

# Adoption of Sales Force Automation Systems in Supply Chain Management: A Technology Acceptance Model Perspective

Lee, Cheng-Chung<sup>1\*</sup>

Phitchaya Wannaphongcharoen<sup>2</sup>

<sup>1\*</sup>Distinguished Associate Professor New Energy Vehicles and Modern Aviation College

Guangzhou Institute of Science and Technology

638 Xingtai Road 3, Taihe Township, Baiyun District Guangzhou 510540, China

<sup>2</sup>Faculty of Management Science Nakhonratchasima Rajabhat University, Thailand

340 Suranarai Road, Nai Mueang Subdistrict, Mueang Nakhon Ratchasima District, Nakhon Ratchasima Province

\*Corresponding author, Email: a0933458580@gmail.com

Received: Sep 3, 2025 / Revised: Dec 18,2025 / Accepted: Dec 18,2025

## Abstract

The purposes of this study were to 1) apply the Technology Acceptance Model (TAM) for sales force in the supply chain system by integrating external variables, namely Self-Efficacy and Organizational Support, 2) examine their effects on Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) and, 3) investigate users' attitudes and intention to use. The instruments were questionnaires. The sample was 288 employees working in the automotive supply chain industry. The statistical analysis was Structural Equation Modeling (SEM). The results showed that Self-Efficacy had a significant positive effect on PEOU, while Organizational Support positively influenced PU. Both PEOU and PU indirectly affected intention to use through users' attitudes. This study not only confirmed the suitability of TAM in the supply chain context but also provided practical implications that supported organizations in driving their digital transformation.

**Keywords:** Technology Acceptance Model, Supply Chain Management, Sales Force Automation, Self-Efficacy Organizational Support



Sales Force Automation (SFA) systems, aiming to enhance sales process efficiency, information transparency, and cross-departmental collaboration.

Nevertheless, practical experience has shown that if employees lack sufficient operational confidence or fail to perceive organizational support in terms of institutional mechanisms, resource allocation, and managerial encouragement, SFA systems may risk becoming symbolic tools rather than delivering their intended benefits, despite substantial financial and human investments. Consequently, this study focuses on identifying the key factors influencing employees' acceptance of SFA systems. The findings are expected to provide both theoretical contributions and managerial insights, offering valuable guidance for advancing digital transformation in the automotive supply chain context.

## Literature Review

### Technology Acceptance Model (TAM)

Proposed by Davis (1989), the Technology Acceptance Model (TAM) aims to explain how users' perceptions of perceived usefulness (PU) and perceived ease of use (PEOU) influence their attitudes and behavioral intentions toward technology adoption. Due to its parsimonious structure and high explanatory power, subsequent researchers have developed extended versions such as TAM2, TAM3, and the Unified Theory of Acceptance and Use of Technology (UTAUT), incorporating external variables such as social influence, facilitating conditions, and experience to better capture real-world applications (Venkatesh & Davis, 2000). In recent years, TAM has been widely applied in the fields of information systems and digital technology adoption, consistently demonstrating its effectiveness in explaining users' acceptance intentions and behaviors (Burton-Jones & Hubona, 2006). Within the supply chain management context, digital tools such as Sales Force Automation (SFA) systems have been extensively implemented. TAM thus provides a systematic theoretical framework to examine how employees, under the influence of organizational support and self-efficacy, form perceptions, attitudes, and adoption intentions toward new systems, ultimately shaping the success of digital transformation.

### Supply Chain Management (SCM)

The core of Supply Chain Management (SCM) lies in coordination, integration, and information flow, with the ultimate objective of enhancing overall operational efficiency and customer value through effective planning and execution (Chopra & Meindl, 2016). With the intensification of global market competition and increasingly diverse customer demands, digital technologies have become indispensable foundations of supply chain operations, particularly in ensuring information transparency, real-time decision-making, and cross-organizational collaboration. Recent studies emphasize that the introduction of digital tools not only improves internal efficiency but also strengthens upstream and downstream collaboration, thereby enhancing supply chain resilience and agility (Queiroz et al., 2019). Against this backdrop, the application of SFA systems holds significant importance. Beyond supporting sales units in managing customer information and tracking sales opportunities, SFA facilitates information sharing between manufacturers and distributors, shortens response times, and improves overall supply chain performance.

Accordingly, SCM contexts not only provide the foundation for SFA to demonstrate its value but also constitute the essential setting for examining employees' adoption intentions in this study.

#### Sales Force Automation (SFA)

Sales Force Automation (SFA) systems are designed to support the daily activities of sales personnel, encompassing functions such as customer relationship management, sales opportunity tracking, performance analysis, and knowledge management. Boujena, Johnston, and Merunka (2009) argue that SFA enhances customer information transparency and improves the quality of customer interactions, thereby promoting sales performance and customer satisfaction. However, Avlonitis and Panagopoulos (2005) found that when employees lack confidence in system usage or fail to perceive its actual value to their work, SFA may be reduced to a symbolic managerial tool, incapable of delivering its intended benefits. Consequently, SFA adoption is not merely a technological challenge but is also shaped by multiple dimensions, including human factors, institutional design, and organizational culture. Prior research highlights that the successful implementation of SFA requires organizational leadership to provide sufficient institutional support, training resources, and technical assistance to enhance employee acceptance and willingness to use the system. Otherwise, adoption initiatives risk failure due to resistance or underutilization. Hence, within the supply chain management context, the value of SFA lies not only in improving process efficiency but also in effectively integrating individual employee characteristics with organizational support.

#### Self-Efficacy

Originating from Bandura's (1997) social cognitive theory, self-efficacy refers to an individual's belief and confidence in their ability to successfully complete specific tasks. Self-efficacy not only influences the degree of effort and persistence an individual invests but also determines whether they display proactive behavior and problem-solving capabilities when confronted with challenges. Research indicates that employees with high self-efficacy are more motivated to learn and better equipped to overcome difficulties in system operation when adopting new technologies (Compeau & Higgins, 1995). Within the framework of TAM, self-efficacy has been widely validated as a critical determinant of PEOU, since individuals with higher self-efficacy generally perceive new systems as easier to use, thereby enhancing their attitudes and behavioral intentions toward adoption. Moreover, self-efficacy may indirectly affect PU, as individuals who can successfully operate a system are more likely to recognize its contribution to work efficiency. Therefore, in the implementation of SFA systems under supply chain management contexts, self-efficacy emerges as a pivotal psychological construct influencing user acceptance and the success of digital transformation initiatives.

#### Organizational Support

The theory of Perceived Organizational Support (POS), initially proposed by Eisenberger et al. (1986), focuses on how employees perceive the extent to which their contributions are valued and supported by their organizations. The theory posits that when employees recognize organizational commitment through institutional design, resource allocation, and managerial care, their organizational commitment and work motivation are enhanced, thereby increasing their willingness to embrace organizational changes. Subsequent studies have confirmed that POS not only strengthens employees' psychological safety but also reduces their resistance to

adopting new systems (Rhoades & Eisenberger, 2002). In the implementation of SFA systems, organizations that provide adequate training, technical support, and policy encouragement enable employees to better perceive the system's usefulness (PU), which in turn fosters positive attitudes and continuous usage intentions. Accordingly, organizational support plays a critical role in promoting user acceptance during information system adoption and diffusion processes, further increasing the likelihood of successful application of digital tools within supply chain management contexts.

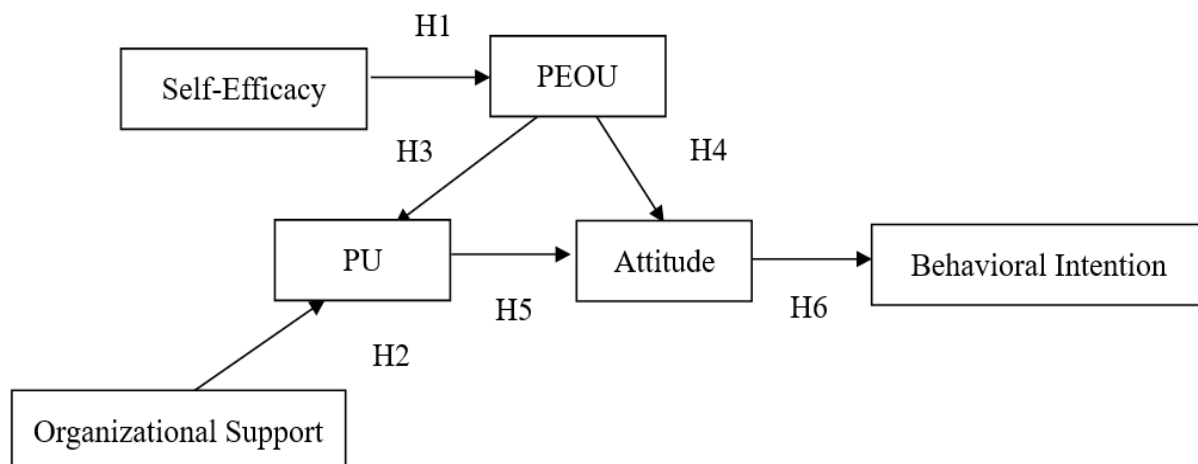
## Research Methodology

### Research Context and Participants

This study is conducted within the context of the automotive industry supply chain, encompassing both the manufacturing sector (corporate headquarters and regional operational units) and the distribution sector (showroom sales consultants, field sales representatives, and after-sales service advisors). As these practitioners rely directly on Sales Force Automation (SFA) systems in their daily operations, their acceptance and willingness to use such systems provide a valid reflection of the actual effectiveness and practical outcomes of technological tool adoption in supply chain management settings.

### Research Framework

The Technology Acceptance Model (TAM) serves as the theoretical foundation of this study, with self-efficacy and organizational support incorporated as external variables to examine their effects on perceived ease of use (PEOU) and perceived usefulness (PU). These cognitive evaluations, in turn, are expected to shape users' attitudes and subsequently influence behavioral intention. The research context specifically focuses on supply chain management within the automotive industry, with the adoption of SFA systems as the central subject of investigation. This design not only validates the applicability of TAM in digital transformation initiatives within supply chains but also sheds light on the critical factors influencing employees' adoption of emerging information technologies.



**Figure 1.** Conceptual Framework of the Study

### Research Hypotheses

Building upon the aforementioned theoretical foundations and literature review, this study adopts the Technology Acceptance Model (TAM) as its core framework, while incorporating self-efficacy and organizational support as external variables to examine their influence on perceived ease of use (PEOU), perceived usefulness (PU), attitude, and behavioral intention. Based on the proposed research framework, the following hypotheses are developed:

- A. H1: Self-efficacy positively influences PEOU.
- B. H2: Organizational support positively influences PU.
- C. H3: PEOU positively influences PU.
- D. H4: PEOU positively influences attitude.
- E. H5: PU positively influences attitude.
- F. H6: Attitude positively influences behavioral intention.
- G. H7: Within the supply chain management context, the adoption of SFA systems strengthens the explanatory power of TAM.

Taken together, these hypotheses form a comprehensive research model that encompasses external variables (self-efficacy and organizational support), cognitive evaluations (PEOU and PU), attitudinal responses, and behavioral intention. The model aims to validate the applicability of TAM within supply chain management settings and to further evaluate its theoretical significance and practical implications in the process of digital transformation, thereby providing the foundation for subsequent empirical analyses.

### Research Instruments

#### A. Questionnaire Design

The questionnaire used in this study was adapted and developed based on relevant literature, covering six constructs: self-efficacy, organizational support, perceived ease of use (PEOU), perceived usefulness (PU), attitude, and behavioral intention. All items were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) to ensure comparability and consistency in measurement. To establish content validity, the questionnaire was reviewed by three academic scholars and two industry experts. A pilot test with 30 respondents was subsequently conducted to evaluate semantic clarity and preliminary reliability, with revisions made according to the feedback received. The finalized questionnaire served as the foundation for subsequent reliability and validity assessments, as well as for the empirical analysis using structural equation modeling (SEM).

#### Questionnaire Survey

The formal survey employed stratified convenience sampling, targeting both manufacturing and distribution personnel within the automotive supply chain. A total of 320 questionnaires were distributed, yielding 288 valid responses, resulting in an effective response rate of 90%. The survey was administered through both online questionnaires and on-site meeting sessions. To ensure compliance with ethical standards, anonymity and voluntary participation were emphasized throughout the data collection process, thereby enhancing the credibility and reliability of the research data.

Data Analysis Methods

A. Descriptive Statistics: Descriptive analyses were conducted on demographic variables such as gender, age, and job position to present the structural characteristics and representativeness of the sample, thereby facilitating subsequent statistical inferences.

B. Reliability and Validity Analysis: The quality of the measurement model was assessed using Cronbach's  $\alpha$ , Composite Reliability (CR), and Average Variance Extracted (AVE) to confirm that each construct exhibited satisfactory reliability and convergent validity.

C. Confirmatory Factor Analysis (CFA): CFA was performed using AMOS to examine the factor loadings of individual items and to evaluate the overall model fit, ensuring that the measurement model demonstrated both convergent and construct validity.

D. Structural Equation Modeling (SEM): SEM was employed to test the hypothesized causal relationships among latent variables, while simultaneously assessing the model's fit indices to evaluate the explanatory power and theoretical adequacy of the proposed research framework.

Empirical Analysis

Demographic Profile of Respondents

To present the structural characteristics of the sample, the demographic distribution of respondents is summarized in Table 1.

Table 1. Demographic Profile of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	170	59.00%
	Female	118	41.00%
Age	20–30 years	85	29.50%
	31–40 years	120	41.70%
	Above 41 years	83	28.80%
Position	Manufacturer staff	110	38.20%
	Distributor staff	178	61.80%

The sample covers distributions across gender, age, and job position, demonstrating a balanced structure with adequate representativeness and explanatory power for subsequent analysis.

Reliability and Validity Analysis

All constructs achieved Cronbach's  $\alpha$  values above the recommended threshold, indicating that the measurement scale possesses strong stability and internal consistency, thereby providing a reliable basis and statistical support for subsequent model validation and empirical analysis.

**Table 2.** Reliability and Validity Tests

Construct	Cronbach's $\alpha$	AVE	CR
Self-Efficacy	0.89	0.65	0.91
Organizational Support	0.87	0.61	0.9
PEOU	0.88	0.64	0.9
PU	0.91	0.68	0.92
Attitude	0.86	0.71	0.89
Behavioral Intention	0.9	0.73	0.92

The results show that Cronbach's  $\alpha$  values ranged from 0.86 to 0.91, CR values from 0.89 to 0.92, and AVE values from 0.61 to 0.73. All values exceeded the recommended thresholds, confirming that the measurement instrument demonstrates satisfactory reliability and convergent validity. These results suggest that the constructs effectively capture the underlying latent variables and provide a solid foundation for subsequent SEM validation.

#### Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) was conducted using AMOS to examine the factor loadings of measurement items and the overall model fit, thereby confirming the reliability, validity, and adequacy of the measurement model.

**Table 3.** Results of Confirmatory Factor Analysis

Construct	Example Item	Factor Loadings Range	CR	AVE
Self-Efficacy	I can proficiently operate the SFA system	0.72–0.85	0.91	0.65
Organizational Support	The company provides sufficient resources to assist	0.70–0.83	0.9	0.61
PEOU	The SFA system is easy to learn and use	0.73–0.87	0.9	0.64
PU	The SFA system improves work efficiency	0.74–0.88	0.92	0.68
Attitude	I hold a positive attitude toward the SFA system	0.75–0.86	0.89	0.71
Behavioral Intention	I am willing to continue using the SFA system	0.77–0.87	0.92	0.73

The CFA results indicate that the factor loadings of all constructs ranged from 0.70 to 0.88, exceeding the recommended threshold of 0.50. Composite reliability (CR) values ranged from 0.89 to 0.92, and average variance extracted (AVE) values ranged from 0.61 to 0.73. All indices met the suggested standards, confirming that the measurement model demonstrates satisfactory reliability, convergent validity, and construct validity.



## Hypothesis Testing (SEM Results)

Structural equation modeling (SEM) was employed to examine the path relationships of the proposed hypotheses and to evaluate the overall model fit, thereby confirming the explanatory power and statistical robustness of the theoretical framework.

**Table 4.** Results of SEM Path Analysis

Hypothesis	Path	$\beta$	t - value	Result
H1	Self-Efficacy $\rightarrow$ PEOU	0.51***	8.21	Supported
H2	Organizational Support $\rightarrow$ PU	0.34**	6.05	Supported
H3	PEOU $\rightarrow$ PU	0.39***	7.11	Supported
H4	PEOU $\rightarrow$ Attitude	0.28**	4.97	Supported
H5	PU $\rightarrow$ Attitude	0.46***	9.02	Supported
H6	Attitude $\rightarrow$ Behavioral Intention	0.55***	10.35	Supported
H7	SFA under SCM context $\rightarrow$ Model Explanatory Power	Significant improvement	—	Supported

The model fit indices demonstrated satisfactory levels:  $\chi^2/df = 2.05$ , CFI = 0.94, TLI = 0.93, and RMSEA = 0.050, all of which met recommended academic thresholds. These results indicate that the structural model exhibits good fit and statistical robustness, thereby effectively explaining SFA adoption behavior within the context of supply chain management.

## Conclusion

### Research Conclusions

Grounded in the Technology Acceptance Model (TAM), this study investigated the determinants influencing employees' adoption of Sales Force Automation (SFA) systems within the context of supply chain management, and employed structural equation modeling (SEM) for empirical validation. The findings confirmed support for all proposed hypotheses, thereby demonstrating the applicability of TAM in the domain of supply chain digital transformation, while also highlighting the critical role of individual characteristics and organizational support in shaping system adoption.

A. Self-efficacy significantly enhances perceived ease of use (PEOU), suggesting that employees with higher confidence and operational ability perceive the system as easier to use, thereby lowering learning barriers and facilitating continuous utilization.

B. Organizational support positively influences perceived usefulness (PU), indicating that when employees receive institutional, resource-based, and managerial support, they are more likely to recognize the tangible benefits of SFA systems in improving work efficiency and performance.

C. PEOU not only directly affects PU but also indirectly influences behavioral intention through PU and attitude, underscoring its multiple mediating roles in transforming ease-of-use perceptions into actual adoption intentions.

D. Both PU and PEOU significantly strengthen user attitude, and a positive attitude, in turn, further enhances behavioral intention, underscoring the central role of attitude in linking cognitive evaluations with behavioral tendencies.

E. Within the supply chain management context, the implementation of SFA systems enhances the explanatory power of TAM, thereby validating its theoretical contribution while also underscoring its practical implications for digital transformation and cross-organizational collaboration.

In sum, the results demonstrate that individual characteristics (self-efficacy), organizational contextual factors (organizational support), and cognitive evaluations (PEOU and PU) jointly shape employee attitudes and behavioral intentions. PEOU and PU not only serve as mediators within the model but also reinforce the linkage between attitude and behavioral intention. Most importantly, the introduction of SFA systems in supply chain management contexts not only validates the applicability of TAM but also reveals the pivotal roles of human factors and organizational support in the process of digital transformation, thereby offering dual contributions to both theory and practice.

#### Managerial Implications

Based on the research findings, the following managerial recommendations are proposed for the automotive industry and other supply chain enterprises undertaking digital transformation and information system implementation:

A. Enhance employee digital training: Organizations should provide continuous training on the operation of SFA systems to strengthen employees' self-efficacy and reduce resistance toward new technologies.

B. Institutionalized support and resource allocation: The effectiveness of SFA usage should be incorporated into performance evaluations, while ensuring sufficient technical support and time resources to enable employees to effectively utilize the system.

C. Leadership demonstration and encouragement: Managers should take the initiative to adopt and promote SFA, setting an example that fosters a positive usage climate and further influences employee attitudes.

D. Promote supply chain integration: SFA systems should not be limited to single departmental use but rather serve as a central tool for supply chain information flows, fostering collaboration between manufacturers and distributors, enhancing decision-making transparency, and improving customer satisfaction.

#### Limitations and Future Research Directions

Although this study validates the applicability of the Technology Acceptance Model (TAM) in the adoption of Sales Force Automation (SFA) systems and provides both theoretical and practical insights, several limitations should be acknowledged:

A. Sample scope limitation: The study focused exclusively on the supply chain of the Taiwanese automotive industry. The findings may thus be influenced by industry-specific characteristics. Future research could extend the scope to other industries or conduct cross-national comparative studies to enhance generalizability.

B. Limited external variable design: This study incorporated only self-efficacy and organizational support as external variables, without considering other potentially influential factors such as digital literacy, psychological safety, or cross-departmental collaboration. Future research may include additional constructs to strengthen the explanatory power of the model.

C. Methodological limitation: This study employed cross-sectional survey data, which restricts the ability to capture dynamic changes in system adoption over time. Future studies could adopt longitudinal research designs or mixed-method approaches, integrating qualitative interviews with actual system usage records, to provide a more comprehensive understanding.

## References

- Avlonitis, G. J., & Panagopoulos, N. G. (2005). Antecedents and consequences of CRM technology acceptance in the sales force. *Industrial Marketing Management*, 34(4), 355–368. <https://doi.org/10.1016/j.indmarman.2004.09.021>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman. <https://psycnet.apa.org/record/1997-08589-000>
- Boujena, O., Johnston, W. J., & Merunka, D. (2009). The benefits of sales force automation: A customer's perspective. *Journal of Personal Selling & Sales Management*, 29(2), 137–150. <https://www.researchgate.net/publication/261645502>
- Burton-Jones, A., & Hubona, G. S. (2006). The mediation of external variables in the technology acceptance model. *Information & Management*, 43(6), 706–717. <https://www.sciencedirect.com/science/article/pii/S0378720606000300>
- Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, 19(2), 189–211. <https://doi.org/10.2307/249688>
- Chopra, S., & Meindl, P. (2016). *Supply chain management: Strategy, planning, and operation* (6th ed.). Pearson. <https://www.researchgate.net/publication/327890174>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://www.jstor.org/stable/249008>
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71(3), 500–507. <https://doi.org/10.1037/0021-9010.71.3.500>
- Queiroz, M., Wamba, S. F., & Queiroz, J. (2019). Blockchain adoption in supply chain management: Empirical evidence from an emerging economy. *International Journal of Production Research*, 57(7), 2025–2043. <https://doi.org/10.1080/00207543.2018.1552076>
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, 87(4), 698–714. <https://www.researchgate.net/publication/232493553>
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>