technical and value dimensions like relational, economic, and functional value.

Thomas w Leigh et. al., (2001) considered the 7 factors from Chally Group (1998) and did qualitative research and/ or "best papers" review. They could be used the statistical model for benchmarking and to find out the actual correlation between these factors.

A multidisciplinary view of innovation was shown by Mohan V. Tatikonda et. al. (2001)by integrating of operation and marketing perspective of product development and the achievement of operational outcome targets linked to the organizational process factors. However, the research could incorporate other important antecedents such as project leader, portfolio composition, market orientation, competitive market intelligence, and market attractiveness.

Verbeke et. al. (2011) focused only on the quantitative analysis and could include the qualitative aspects derived from these empirical papers and evidence.

Neema Geeta et. al., (2015) research plays an important role towards identifying the antecedents of this research, however, researchers focused more on qualitative analysis, hence coming up with a model for cross-functional factors and sales performance is absent.

A more confident salesperson with his knowledge of company product and service offerings, he will have more confident and positive customers which helps the organization in the long run (Krishnan B et. al., 2002). The researcher talks in the same tone as the present study. Sales performance is not only the selling skills of salespeople but also the other cross-departmental factors that influence salespeople's inability for taking action.

This is clear that there is very less study that has been conducted to understand the effect of the cross-functional factors/ cross-functional teams on company sales performance predominantly for IT/ITes sector. These few studies are found related to the relationship between cross-functional factors, and/or non-salesperson performance-oriented research. There is a clear need to understand also that up to what context these cross-functional sales factors, like the effect of Marketing, collection team, customer service, quality team, pre-sales team, merger and acquisition talk, service delivery team, sales operation team support, lead generation team support etc., are related.

Also, there is a need to have a model to understand how these cross-functional factors are putting positive or negative effects on company sales performance. This is required to understand that which cross-functional factor needs to be rectified to have better company sales performance. In short, this study is required not only to understand the relationship between the cross-functional non-sales force performance factors but also to understand the magnitude of every factor in comparison to the generic, so that top-level management of the organization can predict the impact and fix the problem easily in advance in order to increase the sales teams' performance

In a competitive market, business houses always need to be cautious about their position in the market. They need to know the problems and how they can improve them for the sales team's betterment. Sales performance means indirectly more and more revenue for the company to run the operation and to make a profit. In this regard, it is important to understand one's current performance and measure them through a valid scale. We frequently hear customer satisfaction ratings, but hardly we hear the sales performance score or the sales performance rating of a company concerning the industry. Hence, this was well-required and the most interesting among the Researcher and the industry, especially in the ONYX environment. Using a Likert scale is not advisable as that may not be the accurate and current implementation of that scale for the particular study. Rather Likert- like a scale with a score 1-5 or 1-7 attached to it may solve the problem. However, defining the

Researcher's scale per the study's requirement is the appropriate method of reaching the goal. Managers focus on customer satisfaction (Szymanski et al., 2001).

Here, "Cross-Functional factors" meaning the various item/ parameter/ individual variable/ factor/ indicator(s) for which directly the salesperson is not responsible for his non-performance. Ask a simple question "is this because of a salesperson's inability for which the sales did not happen?"; if the answer is 'yes', then it is a functional issue, or if 'No', then all such variables/ factors would be considered as cross-functional and various other functions (not Sales) reason.

Explanation: Case-1: It will not be sales person's fault and will be considered that due to the legal team's delay (cross-functional), sales do not happen, and sales performance is affected.

Case-2: If the sales skill/salesperson's inefficiency did not happen, it would only be considered a practical reason for his non-performance. Otherwise, all variables/ indicators /factors are considered as the cross-functional variable effect. "Sales Performance Factors" are the Identified Item/parameter/factor affecting the salesperson's efficacy and output."Sales Person's Performance" is nothing but the Salesperson's efficacy to make sales depends on various functions/ factors /items/ indicators. Minimizing the wrong effect of these factors may improve their performance. After doing EFA and CFA, the scale considers and calculates the 'Error' and 'Constant' terms. This results in a "Sales Performance Score" (A final number) to measure the industry's sales performance score standard/scale. IT/ITes companies (Hardware and Software) and IT-enabled services companies (Services) are considered together. Differentiation is not done and was not required as per the study.

Explanation: IBM sells hardware servers as a product and in the Global Technical Services (GTS) segment. Selling IBM blade servers fall under IT sales, and Selling GTS offerings to customers falls under IBM services. As a researcher, all IBM salespeople who sell hardware or services were considered for this study. Hence, ITor ITes were considered (Saha, S. and Kar, S. (2021)).

Through the literature review, this is coming up to the researchers that the full scale was constructed on the reflective scale and with the help of AMOS in the Windows operating system environment. Creating a formative scale in ONYX and MAC OS environments is necessary. Mohan V. Tatikonda et al. (2001) show that organizational process factors are linked to achieving operational outcome targets for quality, cost, and development capabilities. Quarashi Khanam Tahira opined that Marketing approaches and the consumer's opinion are correlated.Rentzet al. (2002) argue that many types of research focused on selling skills after Churchill et al. (1985).

Cross-selling services has an impact on how it is formed and how well services are sold (Yu, Ting, de Ruyter et al., 2018). Organizations must deal with more complicated consumer expectations (Grewal et al., 2015; Tuli, Kohli, & Bharadwaj, 2007; Ulaga& Kohli, 2018). The key aspect in any organization's success is the sales force's performance, whether in urban or rural locations (Neema Geeta et al., 2015). Unquestionably, the sales function has evolved from a form that is in its infancy to stages that are more distinct (Thomas w Leigh et al., 2001). There are numerous internal and external factors that contributed to the matured IT (es) industry of today's 1990s back-office image (S. Annapoorna et al., 2009).

33 variables, including reasonable target settings (Leon et al., 1998), lead generation support (researcher pre-test), and road blockers/toxic personnel, were discovered by researchers. administrative politics, ineffective gatherings, Customer satisfaction (Mohan V Tatikonda, 2001, Agnihotri et al., 2017), customer feedback (Thomas W Leigh et al., 2001, Dawn R. Deeter-Schmelz, 2020), complaint handling (technical/quality) (Yu, Ting, de Ruyter et al., 2018), incentive achievement (Dawn R. Deeter-Schmelz, 2020), branding, and sales incentive structure are just Job satisfaction, functional alignment, team responsibility, and team co-location are all discussed by Nema Geeta et al. (2015), S. Annapoorna et al. (2009), Dawn R. Deeter-Schmelz (2000), and others; Functional alignment, Team accountability, Team co-location (Nema Geeta et. al, 2015; Sarah Holland et. al.; and, ChurchillGA, 1985), Contribution recognition (Nema Geeta et. al, 2015), Job Security (S. Annapoorna et. al., 2009), Business

Culture (CII-PwC report, 2010), Company Image (Dawn R. Deeter-Schmelz, 2020).

After reviewing several kinds of literature, researchers found the following list of 33 indicators to initiate the research (Annexure-1)..

The objective of the study:

To create a model which identifies the cross-functional variables that negatively impact the sales team to make sales and, thereafter, to analyse and understand whether sales can be made without the salesperson's no or minimal involvement.

Research Methodology:

To develop a reliable and valid measurement scale, first, identify antecedents for factor analysis and scale identification and then validation.The primary data was collected through a well-structured questionnaire through the survey research method. The questionnaire was administered randomly to the sales professionals via social media and google forms.350+ responses were received, which was the total sample size. The variable reduction technique uses Exploratory Factor Analysis (EFA) and confirmatory Factor Analysis (CFA).Statistical Data Analysis and Exploratory factor analysis SPSS are used for initial data formatting. The Ωnyx data analysis software is used for MacOS operating System to build the predictive modelling.

Data Analysis:

The primary data collection was through the questionnaire method. The researcher approached through social media and the google form link to approach salespersons face to face approach in questionnaire method in a random manner. However, the researcher has no regret in accepting that multiple follow-ups were required to get finally 310 B2B salespersons' responses to validate the sample size. Several dimension reduction technique is used to reach to do "Exploratory Factor Analysis (EFA), and Confirmatory Factor Analysis (CFA)".

Software used for Data Analysis: For initial data formatting, Statistical Data Analysis and Exploratory factor analysis SPSS is used. To build the predictive modelling,

the free Onyx data analysis software is used for MacOS operating System.

Sample Size and its Validity

As the Researcher intends to do the 'Factorial Analysis' and Modelling during data analysis, the KMO value, 'Bartley test of sphericity' Value and 'Anti-image' values are cross-validated by the sample size of 310 final samples through a random sampling method.

- 'KMO value' tells whether the sample is significant to do an overall factor analysis or not.If the KMO value is >= 0.70, then the sample size is sufficient for the factor analysis and inferences.

- 'Bartlley test of sphericity' tells whether the correlation matrices are identity matrices or not.If the identity matrix then it will show as many factors, as many indicators/ items/ variables, and factors.

1. Anti-image' create distinct correlation (0 to +- 1) and covariance matrix (takes any value). It tells whether the sample size is sufficient for every indicator/ item/ variable.   It should be >+ 0.5 to include the indicator; else, we can drop off/ exclude the indicator.

Table 1: KMO & Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.787
Bartlett's Test of Sphericity	Approx. Chi-Square	1544.093
	df	105
	Sig.	.000

*KMO >= 7.0 is the accepted reference value

Missing value analysis

Rubin (1976) expressed that missing data can occur by three (3) mechanisms under which: "missing completely at random (MCAR)", "missing at random (MAR)", and "missing not at random (MNAR)". The researcher found that the values of Sales achievement & Sales Target, actual values; are MNAR ("Missing Variable Not at Random), Donders et al. (2006) & Schafer et al. (2002); and if has a pattern among missing data (Target achieved group of respondents have lesser missing values than not achieved

sales target group of respondents). If no patterns were detected, pairwise or listwise deletion could be done to deal with missing data. And if the pattern is detected, the imputation method must be, Donders et al. (2006) & Schafer et al. (2002).

However, in this research in either of the question's researcher could not find any pattern. Salespeople were not ready to provide Sales achievement & Sales Targets (actual values), imagining that this might reveal the unexpected, this fact will be revealed which is very bad for a salesperson. This is the psychological phenomenon observed that salespeople will not share the right information about their sales target vs. achievement value. This is the clear-cut example of Missing value Not at Random (MNAR) case and there is no clear answer to gauge the right value. On the other hand, for these two fields the missing value is 16.63% which is higher in comparison to the different literature references.

In order to ignore the missing data problem, the different literature study on missing data methods suggests including additional variables (Collins et al. 2001 ; Graham 2003 ; Rubin 1996).

Following above as researcher's end intention is to find out a model and not to predict the actual sales value. Hence, in the questionnaire researcher added two closed-ended questions (Sales achievement and Sales target) to which all the respondents registered their responses against given the Likert scale options. So, there is no loss in data analysis. So, the researcher dropped these two variables from the analysis.

King et al. (2001) quoted that incomplete records exceeded 50% on average for political sciences subjects; also, in some studies, over 90% of incomplete records. However, theoretically, 25% - 30% is the maximum missing value allowed, beyond which we might want to drop the variable from the analysis. In this study, researchers found 21.61% (67/310) missing values overall, and company category wise the value is much lesser. Also, as this is purely target vs achievement value quoted by the respondent from 72+ companies, researchers did not find any pattern. Hence, instead of deleting the records, the mean value of the respective category value is mentioned and replaced with missing values. It means the Mean value (Single Imputation) of the target and achievement value of MNC, Non-MNC & Start-Up, respectively, used to replace the missing values of MNC, Non- MNC & Start-Up series.

The reason behind this was the same questions were mandatorily asked differently on 1-5 scale. All other relevant questions were mandatory (other than these two questions); hence, in the data response set, there was no missing data considered for the final data analysis.

Table 2: Case Processing Summary

	D4_company_ Type	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Q17N_sales_ta rget	MNC	119	79.9%	30	20.1%	149	100.0%
	Non-MNC	53	79.1%	14	20.9%	67	100.0%
	Start- Up	70	74.5%	24	25.5%	94	100.0%
Q18N_sales_ac hievement	MNC	119	79.9%	30	20.1%	149	100.0%
	Non-MNC	53	79.1%	14	20.9%	67	100.0%
	Start- Up	70	74.5%	24	25.5%	94	100.0%

During data collection, it was found that salespeople avoided giving the actual sales targets and achievements in monetary value. Sales Target & Sales achievement, actual values are MNAR with no pattern detected, Donders et. al. (2006) & Schafer et. al (2002). Keeping this in mind two closed-ended questions were included to capture the responses in the questionnaire (Carifio, J. & Perla, R. (2007) & Glass, Peckham, and Sanders (1972)). Hence, researchers dropped these two questions' responses from the final analysis.

Multivariate outliers analysis

- The univariate or bivariate analysis is not useful as the study has 33 individual variables; hence multivariate analysis would be the justified method to understand the outliers present in the data.
- The researcher followed Mahalanob is Distance Test(threshold value p<= .0010) for Multivariate analysis for outliers' determination. Three (p>0.0010) outliers were identified and removed from the data analysis.

To conduct Mahalanobis Distance Test:

- We can do this test in SPSS through Regression analysis
- In this case, actual DV is not required, we will assume that for the calculation purpose only
- This DV we name as "Random ID", if we do not have any Random ID in the data set, we should create one.
- Go to Transform > compute variable > Target Variable (write DV) > function group > All > function & special variables> $casenum> double click > Ok

Now, go to variable view > Move that "Random ID" to the top row.

Interpretation: we need to know this value's probability to understand how far the variable should lie. A larger MAH value means more distance, i.e., extreme outliers.

SPSS Method to calculate pMAH_1 (probability value of MAH_1)

- Now, we need to create a new variable.

- Go to Transform > compute variable > Name Target Variable= pMAH_1 > select CDF and non-central CDF in Function group (CDF stands for Cumulative Data Function) > Select CDF Chi-Square at below box > Click Variable name (MAH_1) and df =n > Make inverse

deducting 1 from the formula i.e., 1-CDF.CHISQ(MAH_1,33) (* Note: 33 is the total number of variables in the study)> Ok

- Double-click the new variable in the Variable view > Increase the decimal to 4 > Return to the data set by double-clicking the variable name (row)

Fig 1: Mahalanobis Distance Test in SPSS
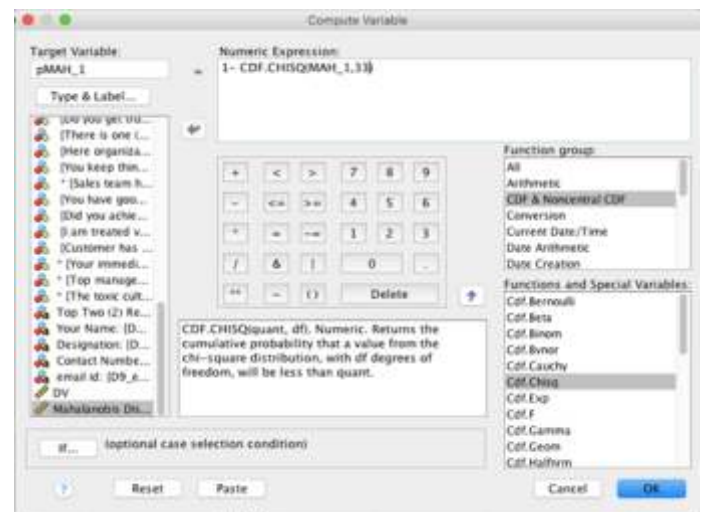
Interpretation:

If the Cut-Off probability <0.001, then that is a Multivariate Outlier, and that Item/Case/Record should be deleted/removed from the data set/Analysis (Note: This is the item removal test and not to remove Variable/Indicator.)

Multicollinearity

VIF value <10, the Tolerance value is > 0.1, and No correlation value >0.90 among any close two variables confirms the Multicollinearity test.

Multivariate normality analysis

Mayers (2013, p. 53) recommended a cut-off of 3.29 (samples >100) for the values of skewness and kurtosis to understand the normalcy of the data.

Skewness and Kurtosis have values of 3.29. Consequently, permissible values take into account normalcy. According to Peter Samuel, the correct values for Skewness and Kurtosis' double standard errors are 0.278 and 0.554, respectively. We discovered that only a few variables do not adhere to this criterion in the descriptive table. Slightly Skewed as a result. It is wise to keep in mind that Factor analysis can work with even somewhat biased data.

Table 3: Descriptive Statistics

	N	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
Q1_Lead_Generation	307	3.65	.068	1.199	-.722	.139	-.420	.277
Q2_work_Engagement	307	3.68	.057	1.005	-.854	.139	.370	.277
Q3_Product_Knowledge	307	4.05	.054	.942	-1.084	.139	.966	.277
Q4_unproductive_meetings	307	3.71	.057	1.006	-.588	.139	-.267	.277
Q5_product_price	307	3.48	.061	1.073	-.551	.139	-.453	.277
Q6_product_quality	307	3.93	.052	.910	-.978	.139	.937	.277
Q7_market_competition	307	3.12	.063	1.109	-.110	.139	-.762	.277
Q8_product_acceptance	307	2.54	.062	1.085	.428	.139	-.652	.277
Q9_Presales_support	307	3.64	.058	1.020	-.584	.139	-.405	.277
Q10_sales_target	307	3.27	.062	1.082	-.236	.139	-.961	.277
Q11_legal_support	307	3.36	.061	1.070	-.569	.139	-.344	.277
Q12_cust_satisfaction	307	2.24	.058	1.016	.649	.139	-.223	.277
Q13_cust_feedback	307	2.30	.062	1.091	.698	.139	.000	.277
Q14_Complain_handling	307	3.80	.061	1.077	-.956	.139	.523	.277
Q15_Incentive_Achievement	307	3.25	.077	1.341	-.440	.139	-1.014	.277
Q16_Branding	307	4.16	.051	.891	-1.071	.139	.965	.277
Q19_Incentive_structure	307	3.30	.058	1.023	-.602	.139	.005	.277
Q20_Job_satisfaction	307	3.63	.058	1.015	-.533	.139	.024	.277
Q21_Reasonable_target	307	3.26	.062	1.092	-.525	.139	-.503	.277
Q22_functional_alignment	307	3.36	.058	1.023	-.202	.139	-.726	.277
Q23_Team_accountability	307	3.48	.059	1.033	-.704	.139	-.153	.277
Q24_Team_collocation	307	2.92	.055	.960	-.053	.139	-.754	.277
Q25_Road_blocker	307	3.12	.068	1.195	-.114	.139	-.936	.277
Q26_organizational_politics	307	2.88	.069	1.208	.032	.139	-.982	.277
Q27_job_security	307	2.89	.066	1.162	-.066	.139	-.812	.277
Q28_contribution_recognition	307	2.57	.068	1.190	.377	.139	-.783	.277
Q29_relationship_with_boss	307	3.82	.061	1.063	-.994	.139	.692	.277
Q30_sales_achievement	307	3.55	.062	1.082	-.395	.139	-.683	.277
Q31_company_culture	307	2.21	.061	1.075	.738	.139	-.084	.277
Q32_company_image	307	2.04	.058	1.020	.894	.139	.177	.277
Q33_micro_management_from boss	307	2.54	.075	1.311	.299	.139	-1.158	.277
Q34_Micro_management_from top_level	307	2.68	.071	1.246	.151	.139	-1.141	.277
Q35_toxic_environment	307	2.63	.069	1.201	.041	.139	-1.070	.277
Valid N (listwise)	307							

FACTOR ROTATION

"Factor Rotation": what is it, and why is it done?

It is used to cluster the variables into a smaller number of factors. The main aim of factor rotation is to cluster or group many variables to form a few meaningful factors. Variables depending on their correlation come together and form a factor. The researcher has to make assumptions if the factors he is looking at are correlated or uncorrelated depending on the theory or observation of the correlation matrix. So, if few factors emerge in a factor analysis, they can be presumed either uncorrelated or correlated. The arrangement of factors gives rise to axes which present the factor spatially.

There are 35 questions, 33 variables, and 15 determinants/variables of sales performance factors in our data set, and we want to cluster them into a few meaningful factors. This is done as follows-

- We will find the correlations of these variables with 0.3 – 0.75 and not correlated to others, group them into a single factor, and assign an axis to that factor.

- Similarly, another group of variables that do not go with the first factor forms the second one.

- Now, after Factor Analysis, we can see that these 2 factors (maybe more than 2 also) are either correlated or uncorrelated to each other. If they are uncorrelated after FA, then we expect an orthogonal rotation arrangement in between these factors. If correlated, then, actually, it is expected to have an Oblique rotation arrangement between the factors.

Figure 2: Factor loading plot & factor rotation
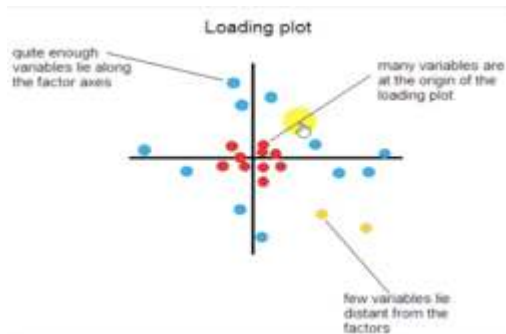
'Rotation' is the spatial arrangement of factors after Factor Analysis.

Also, to form a meaningful factor, we need a minimum of 3 variables.

- Variables at the origin are very close to each other, NOT forming any group and also NOT giving any meaningful information.

- In 4th. Quadrant 2 variables lie very far from each other. Hence, we should eliminate them from Factor Analysis.

- The arrangement is based on the FACTOR LOADING VALUE (-ve to positive, left to the right side of the X axis).

- Hence, we may get the factors which are ORTHOGONAL. It means the axis between 2 factors are maximum 90 Degree (that is the maximum possible separation). But for fitting factors we might rotate the axis. It is done to fit the data better. Meaning now all the variables are closure to the axis and each other to form a meaningful factor

Figure 3: Orthogonal and Oblique rotation

Orthogonal Rotation   Oblique Rotation
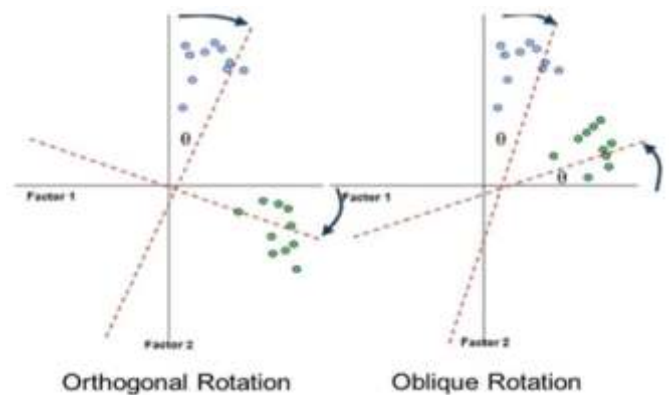
- If we go for ORTHOGONAL rotation then most of the data points are falling away from the axis. Now, if we rotate the axis in such a way that most of the variables are coming close to the axis. Hence, this is a clear case of OBLIQUE rotation.

- Hence, rotation is done to best fit the variables with the variable Factor Loading (F.L).

Hence, as per our data set, below is mentioned the Component matrix before rotation and after rotation..

Table 4: Unrotated component matrix

Unrotated Component Matrix				
	Component			
	1	2	3	4
Q20_Job_satisfaction	0.789			
Q29_relationship_with_boss	0.585			
Q21_Reasonable_target	0.65			
Q23_Team_accountability				
Q1_Lead_Generation	0.592			-0.573
Q2_work_Engagement	0.656			
Q5_product_price			0.521	
Q14_Complain_handling	0.603			
Q30_sales_achievement	0.585			
Q4_unproductive_meetings		0.577		
Q15_Incentive_Achievement	0.547			
Q16_Branding			0.602	
Q19_Incentive_structure	0.774			
Q3_Product_Knowledge		0.649		
Q6_product_quality				
Extraction Method: Principal Component Analysis.				
a 4 components extracted.				

Table 5: Rotated component matrix

Rotated Component Matrix				
	Component			
	1	2	3	4
Q20_Job_satisfaction	0.733			
Q29_relationship_with_boss	0.694			
Q21_Reasonable_target	0.63			
Q23_Team_accountability	0.694			
Q1_Lead_Generation		0.755		
Q2_work_Engagement		0.68		
Q5_product_price		0.574		
Q14_Complain_handling			0.718	
Q30_sales_achievement		0.661		
Q4_unproductive_meetings				0.738
Q15_Incentive_Achievement			0.615	
Q16_Branding				0.715
Q19_Incentive_structure			0.58	
Q3_Product_Knowledge				0.639
Q6_product_quality			0.69	
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization				
a Rotation converged in 9 iterations.				

STEPS TO FOLLOW IN SCALE CONSTRUCTION:

The steps that the Researchers followed are adopted from Slavec, A., & Drnovsek, M. (2012).

1) **Dimensionality assessment:**

a) Using the Principal component analysis method, after the final exploratory factor analysis, 04 factors emerged with a % of variance value > 5%, Eigenvalue> 1.0.

b) The correlation matrix determinant is 0.006 (+ve), KMO (0.787), all the anti-image values> 0.5 (min =0.49 and Max=0.88), Bartlett's test of Sphericity (1544.093) is significant (.001), Eigenvalue>1.0, and all the commonalities>0.5 (min=0.49 Max= 0.730).

c) There are no cross-factor loadings, and Cronbach's alpha values for all the factors are in an acceptable range. Hence, reliable.

d) The construct together contributes a sales performance variance of 59.856%.

Table 6: Final Factor Analysis Table

	Adaptiveness (1)	Selling- Efficacy (2)	Support (3)	Forces (4)
Job Satisfaction	**.733**			
Relationship with boss	**.694**			
Team Accountability	**.694**			
Reasonable Target	**.630**			
Lead Generation		**.755**		
Work Engagement		**.680**		

	Adaptiveness (1)	Selling- Efficacy (2)	Support (3)	Forces (4)
Sales Achievement		.661		
Product price		.574		
Complain handling			.718	
Product quality			.690	
Incentive Achievement			.615	
Incentive structure			.580	
Unproductive meetings				.738
Branding				.715
Product Knowledge				.639
% Variance Explained	31.525	10.360	9.891	8.081
Eigen Value	4.729	1.554	1.484	1.212
Cronbach's Alpha	0.75	0.70	0.73	0.55
KMO= 0.787, Bartlett's ^{2} = 1544.093, p <0.001, Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				

Figure 4: Final Factors

2) SCALE RELIABILITY TEST

For Factor Analysis, referring to Appendix-1 and Appendix 2, we need to do the Reliability test first so that you can consider only the reliable items for Factor Analysis.

• The scale is reliable (if) Cronbach's Alpha>.70

• Its noted that the researchers needed to find a justification for using external validity checks (like the Test-Retest method, Half-split method etc.) due to the inappropriateness of these tools for the study and the data collection method.

Steps to do Reliability analysis in SPSS:

Analyze/ scale/ reliability analysis/ select all the variables/ model: Alpha (Cronbach alpha)/Ok/ statistics/item/scale/scale if item deleted (it will show the scale after deletion of items the Cronbach alpha value if it increases (after deletion of items) is good.) / continue/ok

- This applies to understanding the reliability of both continuous and ordinal scales. In this case, our scale is a continuous scale.

The researcher deleted all the -ve 'corrected-item-total-correlation' values of the variables and found the Industry performance subscale consisted (α>.70).

3) FACTORS VALIDITY CHECK

1. "Factor structure Validity" (from the EFA Table) refers to the relationships between the variables examined by the EFA. Variables from the pattern matrix organise into factors; more specifically, they "load" onto factors (Table 4). (1994; Nunnally & Bernstein).

2. A very clean factor structure with highly connected 'Convergent validity' variables within each factor. Additionally, it can be shown that the sample size (307) is significantly larger than the necessary sample size (100) for a 0.55-factor loading. (1980 Schwab).

Table 4: Unrotated component matrix

Factors	1	2	3	4
1	.613	.548	.507	.258
2	.151	.016	-.599	.716
3	-.706	.267	.400	.444
4	.173	-.702	.473	.344
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				

3."Discriminant validity": No significant cross-loadings between factors (difference > 0.2; primary loading > 0.57 is greater than secondary loading) and component transform matrix (below table) The shared variance was only 49% and the correlations between the factors did not go far beyond 0.7, making the confirmatory factor analysis (CFA) in the future feasible. (2003) (Netemeyer et al.)

4. "Face Validity" was endorsed as a term for variables that make sense and are similarly loaded on the same factor. Each of the four elements' "Reliability Test" results in acceptable Cronbach a scores (0.75, 0.70, 0.73, 0.55 respectively). Y. Truong, R. McColl (2011)

Hence, the model is completely reliable and valid.

Final CFA Model (prepared in Ωnyx)Validity Check:

Generally, the result interpretation is different from Onyx software for AMOS, or Smart-PLS software.Baggozzi recommends the following standards for assessing the good fitness of SEM models:

Chi-squaredp-value ≥ 0.95, CFI≥ 0.95, and SRMR≤.08, RMSEA ≤.10 "good" , and RMSEA ≤ .05 "very good" (Schumacker& Lomax, 2010).

"Overall model fit metrics – is a good fit!", Importantly, we need to keep in mind that the researchers usedfreeOnyx software for the model-building exercise.A typical set of model-fitting statistics is shown to be opposite to the morality model obtained from the free Onyx software, Robin Beaumont (2018).It means the acceptable reference range is :

Chi-squared p- value ≤ 0.95, CFI ≤0.95, and SRMR ≥ .08, RMSEA ≥ .10 "good" , and RMSEA ≥.05 "very good", Robin Beaumont (2018).

Refereeing the table in Annexure -2,the overall model indicates a well-fitting model with CFI =0.0 (good fit CFI<0.95), SRMR = 0.195, which is > .08, and RMSEA=0.29 (RMSEA>.10 which is a good fit).

Table 8: Final Determinants and respective accountable functions in the company

Final Determinants	Responsible Cross Functions
Job Satisfaction	HR Team
Relationship with boss	People & Culture Team
(Cross Functional) Team's Accountability	Operation Team
Reasonable Target Setting	Sales Operation OR, Marketing Team
Lead Generation	Marketing Team
Work Engagement	People & Culture Team
Sales Achievement	Sales Operation Team (It is the dependent variable. This depends on the target setting value by 'Sales Operation team')
Product price	Marketing Team
Complain handling	Customer Support Team
Product quality	Quality Team
Incentive Achievement (To qualify for incentive)	Sales Operation Team (This depends on the reasonable Target Setting; else to qualify for incentive scenario may differ.)
Incentive structure	Sales Operation Team
Unproductive meetings	People & Culture Team
Branding	Marketing Team
Product Knowledge	Training and Development team/ product team

Computation of Industry performance measurement Index:

To calculate the 'Industry Performance Score' (SPS) expressed as a score (computing a new variable, Unitless) for each set of formative items (variables).

This score could be a sum, a constant value $(\beta 0, intercept)$, , a total error term (è) and multiplication value of each variable's average value (Xi) with factor loading value $(\beta i$, weighted scoring).

Industry Performance Index = $\beta_0 + \sum_{i=1}^{15} \beta_i . X_i + \dot{e}$;

= Total Constant Value (intercept) + (Factor loading value * Average of each (15) individual variables) + Total Error term (Standardized value)

= 48.331 + 37.8944022 + 0.59

= 85.9438944

Table9: Individual value and total calculation

Beta (Factor loading value)	Xi	Beta * Xi
0.733	3.63192	2.66219736
0.694	3.81759	2.64940746
0.694	3.47883	2.41430802
0.63	3.25733	2.0521179
0.755	3.65147	2.75685985
0.68	3.67752	2.5007136
0.661	3.54723	2.34471903
0.574	3.47883	1.99684842
0.718	3.8013	2.7293334
0.69	3.92508	2.7083052
0.615	3.25407	2.00125305
0.58	3.29642	1.9119236
0.738	3.70684	2.73564792
0.715	4.15961	2.97412115
0.639	4.0456	2.5851384
	Total	37.0228944
	Constant	48.331
	error	0.59
	score	85.9438944

The implication of this research:

The final sales performance score is calculated per the above results taking as reference 85.9438944.if we consider this Value as the standard Value, then the score measured as per this scale below this Value will be unexpected and reverse, meaning that if you calculate the score as per this scale, considering the same set of questionnaires used for scale creation, it is good.

Fig 5: Final performance Formative Scale

Bad   85.9438944   Good
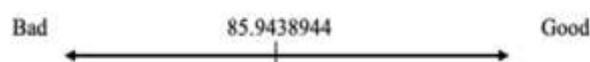
The created scale itself became a measurement tool for industry performance measurement.

Management will be well-equipped to understand the business situation with respect to the industry. This will help to identify exactly which department needs more focus or changes to be done in case improvement is required as per the above-created scale.

Limitations and future scope of research:

1.The Model and Scale built in this study for reliability check; only the internal reliability check (Cronbach's alpha method) is tested. The external reliability methods (like the Half-split method, Test-retest etc.) are not used.

2. This also needs toget in touchwith a salesperson's psychological and/or behavioural aspects like motivation, interest level, (dis)liking etc.

3. This research does not answer the sales performance effects due to pandemics (like corona), acts of gods, terrorism, Recession etc.

Conclusion, Applicability of this research outcome:

Now this study gives us the idea of 15 cross-functional variables of IT industry and their comparative values with respect to the other companies of the same industry. If, as an organization, one can make a robust mechanism so that these variables or factors and their responsible departments mentioned above are performing well and with no or negligible errors, then ideally, there will not be any negative effect on salespersons to make sales. That implies that sales will happen smoothly without or with minimal effort from the sales team. It implies that if these departments/ variables are controlled, companies can increase sales through technological interaction (or online sales), which needs no or minimal sales team to generate revenue.

References

- Annie Liu, Mark P Leach & Richa Chugh. (2015). A Sales Process Framework to retain B2B customers. Journal of Business & Industrial Marketing. DOI: 10.1108/JBIM-02-2014-0026

- Bagozzi, Richard P. (1980), Causal Models in Marketing, New York: John Wiley (1984), "A Prospectus for Theory Construction in Marketing,"

Journal of Marketing, 48, (Winter), 11-29

- Chang, W. J. (2014). Market orientation and business-to-business (B2B): a Meta-analysis perspective. International Journal of Services Technology and Management, 20, 123–148. 10.1504/IJSTM.2014.063569

- Churchill, G. A., Jr., Ford, N. M., Steven, W. H., & Walker, O. C., Jr. (1985). The determinants of salesperson performance: a meta- analysis. Journal of Marketing Research, 22, 103–118

- Connelly, L. M. (2008). Pilot studies. Medsurg Nursing, 17(6), 411-2.

- Collins LM, Schafer JL, Kam C-M. A comparison of inclusive and restrictive strategies in modern missing data procedures. Psychol Meth. 2001;6(4):330–351. doi: 10.1037/1082-989X.6.4.330

- Dawn R. Deeter-Schmelz (2020) Personal selling and sales management abstracts, Journal of Personal Selling & Sales Management, 40:2, 149-160, DOI: 10.1080/08853134.2020.1745645

- King, G., J. Honaker, A. Joseph, and K. Scheve. 2001. "Analyzing Incomplete Political Science Data: An Alternative Algorithm for Multiple Imputation." American Political Science Review 95 (1): 49–69.

- Krishnan B., Netemeyer R. and Boles J.(2002) "Self–Efficacy, Competitiveness, and Effort as Antecedents of Salesperson Performance" The Journal of Personal Selling and Sales Management, Vol. 22, No. 4 , pp. 285 -295,Published by: M.E. Sharpe, Inc.

- Leon Mann Danny Samson Douglas Dow University of Melbourne "A Field Experiment on the Effects of Benchmarking and Goal Setting on Company Sales Performance ", Journal of Management 1998, Vol. 24, No. I, 73-96

- Michael J. Spendolini, (1993) "How to Build a Benchmarking Team", Journal of Business Strategy, Vol. 14 Issue: 2, pp.53-57.

- Mohan V. Tatikonda and Mitzi M, Montoya, "Integrating Operations and Marketing perspectives of Product Innovation: The influence of organisational process factors and capabilities on development performance", Management Science, 2001 INFORMS vol. 47, No. 1, January 2001 pp. 151- 172.

- Nema Geeta & Gaurav Sethia, "A Comparative Study of The Factors Affecting Sales Force Performance In Urban And Rural Areas" – Abhinav Publication-Volume 4, Issue 10 (October, 2015), Online ISSN-2320-0073.

- Netemeyer, R. g., Bearden, W. O., & Sharma, S. (2003). Scaling procedures: Issues and applications. Thousand Oaks, CA: Sage Publications.

- Quareshi Khanam Tahira; International Journal of Advance Research, Ideas and Innovations in Technology. ISSN: 2454-132X, (Volume3, Issue1)

- R. Grewal, G.L. Lilien, S. Bharadwaj, P. Jindal, U. Kayande, R.F. Lusch, ..., R. SpekmanBusiness-to-business buying: Challenges and opportunities Customer Needs and Solutions, 2 (3) (2015), pp. 193-208.

- Rubin DB. Inference and missing data. Biometrika. 1976;63(3):581–592. doi: 10.1093/biomet/63.3.581.

- Rentz, J. O., Shepherd, D. C., Tashchian, A., Dabholkar, P. A., & Ladd, R. T. (2002). A measure of selling skill: scale development and validation. Journal of Personal Selling & Sales Management, 22(1), 13–21

- S. Annapoorna and s.T.Bagalkoti, Development of IT sector in India: Analysis of Reasons and Challenges; Journal of Economics and Sustainable Development, ISSN 2222-1700(Paper) ISSN 2222-2855, 2009.

- Saha, S. and Kar, S. (2021a), "Computation of sales performance score and key cross-functional factors: a performance dynamics in IT/ITES", American Journal of Business, Vol. 36 No. 01, pp. 3-19; https://doi.org/10.1108/AJB-08-2020-0138

- Saha, S. and Kar, S. (2021b), "Salespersons performance predictor model: An exploratory factor analysis", The Journal of Indian Management and Strategy, Vol. 26 No. 01, pp. 25-33; DOI: 10.5958/0973-9343.2021.00003.X

- Sarah Holland, Kevin Gaston and Jorge Gomes,

"Critical success factors for cross-functional teamwork in new product development", International Journal of Management Reviews Volume 2 Issue 3 pp. 231–259

- Szymanski, D. M., &Henard, D. H. (2001). Customer satisfaction: a meta-analysis of the empirical evidence. Journal of the Academy of Marketing Science, 29(1), 16–35

- Tabachnick, B.G, &Fidell, L.S (2013), Using Multivariate Statistics (6th. Ed), Boston, MA, Allyn and Bacon.

- Thomas W Leigh; Greg W Marshall, "Research priorities in sales strategy and performance ", The Journal of Personal Selling & Sales Management; Spring 2001; 21, 2; Abi/Inform Global pg. 83 – 93

- Willem Verbeke & Bart Dietz & Ernst Verwaal, "Drivers of sales performance: a contemporary meta-analysis. Have salespeople become knowledge brokers?" J. of the Acad. Mark. Sci. (2011) 39:407–428 DOI 10.1007/s11747-010-0211-8.

- Walker, O. C., Jr., Churchill, G. A., Jr., & Ford, N. M. (1977). Motivation and performance in industrial selling: present knowledge and needed research. Journal of Marketing Research, 14, 156–168

- Yu, Ting, de Ruyter, Ko, Patterson, Paul G., Chen, Ching-Fu (2018), "The Formation of a Cross-Selling Initiative Climate and Its Interplay with Service Climate," European Journal of Marketing, 52 (7/8), 1457–1484.

Apendix-1
Final FORMATIVE Model after Confirmatory Factor Analysis (CFA):
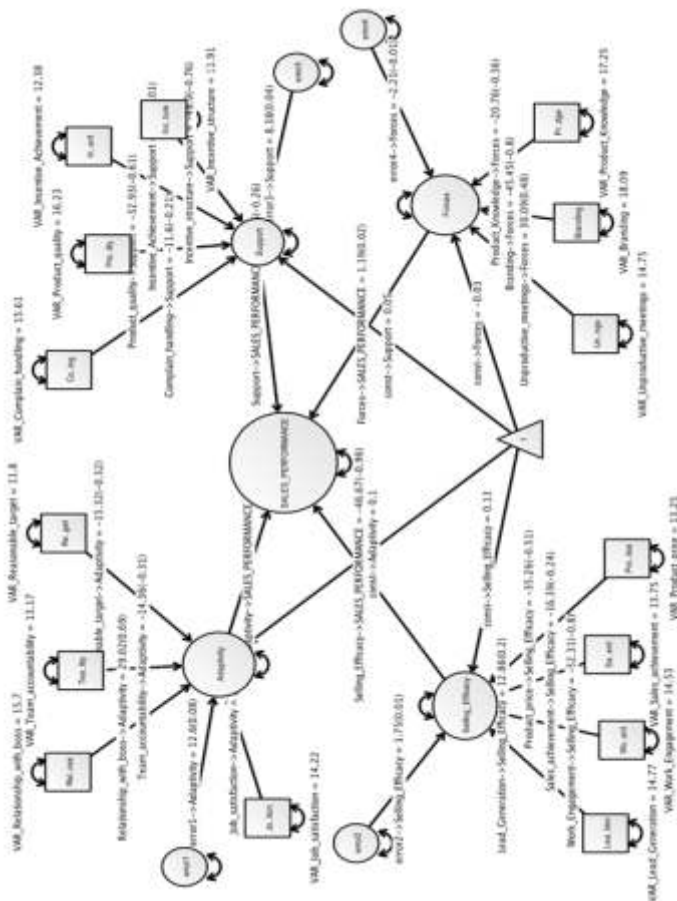
Appendix-2
Confirmatory Factor Analysis model