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Customer Technical Competence as a Moderator on the Impact of Sales Strategy on Successful Selling of PLM Solutions in the Automotive Tier 1 Supplier Market

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Abstract:
As a result of constant technological and economic upheavals, the automotive sector, particularly in Tier-1 Automotive Suppliers, is undergoing substantial changes, and as a result, competition has intensified dramatically. The competitiveness has been heightened by the participation of a significant number of new and old participants, making it critical for each firm to deliver or perish. Tier-2 players are always on the hunt for efficient tools that will allow them to automate, oversee, and improve their entire manufacturing process in such situations. The Product Life-cycle Management (PLM) solution is one such tool. Selling a PLM solution to Automotive Suppliers is a complex process that requires the creation and implementation of a solid sales management framework that takes both vendor and customer variables into consideration. This study investigates selling strategies adopted by vendors and their impact on successful sales. The mediating role of technical competences of the customer is also investigated.
Methodology: *This research was carried out from Bengaluru across India region. The sample was collected through Questionnaire and Focussed discussions from information acquired by the investigator India from PLM software developers and suppliers, the channel partners & sales agents for PLM software, as well as Tier 1 Automotive Suppliers.A basic random convenience sampling strategy was followed that allows the researcher to offer all participants an equal chance. Furthermore, random sampling ensures a non-biased sample group. A set of 380 questionnaires were finally evaluated for the study and SPSS Software was used for statistical analysis.*
Results: *The demography of the participants was 89% male with the age group of 25-35 years with 54% post-graduates and they were aware of the Sales strategies and related sales experience. Reliability was tested by Cronbach alpha had values of more than 0.6 indicating high consistency and Goodness of model fit indices were fairly near threshold of 0.9. Structural Equation Model Analysis was built to ascertain relationship among variables along with structural model testing.*
Conclusions: *It was observed that sales strategies adopted by vendors were not significant in selling PLM solutions, and the competence of the customer mediates the relationship between strategies of PLM software selling and successful selling of the PLM software product.*
Keywords*: PLM Software Sales, Adoption of PLM in Tier 1 Automotive Supplier*

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I. Introduction

Sales management, the tactical handling of human, marketing and financial resources aimed at attaining a pre-determined sales objective, is among the key components needed to ensure that the given business venture is successful (Albers & Mantrala, 2008). If an effective sales management structure is not deployed, even the most effective product and selling method may struggle to generate revenues. Whilst sales management has historically been associated with the upkeep of sales records and the supervision of sales representatives, its scope has expanded significantly, and it now encompasses the manufacturing and sales operations (Dixon and Tanner, 2012). Because the ultimate goal of any firm is to maximize sales, it is critical to give priority to sales management (Adamson et al., 2012).

Creating the proper offering, fixing the correct rates, and providing the correct marketing strategies are all part of the sales managing process, which is central to the business of any enterprise (Avila and Inks, 2017).The product, manpower, and the processes are three key features of an ideal sales management policy, which essentially concern the offering of the business. At one level, it requires supervising and managing the

entire firm, and at another level, it entails closely monitoring the market and implementing necessary adjustments in the organization's operations (Eberechukwu et al., 2017).

The automobile industry, particularly in Tier-1 Automotive suppliers, is undergoing significant changes as a result of continuous technological and economical transformations, and consequently, the competition has increased tremendously (Kousa, 2017). The presence of a large number of new and old participants has heightened the competition, making it vital for every firm to deliver or fail. Tier-2 players are constantly on the lookout for effective solutions that can enable them to automate, oversee, and enhance their whole production process under such scenarios, and that is where Product Life-cycle Management (PLM) solutions come into play (Ferreira et al., 2017).

Given the significance of a PLM framework for a Tier-1 automotive supplier, it can be assumed that PLM providers are up against stiff competition, and that they must create and execute successful sales strategies to meet sales targets. Furthermore, for PLM solutions, there is an additional factor that must be considered, namely, the potential client's technical and organizational abilities (Bitzer et al., 2016; Nemcekova, 2008). As a result, selling a PLM system to automakers is a difficult task that necessitates the development and implementation of a sturdy sales management structure that takes into account both supplier and customer factors.

The following are the objectives of the paper:

1. To study the impact of sales strategies of the vendor on successful sales, and
2. To study the moderating effect of customer technical competence on sales strategy on successful selling.

II. Related Work

2.1 Sales strategy and successful selling

Much of marketing research has always seen sales as just a tactical function related to the implementation of marketing approaches. Recent research has observed that the contribution of sales in business enterprises is frequently much more pivotal than the marketing research indicates (Homburg et al., 2008; Haas et al., 2012), and there seems to be presently an apparent transition in business organizations' selling activities which are shifting from an operational emphasis towards a more tactical strategy (Geiger & Guenzi, 2009; Storbacka et al., 2009; Leigh & Marshall, 2001). Prominent B2B companies are moving from a products-based approach to a service-based one, wherein they stress on expensive offerings like sophisticated services, comprehensive solutions, composite solutions, etc. with a value-based orientation (Tuli et al., 2007; Vargo & Lusch, 2004). In this approach, selling is more focused on pushing strategic objectives toward both, clients and the company, rather than just implementing strategies (Storbacka et al., 2009). The degree to which a business operates a range of operations and practices involving the allotment of limited sales assets (i.e., personnel, selling activity, and funds) to handle customer engagements "on the basis of each client's worth" to the company has been termed as sales strategy (Panagopoulos & Avlonitis, 2010). The primary distinction between a company's marketing and sales strategy is that latter's decisions are concerned with how the company interacts with every customer inside a product category, while the former is concerned with creating and maintaining a lead at the market level (Spiro et al., 2008; Ingram et al., 2002).

2.2 Software solutions sector

The software solutions industry is divided into sectors with a variety of sales and marketing features. Embedded technology is typically produced in-house or as a specialized service for a specific company. IT companies that offer consulting services set up customized systems and install and modify enterprise software for their clients. Since the solution to be given does not already exist, trust is crucial in the professional service sector (Hoch et al., 2000). Customers are few, but transaction fees and earnings per customer are substantial (Tähtinen & Parvinen, 2003), necessitating customer relationship management (CRM) investment (Hoch et al., 2000). Rather, Internet generating enterprises with successful brand promotion and marketing partnerships offer standard and packaged software solutions at comparatively low rates (Hoch et al., 2000). The seller's client base is huge, and the users are far away (Tähtinen & Parvinen, 2003). Marketing costs account for a significant portion of the budget for many software product companies [20]. Relationship marketing, symposia, fairs, and other types of personal connection are suitable promotional tools for software service businesses, but software solution businesses rely more on promotion and direct selling, and they both use the Web as a marketing medium (Tähtinen & Parvinen, 2003). Sales avenues for software solution businesses include direct marketing, agents, and value-addition reselling. To co-create value, a network of IT service companies can also co-develop a service package for clients using the service-based approach. IT companies rely on wholesaling and reselling, as well as the Internet, to sell their products (Tähtinen & Parvinen, 2003). In global markets, IT service businesses that work closely with clients prefer to use market representatives, while those creating partly-standardized business solutions tend to set up their own selling affiliates, and firms selling mass-market

solutions to clients favor cooperative mode of entry where local organizations have extensive understanding of the targeted market (Ojala & Tyrväinen, 2006).

2.3 Customer technical competence and hesitancy

Despite these benefits, prior research show that users employ digital solutions sparingly (Stratopoulos, 2016; Lal & Bharadwaj, 2014). Several earlier studies provide detailed discussions of the problems associated with technology adoption (Kumar & Kasuhal, 2017; Holahan, et al. 2012). Lack of awareness, perceived risk, and user mindset toward technology are a few of these reasons; these research suggest that customers place little or no importance for digital solutions (Sinha & Singh, 2019). Consumer reluctance issues have been the subject of several research works (Bhattacharya & Srivastava, 2018; Kumar & Kasuhal, 2017; Mulik et al., 2018). Numerous researches have been proposed in the existing literature relating to technology acceptance to explore consumer adoption intention (Yang et. al., 2012; Lal & Bharadwaj, 2014). To assess variables such as simplicity of use, utility, risk perception, societal norms, mindsets, and confidence on newer technologies use and intent, most of these research employed Technology Acceptance Model (Dahlberg et al., 2015) and included Unified Theory of Acceptance and Use of Technology Model (Oliveria et al., 2016). As per Holahan et al. (2012), implementing technology improves suitability and effectiveness; their findings indicated that perceived utility and simplicity of use are equally significant in enhancing staff acceptance in an organizational atmosphere.

III. Hypothesis

Sales management strategies are always the key to success when sales performance needs to be enhanced (Storbacka et al., 2009). In addition to assisting the business in achieving its sales targets, the sales management strategy allows the company to develop well alongside its industry and can make an impact in the company's sustainability and profitability in a competitive market. (Rapp, 2009). How true is this in the PLM solutions space? The first hypothesis, in this context, is as follows:

H1: Sales strategies of the vendor impacts the successful sales significantly.

Communication methods have changed dramatically in recent years, and everything is now much simpler to transfer or upload (Fenton, 2016). Social media and apps are extensively utilized because they offer a variety of services that can make transactions smarter (Li et al., 2015). Customers nowadays are more technically competent and tech-savvy, and each one requires a bespoke experience to meet their needs (Venkateswari, 2018). But among Tier-1 automotive vendors, how does customer technical competence influence the impact of sales strategy on successful selling? The next hypothesis, hence, is as follows:

H2: Customer technical competence significantly moderates the impact of sales strategy on successful selling.

The conceptual model is presented in Figure 1.

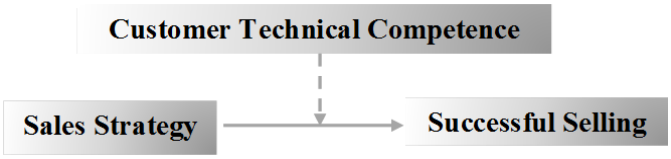

Figure 1 Conceptual framework of the study

IV. Methodology

This research was carried out from Bengaluru across India region. The sample was collected from information acquired by the investigator across India from PLM software developers and suppliers, the channel partners & sales agents for PLM software, as well as Tier 1 Automotive Suppliers. The general population in the research comprised manager-level workforce working in the sales divisions of PLM software vendors and their channel partners along with the manager-level staff in R&D, Manufacturing, IT and Purchase Divisions of Tier 1 Automotive Suppliers across India. A basic random convenience sampling strategy was followed that allows the researcher to offer all participants an equal chance. Furthermore, random sampling ensures a non-biased sample group, and, as a result, increases the acceptance of inferences. A set of 380 questionnaires were finally evaluated for the study.

4.1 Questionnaire design and measures

There were four sections in the questionnaire. The purpose of the first portion was to learn more about the demographics of the respondents. This part asked respondents about their age, gender, educational status, general experience, and previous job experience. The second, third and fourth sections dealt with sales strategies (SLS) (with sub-constructs Challenger Sales Approach, Provocative Sales Approach, and Transformational Sales Approach), Customer Technical Competence (CTC) (with sub-constructs Employee readiness, Staff competence, and Infrastructure), and Successful Sales (SCS), respectively. The responses of

these sections were graded on a five-point Likert scale, with 1 being 'strongly disagree' and 5 being 'strongly agree'.

The second section was created to evaluate vendors' sales strategies. This part featured statements evaluating the suppliers' tactics, highlighting their obstacles, and assessing the quality of their products. This section also includes statements to assess their service quality and product dependability. In the third section, several statements were used to gauge vendors' perspectives of customers' priorities while purchasing PLM systems. This section evaluates the growth of the sales, sales frequency and sales costs of vendors using different statements. In the fourth section, qualities of the respondents were collected and analyzed to know the effect of it on sales.

4.2 Statistical analysis

All data analysis was done with SPSS 20 software. Cronbach's Alpha was employed to establish research reliability, and Varimax rotation was utilised to do exploratory factor analysis to further assess the validity of the scales utilised in the questionnaire. Structural models and standardised path coefficients of models were studied using Structural Equation Modeling (SEM) to match alternative models centred on fit indices.

V. Results

5.1 Demographics

Of the 380 participants surveyed, 89% were male, majority (66%) of respondents were in the 25-35 years age group, more respondents were post-graduates (54%) than undergraduates (46%), most participants (76%) were directly related to sales as managers or as representatives, most respondents (62%) had an experience of under 10 years, and most (52%) had work experience of 6-10 years, which suggest that sales of products, relevant strategies and results were known to them.

5.2 Reliability

Cronbach alpha, whose value ranges 0-1, assesses the reliability of the items in a questionnaire. The value of 1 signifies that the measuring scale is consistent. A Cronbach alpha value of over 0.5 is generally regarded as reliable (Hinton et al., 2014). In this study, Cronbach alpha values were more than or near to 0.6 in all instances (Table 1), indicating that the items employed in the study had a high degree of internal consistency.

Table 1 Reliability of factors

Scale Items	Reliability Statistics	
	Cronbach Alpha	No. of Items
SLS		
Challenger	0.665	11
Provocative	0.755	5
Transformational	0.837	7
CTC		
Employee readiness	0.78	4
Staff competence	0.737	3
Infrastructure	0.68	3
SCS		
Revenue Growth (RG)	0.671	3
Sales Frequency (SF)	0.612	4
Cost of sales (COS)	0.74	3

5.3 Exploratory factor analysis

To determine the validity of the scales employed in the questionnaire, an exploratory factor analysis was conducted applying Varimax rotation. Validity refers to the degree to which the study constructs can sufficiently and efficiently assess research constructs, resulting in study outcomes that accurately reflect the research phenomenon. Factor loadings closer to 1 indicate higher validity, while those near 0 indicate lower validity. All factor loadings in the research were more than 0.5, indicating excellent validity. SLS, CTC, and SCS were tested using KMO and Bartlett's methods. The Kaiser-Meyer-Olkin sampling adequacy metric for all three was found to be more than 0.7. All Bartlett's test of sphericity scores were found to be significant at $p<0.05$, validating the sample's suitability for assessing factors and determining the questionnaire's validity (Cerny and Kaiser, 1977).

5.4 SEM analysis

By comparing various models based on fit indices, structural models and standardised path coefficients of models were studied. The study's major purpose was to look into the association between SCS, the main outcome variable, and SLS, the secondary variable. Because SCS is the key variable that determines the

outcome, it was classified as an endogenous variable, and a model was built around it, with SLS serving as the exogenous one. The model also looked at the role of CTC as a mediator. The model was built utilising sub constructs discovered by exploratory factor analysis (EFA) and confirmed using confirmatory factory analysis (CFA).

Structure Equation Model (SEM) was built to ascertain the relationship among SLS, CTC, and SCS, as shown in Figure 1. This model includes the additional effect of variables 'vendor offering' (VO) and 'salesperson profile'. The sub constructs of these variables were used for building the model.

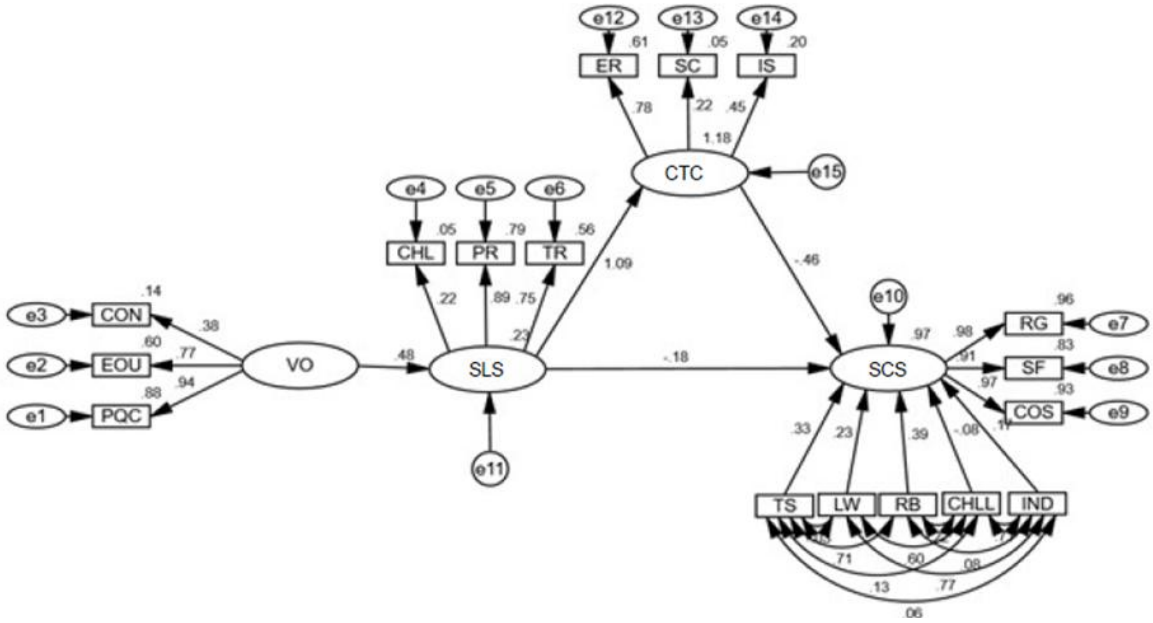

Figure 1 Structural equation model for the study

5.4.1 Goodness of model fit

Other values like CFI, IFI, NFI, RFI, and TLI were found to be fairly near to the required threshold of 0.9, and Chi-square score and RMSEA were within expected values (Table 2). As a result, the suggested model has the potential to predictably measure an overall association among all proposed components, namely SLS, CTC, and SCS. The model also has a strong explanatory power when it comes to explaining the interrelations between endogenous, exogenous, and latent components, and also their sub-constructs.

Table 2 Goodness of fit indices

Model Fit Indices	Observed Value
Chi-square (CMIN/DF)	4.195
Normed Fit Index (NFI)	0.836
Relative Fit Index (RFI)	0.812
Incremental Fit Index (IFI)	0.829
Tucker Lewis Index (TLI)	0.860
Comparative Fit Index (CFI)	0.877
Root Mean Square Error of Approximation (RMSEA)	0.079

5.4.2 Model Testing

The link between exogenous and endogenous constructs was assessed using structural model testing, and the mediating effect of CTC in establishing the association between exogenous and endogenous factors was investigated using mediation analysis.

Table 3 shows the standardized structural path estimates obtained from the model. It may be deduced that the Composite Reliability values in most cases surpassed 1.96 and were statistically significant ($p<0.01$). The model thus establishes the significance of all paths.

Table 3 Standardized regression weights

Independent	Dependent	Estimate	S.E.	C.R.	P
Sales strategy	Customer consideration	1.087	.561	5.351	***
	Successful sales	-.181	1.575	-1.067	.286
	Challenger	.216			
	Provocative	.890	.498	5.398	***

Independent	Dependent	Estimate	S.E.	C.R.	P
	Transformational	.746	.492	5.329	***
Successful sales	Revenue Growth	.980	.018	64.499	***
	Sales Frequency	.911			
	Cost of sales	.965	.015	58.332	***
Customer consideration	Successful sales	-.465	.518	-3.009	.003
	Employee readiness	.779			
	Staff competence	.217	.054	5.389	***
Challenging	Successful sales	-.075	.048	-4.258	***
Troubleshooter	Successful sales	.329			

Sales strategies had no significant influence on successful product sales (B=0.181, p>0.05), according to the findings. This suggests that different sales methods such as challenger, provocative, and transformative sales were insufficient to generate effective sales. The influence of SLS on SCS was assessed separately using regression and found to be significant; however, when evaluated with other factors, the influence was shown to be non-significant.

Thus, hypotheses H1 "Sales strategies of the vendor impact the successful sales significantly" is rejected.

The impact of CTC as a mediating factor on the association between SLS and SCS of PLM solutions was investigated. The standardized direct, indirect, and total effects of SLS on SCS are presented in Table 4. There are also distinctive indirect effects through different pathways, as well as total impacts through the mediating variable of CTC.

SLS and CTC had a significant association (B=1.087, p<0.01), as did CTC and successful sales (B=-0.465, p<0.05). This is the indirect path from SLS to SCS. This suggests that CTC is a mediator in the association between SLS and SCS. However, SLS did not exert direct significant influence on SCS (B=0.181, p>0.05) (Tables 4). Thus, it can be stated that CTC mediates the relationship between SLS and SCS of a product. Put differently, factors like employee readiness to accept the solution and staff's competencies should be considered by vendors during the development of SLS to produce SCS.

Thus, hypothesis H2: "Customer Technical Competence (CTCs) significantly mediate the relationship between sales strategy and successful selling" is accepted.

Table 4 Standardized direct effects

Mediator	Direct effects		Indirect effects	Total effects		95% CI (LB-UB)	
	SLS	CTC	SLS	SLS	CTC	SLS	CTC
Customer consideration	1.087**	.000	.000	1.087	.000	1.032- 1.156	-
Successful sales	-.181	-.465**	-.505	-.687	-.465	-0.703- -0.669	-1.114- -.270

VI. Discussion

Software solutions have a high level of intricacy and intangibility which makes supporting and servicing aspects crucial for the value creating process for the client (Ruokonen and Saarenketo, 2009). As per Helander & Ulkuniemi (2006), buying software is a high-involving and high-risk purchasing choice for corporate clients, requiring engagement from both the client and the vendor. According to them, software firms must hence develop relational skills that include comprehensive technology and customer understanding. A research performed by Berry (1996) indicated that technology-driven firms were the least successful in respect of corporate output, underlining the necessity for firms to shift from a technological stance to a marketing-led organisation adopting a strategic sales approach and long-term planning. This highlights the importance of the study.

It is seen from this study that employee readiness to accept the solution and staff's competencies should be considered by vendors during the development of SLS to produce SCS. While going for new PLM solutions, businesses need to take into account what their employees feel about the transitions, else the project will not be successful, since employees need to cooperate in full for successful implementation. Purchasers buying software products such as a PLM solution need to have certain requirements. First, there must be a change managing system in place which will help the transition to the new solution. Second, an adequate infrastructure that is compatible with the solution's requirements is needed, else the management will have to invest in new infrastructure, in addition to investing in the software solution. An infrastructure audit is recommended before investing in the software solution. Third, the staff need to have technical competence to run the solution. If competence exists, it will be simpler for the vendor to conduct awareness services to orient them about the new software, and certain key personnel can be trained by the vendor to use the software.

From the client's perspective, the solution needs to be of high quality and availability, cost effective, simple and convenient to use, and customizable. There must be vendor support while adopting solution and constant monitoring till the client gains proficiency. Clients also expect advice on best practices on usage of the product, along with prompt after-sales consultancy and support.

VII. Conclusion

This research has empirically evaluated the determinants of successful selling of PLM solutions in the Tier-1 automotive supplier sector. It was seen that sales strategies adopted by vendors were not significant in selling PLM solutions, indicating that PLM software solutions are not like conventional products. The competence of the customer mediates the relationship between strategies of software selling and successful selling of the product, i.e., factors such as employee readiness to accept the solution and staff's competencies should be considered by vendors during the development of selling strategies for successful selling. The findings of this research can be used by managers for developing strategies. Managers need to constantly monitor the customers before and after selling the solution. Customers, too need to develop required competences and infrastructure to use the solution.

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