

Investigating the Impact of E-commerce Adoption on Achieving Competitive Advantage, Company Sustainability, and Financial Performance of International Exporting Companies in Iran

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Abstract

Purpose: This study aimed to investigate the impact of e-commerce adoption on achieving competitive advantage, sustainability, and financial performance of international exporting companies in Iran. In terms of purpose, this research was applied, and in terms of data collection and analysis methods, it was descriptive-survey and based on structural equation modeling.

Design/methodology/Approach: The statistical population of the study was the managers of all international export companies in Tehran, numbering 800. To achieve the research objectives, using Cochran's formula for sample size determination, a sample of 270 individuals was selected using simple random sampling. The data collection tools in this study were standard questionnaires whose validity and reliability had been confirmed in previous studies. In this research, face validity was used to confirm validity, and Cronbach's alpha was used to confirm reliability. To analyze the findings, structural equation modeling based on partial least squares was used, employing SPSS version 22 and SmartPLS version 4 software. The significance level was considered to be 0.05. The results of this study showed that e-commerce adoption affects competitive advantage, financial performance, and company sustainability. Also, financial performance and competitive advantage affect sustainability.

Findings: Finally, the research findings showed that financial performance and competitive advantage mediate the relationship between e-commerce adoption and company sustainability ($P < 0.05$). These findings highlight the importance of the research variables and encompass concepts for developing financial performance and sustainability, especially achieving competitive advantage

Keywords: E-commerce Adoption, Financial Performance, Competitive Advantage, Sustainability

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In the current digital age, e-commerce is a promising strategy for business development. Through the use of the internet and communication technologies, e-commerce facilitates the growth of companies, especially small and medium-sized enterprises (SMEs), in both developed and developing countries (Hossain et al., 2023). As such, e-commerce promotes international value chains, increases market access and efficiency, reduces operational costs, and thus serves as a vital engine of economic growth in countries, particularly in underdeveloped nations (Amornkitvikai and Lee, 2020). Moreover, e-commerce is rapidly becoming a way of life in the 21st century. As more consumers and organizations turn to electronic tools to make purchases and facilitate business transactions, it has become crucial for academic researchers and practitioners alike to understand its functioning and to be able to analyze problems and rectify weaknesses. This is compounded by the fact that the e-commerce market is global and constantly evolving, with new and innovative business models and products being introduced at a rapid pace (Munoz et al., 2023).

The literature indicates that in the emerging digital economy, e-commerce platform adoption significantly influences transaction costs, delivery speed, customer satisfaction, and subsequent firm performance (Zhou et al., 2022). However, developing a sustainable competitive advantage is challenging in an environment that commoditizes items and enables easy

imitation through rapid access to information about competitors' offerings (Nandamuri et al., 2020).

Despite significant progress in global e-commerce adoption, a considerable gap remains between active and experienced exporting firms (Gao et al., 2023). Industrial, commercial, and exporting companies are increasingly utilizing information and communication technology-based e-commerce to achieve competitive advantages and gain exposure to international markets (Goksoy et al., 2014). Both buyers and sellers can significantly benefit from the adoption and use of e-commerce – benefits that can also be realized by small and medium-sized enterprises (George & George, 2022). Accordingly, manufacturers increasingly consider these online e-commerce platforms as one of their essential sales channels (Matsui, 2024).

Previous e-commerce literature shows that only a few studies have focused on the adoption and use of e-commerce exclusively in small and medium-sized enterprises (SMEs) (Mensah et al., 2023; Gao et al., 2023). This is while the impact of e-commerce adoption on achieving competitive advantage, sustainability, and financial performance of international exporting companies has been investigated in limited studies. Despite the tremendous growth of e-commerce adoption among international business institutions, the implementation of these technologies in the country remains weak. E-commerce is becoming more widespread day by day, and many companies prioritize it

above all else. By enabling better access to information, skills, and knowledge, e-commerce adoption contributes significantly to bridging the digital divide between developed and developing countries, leading to improved export performance of companies (Salah & Ayyash, 2024).

Although trade between countries, accompanied by increased productivity, facilitates the spread of new technological advancements with a faster solution and consequently directly impacts economic growth rates (Gönçer-Demiral & İnce-Yenilmez, 2022). However, several obstacles, such as poor infrastructure and limited access to technology, hinder the progress of poorer countries (Ocloo et al., 2020). E-commerce adoption is essential for the effective expansion of international business institutions, as it has been shown to increase their productivity and financial performance (Hamad et al., 2018). Furthermore, information technology-based e-commerce helps business and industrial institutions compete effectively and achieve a sustainable competitive advantage by acquiring new customers and retaining existing ones through digital marketing (Ullah et al., 2023). International business institutions have started integrating digital technology to expand their customer base, enhance their performance, and maintain their competitive edge. Therefore, e-commerce is beneficial for institutions by reducing costs and promoting easier internal and external communications (Shideler & Badasyan, 2012).

However, studies indicate that e-commerce adoption among international export institutions in the country is still in its early stages. The existing obstacles in the realm of technology and infrastructure are perhaps the most significant of these barriers. On the other hand, very little research has been conducted on the impact of e-commerce adoption on achieving competitive advantage, sustainability, and financial performance of international export institutions in Iran. The results of e-commerce adoption on achieving competitive advantage, sustainability, and financial performance of international export institutions in Iran are still shrouded in ambiguity. Given the extensive research gap in the field of the subject under study, the lack of adequate studies in this area, and the lack of clarity regarding the structural relationships between the research variables as a primary issue, this research was conducted to investigate this matter.

literature Review

The Resource-Based View (RBV) has emerged as a central theoretical foundation of strategic management and has been utilized in business, market, and sales strategies. Barney (1991) emphasized that based on the resource-based view theory, firms must possess unique resources and competencies to participate in industry competition to gain a competitive advantage. Furthermore, companies can achieve a competitive advantage by combining their resources and competencies in a

way that challenges competitors (Gao et al., 2023). Previous literature on e-commerce has utilized the resource-based view to conceptualize e-commerce as a vital resource that can enhance a firm's performance, promote sustainability, and facilitate competitive advantage.

In this regard, Voola et al. (2012) used the resource-based view to examine the complementary effects of marketing and technological capabilities on e-commerce adoption and subsequent firm performance. E-commerce adoption refers to the integration of online platforms and technologies into a company's sales and marketing processes. By adopting e-commerce, companies can increase their reach, improve their customer experience, and reduce the environmental impact of their operations, thus leading to better sustainability and firm performance (Begum et al., 2022).

E-commerce adoption can enhance a company's competitive advantage: for instance, resources allocated to a transactional website may reduce retail expenses or increase revenue and market share, generating greater economic rent. Often, e-commerce capabilities are firmly integrated into a company's resource base and business activities. The extent of e-commerce integration within a business varies, as companies have different financial resources (Gao et al., 2023). Straub & Klein (2001) believe that e-commerce provides a resource for the company that is not replaceable or replicable (such as customer data and shared information). Moreover, digitally

transformed e-businesses can empower consumers to create value by sharing information and participating in online communities.

Nogueira & Borchardt (2022) have indicated that e-business can be defined as online trading via the Internet, which allows for the support of all processes involved in commerce, such as organizational communications, collaboration, and the integration of all activities, managing relationships with customers, suppliers, and other stakeholders. This is the very core theme of e-commerce.

Regarding the impact of e-commerce adoption on company performance, it is argued that e-commerce adoption drives the sustainability practices of small businesses. To attract and retain consumers worldwide, small businesses must assess whether their operations are environmentally, socially, and economically sustainable (Oláh et al., 2023). Also, the findings of Gao et al. (2023) and Akram et al. (2023) indicate that e-commerce impacts both the sustainability and performance of companies. Chen & Zhang (2015) argue that e-commerce adoption can provide small and medium-sized enterprises (SMEs) with a sustainable competitive advantage if they can properly utilize this technology. Mangiaracina et al. (2015) examined the environmental consequences of e-commerce adoption and concluded that e-commerce significantly impacts companies' energy consumption, gas emissions, waste disposal, traffic mileage, and subsequently, environmental sustainability. Moreover, some studies

have also investigated the relationships between the research variables. A summary of these studies is presented in the table below.

Table 1 - Summary of Previous Research

No.	Author(s)	Research Title	Findings
1	Farahani & Mousavi (2023)	Investigating the impact of e-business on sustainable financial performance, considering the mediating role of organizational innovation	Using e-business has a significant impact on operating costs and innovation. Also, innovation moderates the impact of e-business use on operating costs and return on assets. E-business does not have a direct impact on the company's return on assets; rather, this impact is indirect.
2	Teymoori Asfiji & Dehestani (2023)	Investigating the mediating role of financial performance on the relationship between business strategy and competitive advantage	Financial performance shows a direct and significant mediating role on the relationship between business strategy and competitive advantage.
3	Farhang & Piri (2022)	Examining the impact of digital orientation on marketing performance with the mediating role of digital marketing capabilities in small and medium-sized businesses	Digital orientation has a positive and significant impact on marketing performance and digital marketing capabilities, and digital marketing capabilities have a positive and significant impact on marketing performance. Finally, the mediating role of digital marketing capabilities in the relationship between digital orientation and marketing performance was also confirmed by the Sobel test.
4	Moghadamnia & Atashkar (2022)	Investigating the impact of e-commerce and digital marketing adoption on the financial performance and sustainability of small and medium-sized enterprises (SMEs) in the food industry	E-commerce has a significant relationship with the financial performance and sustainability of SMEs. Also, the findings showed that digital marketing adoption has a significant impact on the national performance of SMEs. However, the relationship between digital marketing adoption and the sustainability of institutions was insignificant. Furthermore, it was found that the financial performance of SMEs mediates the relationship between e-commerce adoption and their sustainability performance.
5	Azad & Komili Birjandi (2021)	Investigating the impact of digital marketing on sustainable competitive	Smart marketing capabilities have a positive and significant impact on sustainable competitive advantage. It also showed that customer acquisition has a positive and

		advantage with customer acquisition as a mediator	significant impact on sustainable competitive advantage. The results of the mediating hypothesis showed that the impact of digital marketing capabilities on customer acquisition and sustainable competitive advantage was a significant relationship.
6	Hasanudin et al. (2024)	Sustainable green intangible assets, financial performance, and sustainable competitive advantages	In a study entitled [study title missing], they found that profitability has a negative impact on financial performance, efficiency performance has a significant positive effect, and unique and sustainable green intangible assets do not affect sustainable competitive advantage by using sustainable differentiation advantage.
7	Gao et al. (2023)	Investigating the impact of e-commerce and digital marketing adoption on financial performance and company sustainability	E-commerce has a significant relationship with the financial performance and sustainability of SMEs during the pandemic. It was also observed that digital marketing strategies have a significant impact on the financial performance of SMEs. However, the relationship between digital marketing strategies and the sustainability of small, medium, and large institutions is negligible. Furthermore, it was found that the financial performance of SMEs mediates the relationship between e-commerce adoption and their sustainability performance.
8	Udayana et al. (2023)	Investigating the role of e-commerce application and digital marketing implementation on financial performance and sustainability	Digital marketing has a positive and significant relationship with marketing performance, e-commerce has a positive and significant relationship with marketing performance, and digital marketing has a positive and significant relationship with business sustainability. In SMEs, e-commerce had a positive and significant relationship with business sustainability.
9	Akram et al. (2023)	Investigating the interrelationship between transformational leadership, digital advertising adoption, e-commerce adoption, environmental performance, financial performance	A study addressed... The results show that there is a relationship between digital advertising, e-commerce adoption, environmental performance, and financial performance.

Methodology

In this study, the relationships hypothesized are illustrated and presented in the following proposed conceptual model.

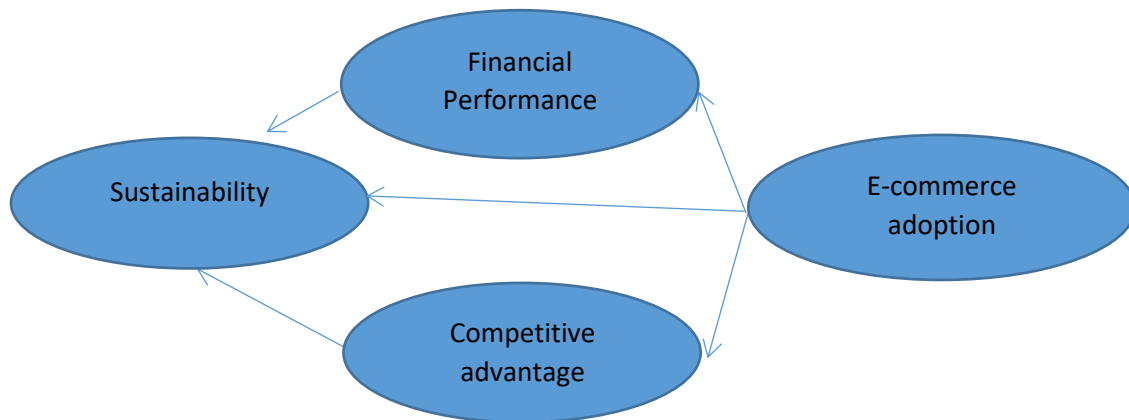


Figure 1 - Conceptual Model of the Research

Source: Adapted from Gao et al. (2023) and Akram et al. (2023)

Research Hypotheses

H1: E-commerce adoption has a positive impact on company sustainability.

H2: E-commerce adoption has a positive impact on company financial performance.

H3: E-commerce adoption has a positive impact on company competitive advantage. H4: Competitive advantage has a positive impact on company sustainability.

H5: Financial performance has a positive impact on company sustainability.

H6: Financial performance mediates the relationship between e-

commerce adoption and company sustainability.

H7: Competitive advantage mediates the relationship between e-commerce adoption and company sustainability.

This research falls into the category of descriptive-survey and is based on structural equation modeling in terms of its nature and method. Also, in terms of cognitive objectives, this research is an applied study, and its basis is quantitative. The population group of this study was the senior managers of all international export institutions in Tehran, which amounted to approximately 800 companies. The sample size in the present study was calculated to be 260 individuals using Cochran's

formula. Considering the possibility of questionnaires being distorted or lost, and in order to increase the accuracy of generalization, a total of 270 questionnaires were randomly distributed among the managers of these companies. After discarding the distorted questionnaires, a total of 267 questionnaires were finally

analyzed. It should be noted that the questionnaires used in this study were standardized. The specifications of the questionnaires, as well as their reliability reported by the authors, are presented in the table below.

Table 2 - Introduction of the Research Questionnaire

Variables	Number of Items	Source	Reliability in Original Study	Reliability in Current Study
E-commerce Adoption	7	Gibbs & Kraemer, 2004	0.85	0.8
Competitive Advantage	5	Shehadeh et al., 2023	0.88	0.82
Company Sustainability	5	Imran et al., 2019	0.89	0.88
Financial Performance	4	Agyabeng et al., 2020	0.88	0.79

To assess the validity in this study, face validity was used. To examine face validity, the questionnaire was translated and provided to several professors in a preliminary test. To measure face validity, the professors were asked to express their opinions on the suitability of the questionnaire's questions for measuring the intended indicators, as well as any ambiguities, and their corrective comments were applied. Furthermore, to assess reliability, Cronbach's alpha was used. For this purpose, 30 initial questionnaires were distributed, and the reliability of the variables was examined and confirmed (as shown in the last column of Table 2) using Cronbach's alpha. To test the hypotheses and examine the conceptual model of the research, structural

equation modeling based on partial least squares was used with SmartPLS version 4 software.

Result

Regarding the demographic information, the findings showed that 21% of the company managers were female and 79% were male. 38% of the respondents were under 40 years old, and 62% were over 40 years old. 58% of the respondents had a bachelor's degree or lower, and 42% had a master's degree or doctorate. 32% of the respondents had less than 15 years of experience, and 68% had more than 15 years of experience. In the descriptive statistics section, the findings also showed that the mean of all

indicators was higher than the theoretical mean (3).

Before testing the research hypotheses, the distribution of the data was examined using the Kolmogorov-Smirnov test. The results showed that the significance level of the test for all variables was less than 0.05; therefore, the research data did not have a normal distribution. Hence, the tests used in this study are non-parametric. To examine the relationship between the

variables, Spearman's rank correlation coefficient was used, and to analyze the structural model of the research, structural equation modeling based on partial least squares was employed. To examine the correlation between the main variables of the research, given that the data were not normally distributed, Spearman's rank correlation test, which is a non-parametric test, was used. The results of this test are shown in the table below.

Table 3 - Spearman Correlation between Variables

Variables	E-commerce Adoption	Financial Performance	Competitive Advantage	Sustainability
E-commerce Adoption	1			
Financial Performance	0.742	1		
Competitive Advantage	0.883	0.759	1	
Sustainability	0.897	0.852	0.75	1

Significant at the 0.01 level

Table 3 shows the correlation coefficients between the main variables of the study. It can be observed that the correlation coefficients between all variables are positive and significant at the $p < 0.01$ level.

After examining the normality and correlation between the variables, the adequacy and suitability of the research's conceptual model will now be investigated using structural equation modeling. SmartPLS 4 software was used to analyze the conceptual model of the research. A total of 21 items were initially included in the model development.

Before proceeding to the hypothesis testing and final model testing stage, it is essential to ensure the validity of the endogenous and exogenous measurement models. The validation criteria for the endogenous and exogenous measurement models are described below, along with the results of these models.

Endogenous measurement models involve the assessment of factor loadings. A value equal to or greater than 0.70 indicates that the variance between the construct and its indicators is greater than its measurement error variance, and the reliability of that measurement

model is acceptable. The next criterion is the Cronbach's alpha values. A Cronbach's alpha value higher than 0.70 indicates acceptable reliability. The next criterion for measurement models is the

composite reliability (CR). If the CR value for each construct is above 0.70, it indicates adequate internal consistency for the measurement models, while a value less than 0.60 indicates a lack of reliability.

Table 4 - Goodness-of-Fit Criteria for Endogenous Measurement Models

Variables	Items	Factor Loadings	Cronbach's Alpha	Composite Reliability (CR)	AVE
E-commerce Adoption (ECA)	ECA1	0.863	0.94	0.95	0.75
	ECA2	0.831			
	ECA3	0.88			
	ECA4	0.885			
	ECA5	0.852			
	ECA6	0.896			
	ECA7	0.848			
Competitive Advantage (CA)	CA1	0.856	0.90	0.93	0.73
	CA2	0.849			
	CA3	0.864			
	CA4	0.869			
	CA5	0.823			
Company Sustainability (SC)	SC1	0.833	0.88	0.92	0.69
	SC2	0.847			
	SC3	0.886			
	SC4	0.763			
	SC5	0.815			
Financial Performance (FP)	FP1	0.895	0.90	0.93	0.77
	FP2	0.901			
	FP3	0.876			
	FP4	0.84			

As can be seen, all factor loadings of the research items are above the critical value of 0.70. The composite reliability values for all research constructs are higher than 0.70, indicating acceptable internal consistency for the measurement model. To examine the convergent validity of the model, the Average Variance Extracted (AVE) criterion was used, for which the critical value is 0.50. According to the last column of Table 4, it can be seen that the calculated AVE value for all

constructs is higher than the critical value of 0.50; therefore, the convergent validity of the model is also confirmed.

After confirming the convergent validity of the model, the discriminant validity of the model was also examined. For this purpose, two methods were used: the Fornell-Larcker criterion and cross-factor loadings. The results are shown in the tables below.

Table 5 - Discriminant Validity of the Model using the Fornell-Larcker Method and the Cross-Factor Loadings Matrix

Fornell-Larcker Method				
Variable	1	2	3	4
E-commerce	0.86			
Financial Performance	0.71	0.88		
Sustainability	0.74	0.85	0.83	
Competitive Advantage	0.72	0.81	0.78	0.85
Cross-Factor Loadings Matrix				
Variable	Variable	Variable	Variable	item
0.552	0.552	0.533	0.863	ECA1
0.558	0.559	0.562	0.831	ECA2
0.634	0.634	0.687	0.88	ECA3
0.61	0.575	0.582	0.885	ECA4
0.635	0.684	0.693	0.852	ECA5
0.639	0.67	0.66	0.896	ECA6
0.68	0.678	0.709	0.848	ECA7

0.76	0.729	0.856	0.705	CA1
0.758	0.712	0.849	0.638	CA2
0.734	0.685	0.864	0.597	CA3
0.758	0.726	0.869	0.566	CA4
0.726	0.732	0.823	0.664	CA5
0.759	0.833	0.721	0.579	SC1
0.738	0.847	0.801	0.604	SC2
0.727	0.886	0.743	0.67	SC3
0.701	0.763	0.743	0.625	SC4
0.725	0.815	0.767	0.635	SC5
0.895	0.692	0.789	0.604	FP1
0.901	0.697	0.759	0.62	FP2
0.876	0.59	0.632	0.535	FP3
0.84	0.654	0.68	0.602	FP4

As shown in Table 5, based on the Fornell & Larcker (1981) method, it was found that the square root of the Average Variance Extracted (AVE) for the latent variables in the present study, which are located in the cells on the main diagonal of the matrix, is greater than the correlation between them in the cells below the main diagonal. Therefore, it can be stated that in the present study, the constructs (latent variables) in the model have a greater interaction with their own indicators than with other constructs, and the discriminant validity of the model is adequate.

The matrix of cross-factor loadings is also presented in the table above. The correlation between the

indicators and their associated constructs (colored numbers in the matrix) is greater than the correlation between them and other constructs. These values indicate the confirmation of discriminant validity and the suitability of these indicators in this model.

Assessment of the Structural Model

After ensuring the suitability of the measurement model of the research, the structural model of the research was also examined. According to Table 6, the goodness-of-fit criteria for this section are presented. These criteria include path coefficient values, T-values, coefficient of

determination (R-squared), effect size (f-squared), and Variance Inflation Factor (VIF).

Table 6 - Goodness-of-Fit Criteria for the Structural Model

Overall Model Fit (GOF)	Variance Inflation Factor	VIF	Effect Size (f-squared)	Relationships Model	
$GOF = \sqrt{AVE \times R^2}$	0.51	Financial Performance	1.29	0.682	FP <-ECA
			1.34	0.052	CA <-ECA
$GOF = \frac{\sqrt{AVE} \times \sqrt{R^2}}{\sqrt{AVE} \times \sqrt{R^2}}$	0.74	Company Sustainability Competitive Advantage	1.20	0.780	SC <-ECA
			2.42	0.041	CA <- FP
			1.22	0.455	CA <- SC

The coefficient of determination (R-squared) between the dependent and independent variables is shown in the table above. This value demonstrates very good explanatory power for the endogenous variables. Also, effect size is an index for measuring the effect of an independent variable on a dependent variable and should be reported along with the standardized path coefficient. According to the table above, the effect size for three relationships is very strong and adequate, while for two relationships, it is weak. Furthermore, to examine collinearity, the Variance Inflation Factor (VIF) statistic was used. The acceptable limit for the VIF index is below 5. As shown in the table above, this criterion is met, and there is no collinearity between the data. Finally, to evaluate the overall model

of the research, the Goodness-of-Fit (GOF) index was used (this index was obtained from the square root of the average of the communality values multiplied by the average of the coefficient of determination). The calculated GOF value is 0.66, which indicates a very good fit and confirms the overall model of the research.

To assess the fit of the structural model of the research, several indices and criteria are used, the first and most fundamental of which is the significance of the path coefficients (T-value). The structural model fit using T-values requires these values to be greater than 1.96 for confirmation. Figure 2 presents the significance and path coefficients of the model.

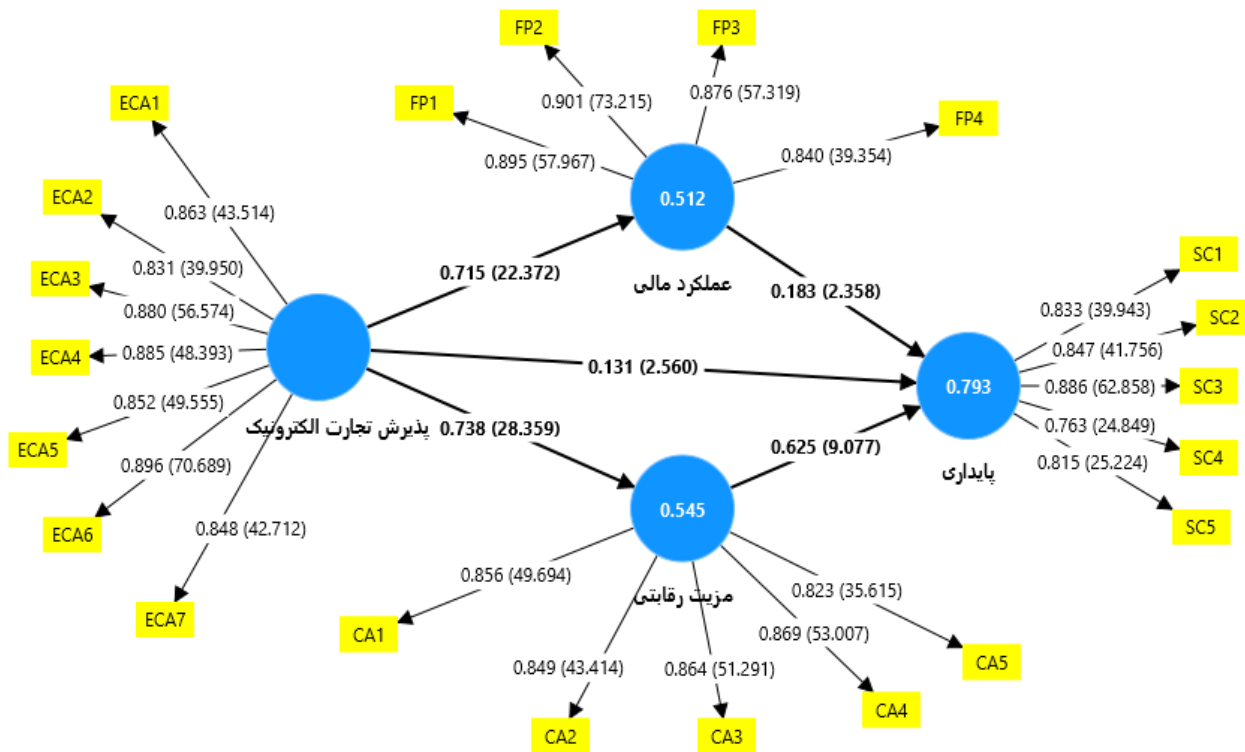


Figure 2 - Standardized Research Model and t-Values

As shown in the structural equation model based on the PLS analysis, all relationships in the model are confirmed at a 95% confidence level. Finally, the results of the direct and indirect hypotheses are presented below.

Table 7 - Results of Direct and Indirect Hypotheses

Paths	Path Coefficient	T-Statistic	Significance Level	Hypothesis Result
Direct Hypotheses				
FP -> SC	0.18	2.36	0.018	Supported
CA -> SC	0.62	9.1	0.000	Supported
ECA -> FP	0.71	22.37	0.000	Supported
ECA -> CA	0.74	28.36	0.000	Supported
ECA -> SC	0.13	0.56	0.010	Supported
Indirect Hypotheses				

ECA -> CA -> SC	0.50	9.37	0.000	Supported
ECA -> FP -> SC				

As the results indicate, all five direct hypotheses of the study were supported. To examine the indirect hypotheses of the research, the bootstrapping test in PLS software was used. The results showed that both indirect and mediating hypotheses are also supported.

Discussion

Businesses, particularly those involved in international export, play a pivotal role in economic growth, especially in developing countries, through innovation, job creation, and social inclusion (Surya et al., 2021). Globally, businesses, especially those in international export, contribute to over 80% of job growth in developed and developing economies and 70% of GDP. E-commerce has significantly aided these companies. Numerous companies have identified e-commerce as an effective avenue for global market trade, which, thanks to increased simplicity and the elimination of barriers and start-up costs, is considered an almost essential strategy for business flexibility. According to the U.S. Department of Commerce's International Trade Administration (2022), Europe's cross-border

industrial e-commerce will grow at a rate of over 12% annually, reaching \$1.8 trillion in 2025 (Ballerini et al., 2024). Given the importance of e-commerce and other variables in this study, this research aims to investigate the impact of e-commerce adoption on achieving competitive advantage, sustainability, and financial performance of international exporting companies in Iran.

The findings of the first hypothesis of the study indicated that e-commerce adoption affects the financial performance of institutions. These findings are consistent with the studies of Farahani & Mousavi (2023), Moghadamnia & Atashkar (2022), Gao et al. (2023), Udayana et al. (2023), and Akram et al. (2023). It should be noted that e-commerce allows institutions to reach a wider customer base, improve operational efficiency, reduce overhead costs, and provide additional revenue channels. Additionally, e-commerce can lead to better customer engagement and loyalty, positively impacting sales and profitability.

The research findings showed that e-commerce adoption affects the sustainability of companies. The findings of this hypothesis are

consistent with Moghadamnia & Atashkar (2022), Gao et al. (2023), and Udayana et al. (2023). It is worth noting that e-commerce provides new opportunities for growth and expansion of global trade. By utilizing internet and e-commerce technologies, exporting institutions can easily access international markets, attract new customers, and increase their revenues.

This study found that e-commerce adoption positively affects the competitive advantage of international exporting institutions. These findings align with the studies of Gao et al. (2023), Udayana et al. (2023), Akram et al. (2023), and Orzan et al. (2020). Through e-commerce, institutions can improve their processes, including advertising, sales, customer service, and marketing communications, leading to increased service quality, cost reduction, and faster decision-making. These advantages enable institutions to gain a competitive edge over their rivals and experience improved export prospects.

The findings of this study showed that the financial performance of international exporting institutions positively affects their financial sustainability. These findings are consistent with the studies of Gao et al. (2023) and Udayana et al. (2023). If a financial institution has strong financial performance, the likelihood of financial problems and

bankruptcy decreases, and its financial sustainability increases.

This study found that financial performance positively affects the competitive advantage of international exporting institutions. These findings are in line with the studies of Gao et al. (2023), Udayana et al. (2023), and Akram et al. (2023). The impact of financial performance on the competitive advantage of institutions lies in the fact that providing sufficient financial resources and utilizing them effectively can help companies significantly improve their activities. With increased financial performance, companies can make the necessary investments to achieve their goals, improve technology, develop new products, and create innovation platforms.

Finally, the findings of this study showed that financial performance and competitive advantage mediate the relationship between e-commerce adoption and company sustainability. Studies have shown that very little research has been conducted on the mediating role of these two variables in the relationship between e-commerce and sustainability. However, the results of Moghadamnia & Atashkar (2022), Gao et al. (2023), and Udayana et al. (2023) somewhat support these hypotheses.

This research aimed to investigate the impact of e-commerce adoption

on achieving competitive advantage, sustainability, and financial performance of international exporting institutions. The results of testing the research hypotheses using structural equation modeling showed that all considered relationships are supported. Overall, e-commerce adoption can influence the competitive advantage, sustainability, and financial performance of international exporting institutions. By adopting e-commerce, institutions can easily explore new markets and offer their services and products to international customers. This can lead to increased market share, revenue growth, and enhanced international reputation for the institution. Generally, e-commerce adoption can significantly impact the competitive advantage, sustainability, and financial performance of international businesses. E-commerce allows businesses to reach a wider audience, reduce costs, increase efficiency, and improve customer satisfaction. On the other hand, e-commerce leads to the formation and creation of digital marketing to target specific audiences, personalize marketing efforts, and track performance in real-time. Therefore, e-commerce can help international businesses compete in the global market, achieve sustainability through efficient operations, and enhance their financial performance through increased sales and customer loyalty. Thus, it is recommended that the studied companies and institutions

consider adopting e-commerce and creating the groundwork for its effective use.

Every research study, by its nature, has limitations, and this study is no exception. The limitations of this study can be attributed to the inability to generalize the results of this study to other populations. Therefore, it is suggested that the model of this study be tested in other populations as well.

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