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Factors Affecting Satisfaction When Applying Accounting Software in the Consumer Goods Industry in Vietnam

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Abstract: *This research was carried out to determine the factors affecting satisfaction when applying accounting software in consumer goods businesses in Vietnam. The study used exploratory factor analysis and multiple regression analysis on 228 surveys. The research result shows that six main factors affect the satisfaction level when applying accounting software of consumer goods businesses in Vietnam, including 1) Service quality, 2) Company size, 3) Service characteristics, 4) Portability of accounting software, 5) Cost of accounting software, and 6) Uniqueness of accounting software.*

Keywords: Accounting software, factors affecting satisfaction, consumer goods businesses, exploratory factor analysis methods.

I. Introduction

Currently, 48% of companies in Vietnam use accounting software(Quyen, 2017) [8]. Accounting software is constantly advancing, developing strongly, and becoming a scientific field with a mission to become an effective arm, helping people in accounting work and helping accountants to process complex business transactions quickly and accurately. The introduction of different accounting software makes it difficult for companies and organizations to choose the accounting software that suits each company's characteristics, processes, and financial capabilities: companies and organizations, especially those dealing with consumer goods. In today's integrated market economy, it is both an opportunity and a great challenge for companies, organizations, and people to follow the trend and create significant added value for customers. The business model has changed recently; accounting tools such as Excel and books are gradually becoming obsolete. Especially the consumer goods companies, which are growing fast and getting stronger. In addition, the organizational and management model of the accounting activity of consumer goods companies has different professional characteristics and characteristics compared to the accounting activity of other companies (Ministry of Finance, 2005) [5]. Therefore, choosing the right accounting software increases the profitability of the company that uses it.

II. Literature review

According to David Arditi and Sandeep Singh(1991) [3], accounting software is evaluated based on three criteria: 1) general characteristics, 2) technical characteristics, and 3) required hardware, software, and support characteristics. Quality Function Deployment (QFD) is a well-known technique for determining the relative importance of criteria. In research of Jad av and Sonar (2009)[2], a QFD-based software prototype is designed and developed in Visual BASIC 6.0 to solve the problem of CAD (Computer Aided Design) software selection. The results show that QFD-based software will reduce human error in the traditional selection process, reduce the workforce, improve work efficiency, and use information efficiently. Furthermore, the results obtained by implementing this model are the same as those obtained in a production environment.

According to Ivancevichet al. (2007) [9], companies' satisfaction with the use of accounting software is evaluated based on the following criteria:

- Functions of the accounting software
- Costs of accounting software

- Compatibility with other software/systems
- The stability and support of the Affiliate Network

The results show that the function of the accounting software is the most critical factor when choosing accounting software, followed by the cost of use. In the software engineering position, flexibility comes first. Regarding the cost of applying specialized software, purchasing, and maintaining the annual cost of specialized software is more important than installing and training to use specialized software. In terms of compatibility, compatibility with the operating system is more impactful than other hardware or software. Examine the relationship between company characteristics, international software characteristics (multiple currencies, multiple languages), general selection criteria (support and security, hardware, flexibility, and cost), and companies' choice of international accounting software in the United States. Ajay Adhikari et al. (2004) [1] show companies' selection of accounting software in the US market for other international characteristics and differences in technical software based on size and degree of internationalization. In particular, the company characteristics that influence the selection and design were examined in international accounting software.

Factor analysis is interesting in Vietnam when choosing accounting software for small and medium-sized businesses. However, these studies are local and apply to each location. The authors Ca P. V. et al. (2018) [7] provided the results of prioritizing the selection of suitable accounting software providers for small and medium-sized enterprises in Tra Vinh Province based on many factors. The survey results allow the following ranking: ACsoft Software is at the top, followed by FAST and MISA. It is evident that accounting software effectively supports management. However, depending on the size of the business organization and the financial situation of each unit, this directly affects the selection decision and the level of satisfaction when applying accounting software. Businesses can try some popular accounting software these days, such as MISA software is suitable for administrative, non-commercial, and small to medium-sized businesses with costs in 2017 starting at 2,950,000 VND up to 12,950,000 VND (about 129 USD to 568 USD in 2017) depending on each product package that customers can use; BRAVO accounting software: The software not only supports the handling of accounting processes, but also has extensive management functions, but there is no uniform fixed price for customers; Prices of FAST accounting software with reference cost applied since 2017 range from VND 5,900,000 to VND 11,900,000 (nearly 260 USD to 522 USD in 2017) as well as some other accounting softwares.

Investigate the factors influencing the decision to choose accounting software for small and medium sized enterprises in Dong Nai Province applying Exploratory Factor Analysis (EFA) method and multiple regression analysis based on 195 actual surveys. Nam and Hai (2020) [6] show six factors: expected effectiveness, ease of use, social impact, support conditions, price, and usage habits that influence the choice of accounting software. In addition, the research team also suggests some guidelines for businesses when choosing accounting software to achieve the best profitability. Huong H. T.(2016) [4] suggested seven factors: user requirements, accounting software capabilities, professional qualifications of accounting software company employees, and professionalism of software companies, customer service, and fees influence the decision to use accounting software for small and medium-sized businesses in Ho Chi Minh City. The regression analysis results show that the software's properties are the most influential factors. Nhi et al.(2014) [11] reported that two main factors influence the satisfaction of small and medium-sized businesses with the use of accounting software, including the ability of accounting software vendors to support businesses and the availability of accounting software.

Based on domestic and foreign documents, satisfaction with applying accounting software in the consumer goods industry is still relatively new and has yet to be studied. Some studies on factors influencing satisfaction in applying accounting software have been conducted in smaller areas and other locations. To help organizations better understand the impact of factors on satisfaction with the use of accounting software, this study focuses on and evaluates an overview of accounting software use, levels of satisfaction, and factors affecting satisfaction after applying accounting software in today's consumer businesses that are impacting Vietnam. It provides tips and methods to help companies in the consumer goods industry choose the most appropriate accounting software, achieves optimal efficiency, and support accounting software vendors with solutions to improve the quality of their products and services.

III. Research Hypotheses and Research Methodology

3.1. Research Hypotheses

H1: Company size affects satisfaction when applying accounting software in businesses in the consumer goods industry.

H2: Service characteristics of the supplier affect satisfaction when applying accounting software in enterprises operating in the consumer goods industry.

H3: The specifications of accounting software affect satisfaction when applying accounting software in enterprises operating in the consumer goods industry.

H4: The functions of accounting software affect satisfaction when applying accounting software in enterprises operating in the consumer goods industry.

H5: The uniqueness of accounting software affects satisfaction when applying accounting software in businesses operating in the consumer goods industry.

H6: Portability of accounting software affects satisfaction when applying accounting software in enterprises operating in the consumer goods industry.

H7: Reliability of accounting software affects satisfaction when applying accounting software in enterprises operating in the consumer goods industry.

H8: The cost of applying accounting software affects satisfaction when applying accounting software in businesses operating in the consumer goods industry.

H9: The quality of the support service of the supplier influences satisfaction when applying accounting software in enterprises operating in the consumer goods industry.

H10: The supplier's communication strategy influences the satisfaction of applying accounting software in businesses operating in the consumer industry.

3.2. Research Methodology

The study was carried out applying exploratory factor analysis (EFA) and multiple regression analysis.

3.3. Research data

3.3.1. Data sources for conducting the research:

To test the research hypotheses, authors use data collected through a survey of 228 consumer goods businesses in Vietnam (including Directors/Deputy Directors, accountants' managers, and accountants) to recognize and evaluate the importance of the determinants of satisfaction when applying accounting software.

3.3.2. Data processing method:

Combining Cronbach's Alpha reliability assessment methods, EFA exploratory factor analysis, and multiple regression analysis.

3.4. Model Specification

3.4.1. Proposed research model:

The research model is built based on previous studies [1, 7, 10] and is shown in Figure 1.

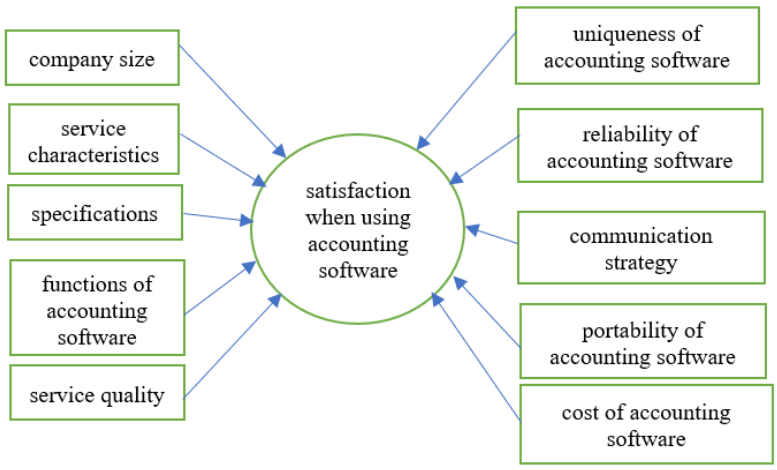


Figure 1: Proposed research model

The research model (Figure 1) has ten dependent variables that determine satisfaction when applying accounting software, including 1) Company size, 2) Service characteristics, 3) Specifications, 4) Functions of accounting software, 5) Service quality, 6) Cost of accounting software, 7) Uniqueness of accounting software, 8) Reliability of accounting software, 9) Communication strategy, and 10) Portability of accounting software.

In the study, 33 observed variables were built to measure ten concepts in the research model listed in Table 1.

Table 1: Scales in quantitative research

No.	Scale	Symbol
I. Company size		
1	Accounting software compatible with the environment and IT infrastructure	QMCT01
2	In line with the organizational characteristics of production and business management of enterprises	QMCT02
3	Comply with legal regulations and accounting regimes registered by enterprises	QMCT03
II. Service characteristics		
1	The supplier always has a trial version available on the website and a free trial version	DDDV01
2	Consulting and communication capabilities of accounting software supplier	DDDV02
3	Response time and experience of supplier	DDDV03
III. Specifications		
1	The supplier with high experience in software product development	DDKT01
2	Employees providing software understand the software, flexibly handle the business requirements, and have knowledge in the business field of the enterprise	DDKT02
3	Employees providing software know accounting, timely updates on changes in tax and accounting policies of the Ministry of Finance, and can provide professional advice to businesses	DDKT03
IV. Functions of accounting software		
1	Full-featured accounting software	CN01
2	The software can automatically generate reports according to user requirements following data integration requirements	CN02
3	The software must have standard, beautiful, clear, and easy-to-understand printing templates	CN03
4	International language and ability to make reports in foreign currencies	CN04
5	Accounting software supports users to comply with the State's regulations on accounting	CN05
V. Service quality		
1	The software supplier provides a complete and timely set of user manuals and training courses on applying the software package	CLDVHH01
2	The software company's staff can guide users well in troubleshooting and error-handling operations	CLDVHH02
3	Accounting software providers regularly record customer requests or comments to assist in maintenance promptly, software product upgrades, and troubleshooting	CLDVHH03
VI. Cost of accounting software		
1	The price users are willing to pay consistent with the price offered by the software company (including all costs: maintenance, upgrades, licensing, and installation)	CP01
2	The costs associated with applying the software are in line with the benefits it brings	CP02
3	The software company has a competitive price compared to other companies	CP03
VII. Uniqueness of accounting software		
1	Match with the size of the enterprise and the organizational characteristics of the accounting department in the enterprise	RB01
2	Expanded database to handle as the business grows	RB02

3	Give custom permissions to users (users are granted custom rights instead of having to rely on a software supplier and must pay a fee)	RB03
VIII. Reliability of accounting software		
1	Accounting software ensures high reliability and accuracy with fast and stable processing speed (the software can run continuously without errors, give fast results, and is suitable for data size)	TTC01
2	Accounting software can meet the requirements of an increasing number of users and the volume of transactions (businesses) processed	TTC02
3	Accounting software ensures data security and safety (with user usage log, user authorization, data access password, backup, and restore support)	TTC03
IX. Communication strategy		
1	The software supplier has a reputation in the software market and has many customers, well-known customers in the market	CLTT01
2	Supplier software is popular in the market	CLTT02
3	Software providers have a good way of communicating with businesses	CLTT03
4	The relationship between the software supplier and the enterprise applying accounting software	CLTT04
X. Portability of accounting software		
1	Accounting software should be easy to switch from one environment to another	TKC01
2	Ability to integrate and compatible with existing hardware, software, and other applications of the enterprise	TKC02
3	Possibility of permanent upgrade	TKC03

IV. Research results

4.1.1. Cronbach's Alpha reliability test

The study assesses the reliability of the scale through Cronbach's Alpha coefficient. Calculating the Cronbach Alpha coefficient (Table 2) shows that most scales meet the reliability. The Cronbach Alpha coefficient is more significant than 0.6, and the variable correlation coefficient - total correction is more significant than 0.3. The results of the Cronbach Alpha test are all reliable.

Table 2. Cronbach Alpha coefficient of the scales

Factor	company size	service characteristics	specifications	functions of accounting software	uniqueness of accounting software	portability of accounting software	cost of accounting software	service quality	communication strategy	satisfaction when using accounting software
Cronbach Alpha coefficient	0.806	0.826	0.833	0.873	0.85	0.864	0.853	0.837	0.655	0.83

4.1.2. The Principal Component Analysis method with perpendicular rotation

The EFA exploratory factor analysis was conducted to determine the factors affecting satisfaction when applying the accounting software of consumer goods businesses in Vietnam. The Principal Component Analysis method with perpendicular rotation minimizes the number of variables with significant coefficients at the same factor. Table 3 presents the EFA exploratory factor analysis results for the independent variables performed three times. For the first time, 32 observed variables were included in the analysis, and five observed variables did not meet the conditions, namely CLTT04, TTC02, TTC03, CLTT02, and TTC01, which were removed for re-analysis. In the second analysis, 27 observed variables were included, and two observed variables that did not meet the conditions, CLTT01 and CLTT03, were removed. In the third (last) analysis, 25 observed variables converged and differentiated into eight factors with a Total Variance Explained of 76.194% for eight factors. KMO coefficient = 0.876 > 0.5, so EFA analysis in this case is appropriate.

Table 3: Result of exploratory factor analysis EFA of independent variables after rotation

Observable variable encoding	*Factor*								*Name of factor*
	1	2	3	4	5	6	7	8	
CN03	.835								Functions of accounting software
CN05	.806								TVE = 31.146%
CN02	.775								Eigenvalue: 7.787
CN01	.723								
TKC02		.848							Portability of accounting software
TKC01		.819							TVE= 42.028%
TKC03		.817							Eigenvalue: 2.720
CP01			.861						Cost of accounting software
CP03			.828						TVE = 50.423%
CP02			.805						Eigenvalue: 2.099
RB01				.849					Reliability of accounting software
RB03				.825					TVE = 59.752%
RB02				.821					Eigenvalue: 1.582
CLDVHT03					.837				Service quality
CLDVHT01					.822				TVE = 62.171%
CLDVHT02					.805				Eigenvalue: 1.355
DDDV02						.817			Service characteristics
DDDV03						.805			TVE = 67.225%
DDDV01						.777			Eigenvalue: 1.263
DDKT03							.818		Specifications
DDKT02							.789		TVE = 71.941%
DDKT01							.784		Eigenvalue: 1.179
QMCT03								.821	Company size
QMCT01								.756	TVE = 76.194%
QMCT02								.728	Eigenvalue: 1.063

The scale of satisfaction when applying accounting software extracted 1 factor (through 1 extraction) with TVE was 74.763%, and the scale of "satisfaction when applying accounting software" reached the convergent value (Table 4).

Table 4 Results of factor analysis of dependent variable

Observable variable encoding	Factor	Name of factor
	1	
PT01	0.897	Satisfaction when applying accounting software TVE = 74.763% Eigenvalue: 2.243

Figure 2 shows the adjusted research model with eight factors (independent variables) affecting consumer goods business satisfaction when applying accounting software in Vietnam (dependent variable). Accordingly, there are eight research hypotheses with the available content that an increase or decrease in the independent variable will lead to an increase or decrease in the satisfaction level of enterprises applying accounting software.

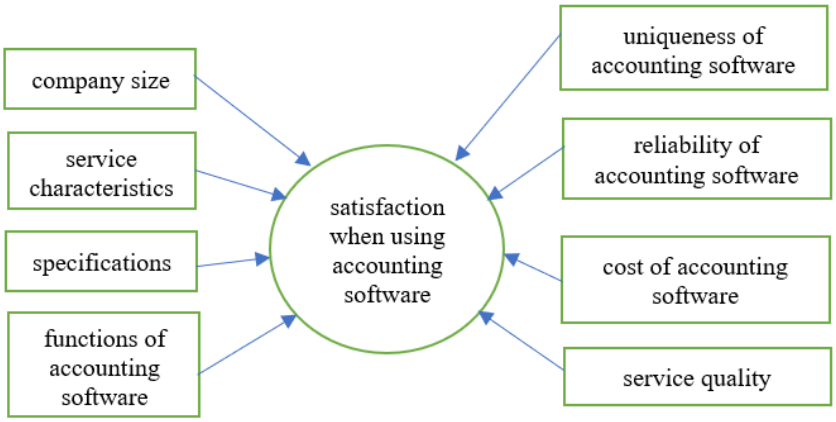


Figure 2: Modified research model

4.1.3. Correlation analysis

The results of the correlation analysis show that the dependent variable of satisfaction when applying accounting software is correlated with all the independent variables in the model (sig<0.05) (Table 5). In which the dependent variable has the strongest correlation with the variable "Service quality" and the lowest is the variable "Uniqueness of accounting software". In general, the correlation between the dependent and independent variables does not differ significantly. Thus, all these independent variables can be included in the model to explain the influence on satisfaction when applying accounting software of enterprises in the consumer industry in Vietnam. The impact level of the factors will be re-tested through multiple regression analysis.

Table 5: Correlation coefficient matrix between variables in the model

	BPT	CN	TKC	CP	RB	CLDVHT	DDDV	DDKT	QMCT
BPT	1	.484**	.528**	.473**	.434**	.588**	.555**	.445**	.562**
CN	.484**	1	.320**	.234**	.331**	.261**	.431**	.490**	.502**
TKC	.528**	.320**	1	.311**	.429**	.304**	.318**	.300**	.359**
CP	.473**	.234**	.311**	1	.322**	.458**	.259**	.162*	.177**
RB	.434**	.331**	.429**	.322**	1	.215**	.203**	.182**	.318**
CLDVHT	.588**	.261**	.304**	.458**	.215**	1	.281**	.282**	.262**
DDDV	.555**	.431**	.318**	.259**	.203**	.281**	1	.464**	.428**
DDKT	.445**	.490**	.300**	.162*	.182**	.282**	.464**	1	.426**
QMCT	.562**	.502**	.359**	.177**	.318**	.262**	.428**	.426**	1

4.1.4. Regression model

Sig test F = 0.00 < 0.05, so the regression model is significant (Table 6). The model fit test shows that the adjusted R^2 is 0.672, which means that the multiple regression model used is consistent with the research data at 67%, or in other words, 67% of the variation of the dependent variable, "Satisfaction when applying accounting software," is explained by the interpretation ofeight independent variables: Company size, Portability of accoungint software, Service characteristics, Specification, Functions of accounting software, Uniqueness of accounting software, Cost of accounting software, and Service quality.

Table 6. Model statistics

Model	R	R^2	Adjusted R^2	Standard error	Durbin-Watson
1	.820[a]	.672	.660	.30181	2.200
ANOVA[a]					
Model	**Sum of squares**	**df**	**Mean squared**	**F**	**Level of significance**

1	Regression	40.793	8	5.099	55.979	.000[b]
	Residual	19.949	219	.091		
	Total	60.742	227			

Assume that the independent variables are not entirely correlated with each other (no multicollinearity): As mentioned in the previous section in the table Analysis of multiple regression results, the VIF coefficient is in use to test the multicollinearity phenomenon of the independent variables is less than 2 (Table 6), which shows that there is no multicollinearity or that the independent variables in the multiple regression model.

Table 7: Results of multiple regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.335	.166		2.015	.045		
	CN	.039	.036	.055	1.103	.271	.607	1.648
	TKC	.110	.031	.165	3.558	.000	.701	1.426
	CP	.089	.032	.128	2.789	.006	.715	1.399
	RB	.080	.032	.115	2.530	.012	.731	1.368
	CLDVHT	.228	.034	.308	6.765	.000	.723	1.384
	DDDV	.165	.035	.220	4.653	.000	.670	1.492
	DDKT	.031	.035	.044	.905	.367	.646	1.548
	QMCT	.149	.033	.223	4.600	.000	.638	1.567

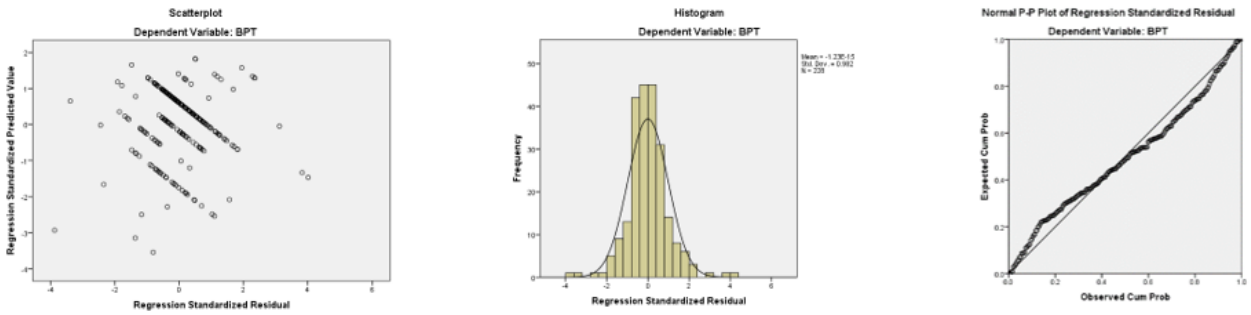
From Table 7 the factors with significance level sig < 0.05 equivalent to 95% confidence level and test standard |t| >2, then the factor is accepted. That means six factors satisfy the condition: Company size, Service characteristics, Service quality, Cost of accounting software, Portability of accounting software, and Uniqueness of accounting software. The factor Specification (DDKT) has a significant level of 0.367 greater than 0.05 and the test standard |t| = 0.905 is less than 2; the factor Functions of accounting software (CN) has a significant level of 0.271 which is greater than 0.05 and test standard |t| = 1.103 is less than 2, so these two factors are not accepted to the hypothesis affecting satisfaction when applying accounting software.

The multiple regression equation for the relationship between factors and affect satisfaction when applying accounting software based on standardized regression coefficient is as follows:

PC = 0.165 TKC + 0.128 CP + 0.115 RB + 0.308 CLDVHT + 0.220 DDDV + 0.223 QMCT

4.2. The assumptions:

Assumption of Linear Relationship: Scatter plot in Figure 3a shows that the residuals are randomly dispersed in the region around the line passing through zero, thus assuming a linear relationship between the independent variables of the dependent variable in the model is valid.



a) b) c)

Figure 3 – Scatter plot (a); Histogram (b) and Q-Q Plot (c)

Assumption of the normal distribution of the residuals: The histogram in Figure 3b shows that the residuals have a form close to the normal distribution, the mean is close to zero, and the standard deviation of 0.974 is close to 1. The Q-Q Plot in Figure 3c shows the actual observations centered quite close to the diagonal of the expected values, which means that the residuals are normally distributed.

Assumption of error independence (no correlation between residuals): The Durbin – Watson statistic in Table 6 has a value of 2.2, close to the threshold 2, so the hypothesis is accepted that there is no autocorrelation between the residuals in the model or other words the assumption of error independence is accepted.

V. Discussion and Conclusion

Based on survey results on factors affecting satisfaction when applying accounting software in 228 consumer goods enterprises in Vietnam by appropriate research methods based on building inherited theory, the study has successfully tested the model with ten dependent variables of the original hypothesis. The research results show that there are six main factors affecting the level of satisfaction when applying accounting software of consumer goods businesses, including 1) Service quality, 2) Company size, 3) Service characteristics, 4) Portability of accounting software, 5) Cost of accounting software, and 6) Uniqueness of accounting software. In particular, the factor Service quality has the most substantial impact on satisfaction when applying accounting software. The Uniqueness of accounting software is the least concerned factor, followed by Cost of accounting software. In addition, the factor Company size is also the second most concerned after Service quality. Today's consumer goods companies are very diverse in size, and accounting software is also designed for many different types. Hence, managers are interested in their company's size and service quality of the software provider to select proper accounting software. The factors that do not affect satisfaction when applying accounting software for consumer goods enterprises are Specifications, Functions of accounting software, Reliability of accounting software, and Communication strategy.

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