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Impact of E-Commerce in B2B Physical Distribution:
Diffusion of Innovations Perspective

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INTRODUCTION

The use of e-services in business transactions has brought several advantages to both service providers and customers in various application contexts (Kwon et al., 2009). The service provider benefits from e-services in the form of lower operating costs, reduced cycle times and improved service levels, which in the end increase competitive advantage (Kumar and Petersen, 2006), while customers benefit in the form of increased information availability and visibility (Golicic et *al*., 2002), ability to make comparisons between alternatives (Longmate et *al*., 2000), convenience (Surjadjaja et *al*., 2003), and reduced processing errors (Croom & Johnston, 2003). However, despite these advantages, the adoption of e-commerce by customers has been subject to some limitations. Customers may prefer using traditional means of services because of self-related reasons, such as pre-formed habits of using the same systems, lack of awareness about e-services, and lack of previous experience with e-services or even lack of awareness of internet in general (Deeter-Schmelz et *al*., 2001; Liang & Huang, 1998). They may also resist using e-services because of lack of human-to-human contact (Yang et al, 2006), which would eliminate the expertise and reassurance of salespeople.

Being a new innovation in certain parts of the world, e-commerce diffuses slowly in these parts and its adoption by customers depends on the benefits they perceive in terms of several innovation attributes such as observability of the relative advantage of e-services over traditional means of transactions (Rogers, 2010). The theory of diffusion of innovations (Rogers, 2010) is thus useful in understanding the level of adoption of e-commerce by customers. This chapter draws on this theory to study how the provision of e-services helps improve the link between service factors and customer satisfaction.

This chapter contributes to the literature by addressing two main areas, namely, (i) drawing on the diffusion of innovation theory for understanding the role of e-services in enhancing customer satisfaction and (ii) focussing on a B2B setting. This is done by studying how e-commerce activities of a physical distribution (PD) firm help improve the link between some service factors and satisfaction of its B2B customers.

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LITERATURE SURVEY AND HYPOTHESES DEVELOPMENT

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Service Attributes Leading to Customer Satisfaction in Physical Distribution Services

Distributor/wholesaler channel systems are the ones that include a manufacturer, a distributor, and the distributor's customer, where the manufacturer sells product to the distributor, sometimes called a wholesaler, who sells to business customers (Maltz & Maltz, 1998). Inventory stocking, product availability, final delivery, and other basic aspects of customer service are some important responsibilities of distributors (Maltz & Maltz, 1998). Mentzer et *al.* (1989) highlight the importance of individual order cycle, starting from order placement and concluding with satisfactory delivery. Achieving high quality in PDS is critical in B2B settings (Perreault and Russ 1974), because a firm's improved performance in terms of the service attributes can help differentiate itself from competitors (Xing and Grant, 2006).

Daugherty et *al*. (1998) found 11 attributes relevant to PDS – fill rate, orders shipped complete, cycle time consistency, cycle time length, delivery on due date, frequency of deliveries, communication of problems/changes, invoice accuracy, usage of advance shipping notices, usage of preferred carriers, and willingness to customize service. Similarly, Mentzer et *al*. (1999) found 9 attributes, including information quality, ordering procedures, ordering release quantities, timeliness, order accuracy (reflecting product availability), order quality, order condition, order discrepancy handling, and personal contact quality.

Groups of Service Attributes

There seems to be a general agreement in the literature on various service attributes leading to customer satisfaction in the physical distribution services. Many research studies have focussed grouping these attributes into smaller number of factors to facilitate further analysis. For example, Rabinowich and Bailey (2004) found three groups of attributes (pricing, transaction attributes such as order size, firm attributes such as experience, size and downstream channel configuration) to be important in influencing PDS quality. Grouping attributes into factors facilitates further analysis in research studies. For example, by grouping service attributes into order fulfilment and order procurement factors, Thirumalai and Sinha (2005) have shown that the significance of the order fulfilment factor differed among three product groups – convenience, shopping and specialty. Since the level of diffusion of e-services is the main objective of the present study, we attempt to group service attributes into factors that differ in terms of the impact of e-services. Note that while some service attributes aim at improving customer service through better communication and responsiveness in reaching them, other factors are related to operational issues such as improved order processing and logistics issues (Stank et al., 2003). Accordingly, it is proposed in this chapter that service attributes could be grouped into three factors: order processing performance, logistics performance and customer service. E-services readily substitute order processing activities, partially substitute logistics activities (only warehousing part but not physical delivery part), but e-services cannot readily substitute customer service that requires higher levels of human interaction. This study captures these factors (order processing, logistics performance and customer service) using scales developed in previous studies.

Good performances in terms of the above service factors influence customer satisfaction positively (Daugherty et al., 1998; Innis & La Londe, 1994; Stank et al., 2003; Ramanathan et al., 2010). In line

with these previous studies, it is hypothesized that customer satisfaction is significantly and positively related to performance in terms of the three service factors. These direct relationships are more explicitly stated in terms of the following hypotheses 1a - 1c.

H1a: *Performance in terms of order processing is positively related to customer satisfaction.*
H1b: *Performance in terms of logistics is positively related to customer satisfaction.*
H1c: *Performance in terms of customer service is positively related to customer satisfaction*.

ELECTRONIC SERVICES

The nature of service delivery has shown a fundamental shift with the increasing role being played by information technologies (Leek *et al.,* 2003; Pujari, 2004). The significant change in the way services are delivered to customers via electronic media has attracted the attention of many academics (Pujari, 2004).

Factors of E-Services That Help Enhance Customer Satisfaction

Several advantages of e-services have been emphasized by academics (Kumar & Petersen, 2006; Golicic et *al*., 2002; Longmate et *al*., 2000; Rowley, 2006).

E-services facilitate availability of information to customers: E-services provide customers easier and faster access to information (Bettua, 1999; Blachere, 2001). By doing so, e-services facilitate easier comparisons on price and sales conditions of products and services (Longmate et *al*., 2000) without having to seek out a salesperson (Zeithaml et *al*., 2002). Various academics have emphasized information availability and content as key benefits of online services when compared with traditional service channels (Zeithaml et *al*., 2002; Wolfinbarger & Gilly, 2003; Rowley, 2006). This information enhanced by e-commerce technology results in higher levels of efficiency and enables businesses to manage their operations more effectively (Golicic et al., 2002).

E-services facilitate easier transactions for customers: Customers generally prefer e-service over traditional service because they can perform their transaction immediately since they do not have to wait for the "next available representative" as in the case of telephone ordering (Kumar and Petersen, 2006). They also receive automated, system-generated, acknowledgement for placing the order. West (2001) argued that this increased speed in transactions provides customers and firms a competitive advantage by reducing cycle times. Other transaction related conveniences offered by e-services to customers include unrestricted trading hours, absence of queues and associated delays, ready information on stock availability, and information on alternatives (Surjadjaja et al., 2003). E-services generally results in fewer errors during order processing. Kumar and Petersen (2006) and Croom and Johnston (2003) found that e-commerce has reduced processing errors, compared to traditional methods, because orders are directly entered by customers.

Thus, the available literature shows that the use of e-technologies in services enhances customer satisfaction by providing better information and by making the transactions easier. In this chapter, these two benefits are called as information convenience and transaction convenience offered by e-services. None of the previous research has addressed how these enhancements translate into improved customer satisfaction. Hence, this study looks at the influence of these benefits of e-services in improving customer satisfaction in this paper.

Theoretical Underpinnings: Diffusion of Innovations

In this chapter, a mediating effect of e-services is argued by drawing on the theory of diffusion of innovations. An innovation is an idea, behaviour, or object that is perceived as new by an individual or another unit of adoption (Rogers, 2010). The extent of adoption of innovative ideas is affected by certain attributes. Rogers (2010) identified five attributes: observability, relative advantage, compatibility, trialability and complexity. The observability refers to the degree to which the results of an innovation are visible to potential adopters. The relative advantage is the degree to which an innovation is perceived as being superior to current practice. The compatibility of an innovation is the degree to which an innovation is perceived to be consistent with social-cultural values and beliefs, previously introduced ideas and/or perceived needs. Trialability is the degree to which an innovation can be experimented on a limited basis. Complexity is the degree to which an innovation is difficult to use and understand.

Using the internet to develop e-commerce based services in physical distribution wholesale firms is an innovative idea, especially in the Turkish context in 2009, to improve performance. As per the diffusion of innovation theory, the level of adoption of innovative e-services by customers depends on the five attributes specified above. This chapter assumes that the extent of adoption of e-services by customers is proportional to customer satisfaction; more satisfied customers will adopt innovations faster and better.

The extent to which customers accept e-services depends on the purpose for which these e-services are introduced. In line with our discussion in previous sections, three different factors of e-services – order processing, logistics and customer service – are distinguished here. Note that these three factors differ in terms of the level of substitutability by automated electronic technologies. While order processing can be well automated using electronic technologies, it is difficult to substitute several customer service aspects (that require human interactions) with electronic technologies. Logistics services can be only partly automated; picking and despatching can be automated but delivery, in a physical distribution firm, requires human interaction.

Thus the theory of diffusion of innovations provides a basic framework to understand the level of acceptability of e-services by customers. E-services that are introduced to automate a routine operation, for example, for registering and processing orders, generally perform highly in terms of observability, relative advantage, compatibility and trialability, and have lower levels of complexity to customers. Hence, they diffuse better in terms of acceptability by customers and help in improving their satisfaction. In contrast, customer service requires a higher level of human interaction and hence the level of diffusion of e-services will be very limited and may not help improve customer satisfaction. Finally, diffusion of e-services for logistics will be only partly successful in terms of improving customer satisfaction.

Based on these arguments, it is posited that, for customers that use e-services, the relationships between service factors and customer satisfaction will be mediated by e-service benefits (i.e., information convenience and transaction convenience). Further note that, of the three service factors (namely order processing, logistics and customer service) discussed in hypotheses 1a-1c, customer experience in terms of order processing and logistics can be more readily enhanced using e-services, while experiences in terms of customer service that involve human interaction cannot be readily enhanced using e-services. Thus, the following additional hypotheses (2a-2c and 3a-3c) are proposed.

H2a: *Information convenience offered by e-services mediates the positive relationship between order processing performance and customer satisfaction.*

H2b: *Information convenience offered by e-services mediates the positive relationship between logistics performance and customer satisfaction.*

H2c: *Information convenience offered by e-services does not mediate the positive relationship between customer service and customer satisfaction.*

H3a: *Transaction convenience offered by e-services mediates the positive relationship between order processing performance and customer satisfaction.*

H3b: *Transaction convenience offered by e-services mediates the positive relationship between logistics performance and customer satisfaction.*

H3c: *Transaction convenience offered by e-services does not mediate the positive relationship between customer service and customer satisfaction.*

METHODOLOGY

In order to test the hypotheses, a questionnaire survey with e-service customers of a single physical distribution company was conducted. The focal company is one of the largest pharmaceutical wholesale distributors in Turkey. In this section, the context of the firm in which our survey was conducted is discussed. Sample selection data collection and analysis methods are discussed later in this section.

The Case Study Company

A pharmaceutical wholesaler and distributor company in Turkey was selected to conduct the research. The customers of the case company are pharmacies located all over Turkey and the suppliers are the pharmaceutical manufacturers. Since patients (final consumers) can get their medicines only from the pharmacies and not from wholesalers, the primary business of the case company is to buy and sell pharmaceuticals in the B2B context.

Pharmacies place their orders several times a day. Prior to starting e-service, ordering products was only possible by telephone. Sales representatives are assigned to each customer (pharmacies) and these representatives regularly contact pharmacies for orders. Customers call the case company directly in the case of urgent orders. Orders are entered into the case company's electronic system and passed to the case company's warehouse via intranet. Employees in the warehouse prepare and load them to the service vehicles to be delivered to customers in specified delivery slots during the day. If the orders are urgent, they are quickly delivered to customers outside the pre-specified service hours.

Over the past few years, the case company has started to provide e-services to their customers. To use these e-services, customers access the website of the case company with an appropriate password. E-services provide customers an alternative way of placing orders. Besides orders, customers can use the website for other services such as finding information on product prices, sales promotions, stock availability, comparison of similar products, and tracking their purchases. The only difference between telephone and online ordering process is that, for online ordering, the customer directly enters his orders into the case company's electronic system without a need to use the services of a sales representative. While some customers use these e-services for ordering, some of them use only for information purposes and continue to order by telephone. Some other customers do not use any of these e-services and prefer trading by conventional means (i.e., telephone enquiry and telephone ordering). The term 'ordering' is used in this chapter instead of 'purchasing' because payments are made after the products are received by customers and are not processed online.

Sample Selection

Ankara, where the company's headquarter is located, was selected as the test region and the questionnaire was applied to a sample of 100 customers (pharmacies) in the area. These sample customers regularly use e-services of the company and order some of their products online. The sample of customers was chosen from the company's online-ordering customer database by tracing electronic orders placed in the last 6 months. To ensure appropriate spread of customers, they were divided into four categories according to their total purchases from the company in the last three months. Then equal numbers of customers (25) from all the four categories were selected paying attention to the customers' location distribution in Ankara. In this way, both loyal and less loyal customers were selected in order to avoid any bias that can be caused by asking the perceptions of only loyal and happy customers, or those customers who are less loyal and less satisfied. This way of sampling also prevented any bias that can be caused by surveying only customers that are closely located to the distribution centres or only those that are far from them. Thus we employed the two-step stratified sample selection process (different amounts of purchases and different locations) to ensure that the 100 pharmacies could be considered representative of the company's customer profiles in Ankara.

Data Collection

A *person-administered in-office survey* method (Shiu et *al*., 2009) was followed during the data collection process for ensuring 100% participation of the selected samples as well as helping the respondents for answering the questions. A pilot test was done prior to collecting responses from the sample of 100 customers.

Data Analysis Methods

Factor analysis was used to group the items. Multiple regression analysis is then used to verify the direct relationships (H1a-c). Multiple regression analysis is a statistical technique that can be used to analyse the relationship between a single dependent variable and several independent variables. This study also used regression to test the mediating effects proposed in the remaining hypotheses (H2a-c and H3a-c). This mediation procedure is briefly discussed below.

A mediating relationship is said to occur if an independent variable has its effect on the dependent variable via a second independent variable (called the mediator variable). This means that the independent variable first has an effect on the mediator variable, and this in turn influences the dependent variable (Miles & Shevlin, 2001). Consider three variables, X, the independent variable, Y, the dependent variable and M, the mediator variable. The following series of regressions are involved (Miles & Shevlin, 2001).

Regression 1: Show that X is a significant predictor of Y.
Regression 2: Show that M is a significant predictor of Y.
Regression 3: Show that X is a significant predictor of M.
Regression 4: Show that M is a significant predictor of Y, when controlling for X. To do this, a multiple regression is carried out using X and M as independent variables, and Y as the dependent variable. If M is a complete mediator of the relationship between X and Y, the effect of X, when controlling for M, should be zero. If it is only a partial mediator the effect will be merely reduced, not eliminated.

RESULTS

Factor Analysis

The survey questionnaire included scales from existing studies (Table 1). Exploratory factor analysis with varimax rotation was performed to identify factors of physical distribution service. This resulted in three factors, namely order processing performance, logistics performance and customer service, with eigenvalues larger than one. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.827, which is more than the recommended value of 0.5. The three factors together represented 70.20% of variance. Confirmatory factor analysis was then performed to verify the unidimensionality of these three factors and other factors (satisfaction, e-information convenience and e-transaction convenience). Results are shown in Table 1. Reliability of the constructs was verified through Cronbach's alpha (Nunnally, 1978). Cronbach's Alpha for all the six factors are in the range of 0.678 – 0.955 and are more than the suggested minimum (0.60). The average variance extracted (AVE) was high for all the factors, much above the minimum recommended value of 50%. Thus convergent validity of the factors is acceptable. Discriminant validity (Hair et *al*., 2006) of the factors was verified by comparing their composite reliabilities with inter-factor correlations (Table 2). Since composite reliabilities are higher than inter-factor correlations, discriminant validity of the factors has been established.

Multiple Regression Analysis for Testing Direct Effects

Multiple regression analysis is used for testing the research hypotheses. First, direct relationships between service factors of physical distribution and customer satisfaction are tested. Customer satisfaction is the dependent variable and is regressed against the three service factors (order processing, logistics performance and customer service), which are the independent variables. The results of the regression are acceptable as shown by the significant F statistic and by the good value of R^2 (see Table 3). There was no evidence of multi-collinearity since variable inflation factors (VIF) are well below the cut-off value of 5. The results show that all the three service factors are significant in explaining customer satisfaction, though order processing performance has a lower level of significance. Thus, these results validate the first three hypotheses (H1a-c) and show that performance in terms of order processing, logistics and customer service are positively related to customer satisfaction.

TESTING FOR MEDIATION EFFECTS

In this section, the tests for mediation effects of the two e-service related factors (information convenience and transaction convenience) are described. These two factors are called as e-information convenience and e-transaction convenience for the remainder of this paper.

Mediation Effect of Information Convenience of E-Services

First the mediation effect of e-information convenience is tested. As explained earlier, to test whether e-information convenience mediates the relationship between the three service factors and customer satisfaction, the following regressions are needed.

Table 1. Confirmatory factor analysis of items

Constructs with Survey Items		Loading	Reliability, Variance and Descriptive Statistics
Order Processing Performance (Emerson and Grimm, 1996; Francheschini and Rafele, 2000; Mentzer et *al*., 1989, 1999; Maltz and Maltz, 1998)	Able to respond to my unexpected/urgent orders	.697	Cronbach's alpha = 0.720; AVE = 0.54; Mean = 5.158; SD = 0.524
	Tracking new products and holding a wide variety of products in stock	.749	
	Low cycle time	.771	
	Order accuracy	.730	
Logistics performance (Hult, 1998; Hult et al., 2000; Mentzer et al., 1989, 1999; Wolfinbarger and Gilly, 2003)	Delivery within the promised time frame	.707	Cronbach's alpha = 0..678; AVE = 0.61; Mean = 6.217; SD = 0.465
	Invoices match purchase orders	.833	
	Delivery of good and undamaged products	.798	
Customer Service (Daugherty et al., 1998; Menzter et *al*., 1999; Parasuraman et al., 1988; Stank et *al*., 1999)	No minimum order size constraint	.865	Cronbach's alpha = 0..955; AVE = 0.62; Mean = 5.980; SD = 0.158
	Willingness to help customers	.814	
	Courtesy of employees	.927	
	Skills and knowledge of employees	.937	
	Providing information on timing of a service	.890	
	Customer services representatives facilitate clear communication	.943	
	Customer services representatives are able to convey trust and confidence	.831	
Customer satisfaction (Daugherty et *al*., 1998; Innis and La Londe, 1994; Mentzer et *al*., 2001; Stank et al., 2003)	I am satisfied with the case company's services	.914	Cronbach's alpha = 0..898; AVE = 0.83; Mean = 6.120; SD = 0.141
	I will continue purchasing from the case company	.913	
	I would recommend the case company to other pharmacies	.908	
e-information convenience (Aladwania and Palvia, 2002; Barnes and Vidgen, 2002; Rowley, 2006; Wolfinbarger and Gilly, 2003; Zeithaml et *al*., 2002)	Up to date and accurate information in the website (the electronic channel)	.636	Cronbach's alpha = 0..912; AVE = 0.59; Mean = 5.074; SD = 0.487
	I find the service of electronic channel credible	.784	
	It is easy to find what I need in the electronic channel	.820	
	It is easy to compare similar products in the electronic channel	.760	
	There is adequate information about products and services in the electronic channel	.859	
	The electronic channel is simple to use	.777	
	The organisation and structure of the electronic channel is logical and easy to follow	.879	
	I can contact customer service over phone in case of any problem in the electronic channel	.655	
	The electronic channel offers customised information based on our previous transactions	.723	
e-transaction convenience (Aladwania and Palvia, 2002; Barnes and Vidgen, 2002; Rowley, 2006; Wolfinbarger and Gilly, 2003; Zeithaml et *al*., 2002)	I feel safe in my transactions with the electronic channel	.725	Cronbach's alpha = 0..800; AVE = 0.62; Mean = 5.540; SD = 0.217
	The electronic channel provides information on price and stock availability of the products while placing an order	.801	
	It is easy and quick to place an order from the electronic channel	.839	
	I receive acknowledgements for my web orders immediately	.787	

Table 2. Inter-factor correlations

	Customer Satisfaction	Order Processing Performance	Logistics Performance	Customer Service	E-Information Convenience	E-Transaction Convenience
Customer satisfaction	**0.937**[a]			.		
Order Processing performance	.377***	**0.826**				
Logistics performance	.458***	.385***	**0.824**			
Customer service	.622***	.295***	.334***	**0.963**		
E-information convenience	.403***	.301***	.343***	.109	**0.928**	
E-transaction convenience	.522***	.357***	.399***	.221**	.740***	**0.868**

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

[a] Diagonal elements represent composite reliability of the factors

Table 3. Regression Analysis for direct effects

Independent Variables	Dependent Variable: Customer Satisfaction
Order Processing performance	.138*
Logistics performance	.238***
Customer service	.502***
R^2	.473
Adjusted R^2	.456
F-statistic	28.68***
Max VIF	1.252

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Regression 1: This step involves a regression with customer satisfaction as the dependent variable and the three service factors as independent variables. The result, presented already in Table 3, shows that all the three service factors are significant predictors of customer satisfaction.

Regression 2: This step involves a regression with customer satisfaction as the dependent variable and the e-information convenience (the mediator variable) as the independent variable. The result, presented in the second column of Table 4, shows that e-information convenience is a significant predictor of customer satisfaction.

Regression 3: This step involves a regression with e-information convenience (the mediator) as the dependent variable and the three service factors as independent variables. The result, presented in the third column of Table 4, shows that two of the three service factors (order processing performance and logistics performance) are significant predictors of e-information convenience. The other service factor, customer service, is not significantly related to e-information convenience.

Regression 4: This step involves a regression with customer satisfaction as the dependent variable and the three service factors and e-information convenience as independent variables. The result, presented in the last column of Table 4, shows that e-information convenience is a significant predictor of customer satisfaction in the presence of the three service factors. While customer service is significant, order processing performance is no longer significant while the level of significance of

logistics performance has reduced both in terms of the magnitude (from 0.238 in Table 3 to 0.164 in the last column of Table 4) and in terms of the level of significance (from 1% level in Table 3 to 5% level in the last column of Table 4).

Thus, these results show that e-information convenience completely mediates the relationship between order processing performance and customer satisfaction, validating hypothesis H2a. Similarly, e-information convenience partially mediates the relationship between logistics performance and customer satisfaction, validating hypothesis H2b. Finally, these results show that customer service is not significantly related to e-information convenience and the significance of customer service does not reduce in the last column of Table 4. These results prove that there is no evidence of mediation effect of e-information convenience on the relationship between customer service and satisfaction. This validates our hypothesis H2c.

Mediation Effect of Transaction Convenience of E-Services

The calculations for testing the mediation effect of e-transaction convenience are exactly similar to the ones discussed in the previous section. The regression results, presented in Tables 3 and 5, show that e-transaction convenience completely mediates the relationship between order processing performance and customer satisfaction, validating hypothesis H3a. Similarly, e-transaction convenience partially mediates the relationship between logistics performance and customer satisfaction, validating hypothesis H3b. Finally, there is no evidence of mediation effect of e-transaction convenience on the relationship between customer service and satisfaction. This validates our hypothesis H3c.

DISCUSSION AND CONCLUSION

Using the data from customers of a Turkish Pharmaceutical wholesale firm, this chapter has studied the impact of performance of the firm in terms of service factors on customer satisfaction and the role of e-services on these impacts. The theoretical bases for the study were drawn from the literature on diffu-

Table 4. Mediating effects of e-information convenience

Independent Variables	Dependent Variables		
	Customer Satisfaction	E-Information Convenience	Customer Satisfaction
Order processing performance		.207**	.083
Logistics performance		.278***	.164**
Customer service		-.044	.513***
E-Information convenience (mediator)	0.403***		.265***
R^2	0.162	.153	.532
Adjusted R^2	0.153	.126	.513
F-statistic	19.0***	5.77***	27.02***
Max VIF	1.000	1.252	1.343

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 5. Mediating effect of e-transaction convenience

Independent Variables	Dependent variables		
	Customer Satisfaction	E-Transaction Convenience	Customer Satisfaction
Order processing performance		.228**	.061
Logistics performance		.293***	.139*
Customer service		.056	.483***
E-transaction convenience (mediator)	0.522***		.338***
R^2	0.272	.210	.563
Adjusted R^2	0.265	.186	.545
F-statistic	36.7***	8.51***	30.6***
Max VIF	1.000	1.252	1.343

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

sion of innovations in firms. Results show that a good performance of the firm in terms of service factors (order processing, logistics and customer service) has significant positive relationship with customer satisfaction. Further this chapter has found that provision of e-services completely mediate the relationship between order processing performance and customer satisfaction, partially mediate the relationship between logistics performance and customer satisfaction, and does not mediate the relationship between customer service and customer satisfaction.

While this study focused the customers of only one pharmaceutical firm, the conclusions can be generalised to a wider context of provision of innovative e-commerce related technologies in the B2B setting. If customers can experiment the innovations more easily to observe the benefits of innovative e-services and if they are convinced of the relative advantage of adopting those innovations, there are better chances of acceptability of these e-services. These characteristics are true with somewhat older e-technologies that are readily available in the market, that are used to automate routine operations and have enjoyed more widespread use. E-services related to order processing, warehousing, order picking and despatch, which are some of the more traditional e-commerce (some times called Web 1.0) applications (Turban et al., 2009), belong to this category. Customer satisfaction is better mediated by e-services in these areas.

In contrast, if customers are not convinced of the innovations in e-services, either because they do not observe any special advantage of employing these innovations or they do not find these innovations to be consistent with their traditional ways of conducting transactions or they find it riskier to experiment the use of new e-services, they will be reluctant to accept these innovations. These characteristics are true with any form of e-service that attempts to substitute human interactions and automate areas that have traditionally required some form of human involvement. Examples are the ability to clarify the doubts of customers before ordering, providing extra suggestions to customers while ordering, trouble-shooting the problems (if any) faced by customers during their ordering process, physically delivering the products ordered in the right condition, and, providing after-sales services in the case of returns and/or refunds (Collier & Bienstock, 2006; Turban et al., 2009). Initial developments of e-commerce focussed less on developing technologies for substituting human involvement (Chaffey, 2009) and hence the diffusion of these technologies is limited and customer acceptability is also limited. These technologies do not provide enough support towards customer service.

However, the absence of mediating role of e-services on customer service could change as electronic technologies evolve in future. New developments in Web 2.0 technologies (social networking, wiki, chat, etc.) (Turban et al., 2009) and even the newer Web 3.0 developments (semantic web) (Joo, 2011; Turban et al., 2009) primarily target participatory technologies and hold promise to substitute a part of human involvement in future.

Some limitations of this research should be considered when interpreting its findings. Overcoming these limitations provide scope for further research. First, this study is based on samples of a single company's customers, which limits the generalisation of the results to the whole industry. Further research should be conducted on multiple companies from the same industry. Second, the sample was selected from a single location, limiting the generalisation of the findings to customers all across the country. In that sense, conducting the research based only on Turkish pharmaceutical wholesale industry is another limitation of this study; while the wholesalers in Turkey sell medicine only to pharmacies and hospitals, in many other countries the transaction is from the manufacturers directly to the retailers. Therefore, the service setting in question should be taken into account while interpreting the findings of this study. Third, this study has not considered any service factors related to financial transactions as the focus wholesale firm does not carry out financial transactions electronically with their customers. Future studies in a different setting could include additional service factors related to financial transactions and security.

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KEY TERMS AND DEFINITIONS

Customer Satisfaction: This refers to the extent to which customers are happy with the services they obtain.

E-Information Convenience: This represents the facility provided by e-services to help customers get more information about products and services.

E-Services: E-services are electronic services provided via online tools. Both service providers and customers are benefited using e-services.

E-Transaction Convenience: This represents level of convenience experienced by customers using e-services for their business transactions. It mainly represents the e-safety in money transactions and the electronic channels for quick access.

Innovation: Innovation can be any new idea or concept that can take businesses forward.

Physical Distribution: It considers critical decision areas involved in activities of distribution of finished products from production line to consumers/customers.

Service Factors: Service factors are major elements behind service improvements. This study considers three service factors namely order processing performance, logistics performance and customer service.