

Determinants of Internet Banking Adoption among Customers of Commercial Banks: An Empirical Study in the Jordanian Banking Sector

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Abstract

The study aimed at investigating the adoption of Internet banking by customers of Jordanian commercial banks, the barriers restraining its growth, and the solutions to some of the main hindrances that face this innovative technology. A sample of 476 customers having accounts in thirteen local commercial banks and using Internet banking was randomly selected. The self-administered questionnaire relying on a 5-point scale was used to solicit the primary data. The factor analysis-varimax rotation was used to determine the dimensions of the study items whereas the simple regression was employed to determine the relative influence of perceived privacy and security, perceived ease of use, service quality, customer trust, and customer feedback on Internet banking adoption. All the independent variables have significant impacts on Internet banking adoption whilst the best predictor of the adoption is accounted for the website quality followed by customer trust. However, the adoption rate is low and is tracked mainly by customers of high education levels and high ability in using computer applications and internet experiences. Also, the study provides some recommendations and future research to resolve the obstacles facing Internet banking adoption by customers of commercial banks in Jordan.

Keywords: E-banking, internet banking adoption, internet banking development, customer behavior, banks services quality, Jordan

1. Introduction

The increasing financial competitive environment, locally or globally, has led small and large banks to engage in searching for new delivery channels through which they can differentiate their products and services and thus achieve competitive advantage (Jenkins, 2007). In that, the internet environment has drastically changed the orientations of traditional business and moved banks' activities towards the so-called digital bank. The internet has allowed banks to practice new generations of banking services without being compelled to invest in physical branches (Furst et al., 2002; Gilmore et al., 2007; Jenkins, 2007). Internet banking positively reduces the operational costs of banks, improves banking services, and leads to retaining customers (Couto et al., 2013; Furst et al., 2002). Furst et al. (2002) refer Internet banking to the system that allows customers to transact business with the bank on the internet and provides an obvious improvement in the services of the banking industry (Chong et al., 2010). Additionally, Internet banking offers convenience to its users through performing activities at any time of the day (24 hours) and from anywhere in the world (Abu-Assi et al., 2014; Sayar & Wolfe, 2007) thus Internet banking is an appropriate gate for banks to meet the ultimate needs of their customers competitively (Abu-Assi et al., 2014; Bradley & Stewart, 2003). Internet banking significantly influences the retail bank-customer relationship at the first stage of the development process, but it does not substitute other delivery channels (Ioannou & Zolkiewski, 2009). Banks need to provide customers with the latest financial products and services depicted in a wide variety of choices, which in turn promotes customers' retention and the market share of banks (Jenkins, 2007). Therefore, banks management shifted their strategic thinking of competition towards non-price and high-quality services by adopting a multi-channel strategy (Salhieh et al., 2011). Furthermore, the organization's culture and customer acceptance of innovative technology considerably affect the adoption of e-services delivery in the UK and Ireland (Daniel, 1999), and the consumer behavior differs across cultures (De

Mooij & Hofstede, 2011). The culture and the role of government determine electronic banking among Iranian banks (Azad et al., 2013). Most of the current measurements, in general, were developed within the context of Western cultures that might not entirely apply to Eastern culture (Sekaran & Bougie, 2010). Consequently, banks management should devote much effort to tackle challenges and impediments limiting the expansion of Internet banking adoption by customers in different cultures.

2. Research Problem and Objectives

According to Jordanian's banks customers, the marketing literature demonstrates that customers are still unsatisfied with Internet banking applications, and there is a need for improvement and development of this innovative technology. While commercial banks in Jordan have provided adequate opportunities for their customers to implement their banking operations on the internet, the acceptance of this technology by customers is still in its infancy accounted that for a number of reasons (Abu-Assi et al., 2014; Alnsour & Al-Hyari, 2011; Rawashdeh, 2015; Salihi et al., 2011). It has been recognized that understanding the reasons behind accepting or rejecting computer systems such as internet banking is one of the most challenging issues in information system research, especially in Jordan...and commercial banks in Jordan are looking to improve their operations and reduce their costs through internet-based E-banking systems (Abu-Assi et al., 2014, p. 170). This behavior urges top management in banks to determine all the facilitators and barriers affecting Internet banking adoption by customers of Jordanian banking taking into account the culture dimension, Jordanian banking conditions, and circumstances (Abu-Assi et al., 2014). Further, it is worthy to noting that a scant research, within the context of a small market, has devoted sufficient attention to investigating the motivations of banks in adopting internet banking services (Jenkins, 2007). However, this study proposes a new model that integrates factors with Internet banking adoption in Jordanian banking. It adds a new factor that was not investigated in previous research "customer feedback" which may have a significant impact on the adoption of Internet banking in Jordan. Subsequently, this study tends to answer the two following questions to fill these gaps:

- What is the current state of Internet banking adoption by commercial banks' customers in Jordan?
- What are the most critical factors controlling the customers' adoption of Internet banking?

3. Literature Review

3.1 The Technology Acceptance Model (TAM)

The technology acceptance model (TAM) was used by many studies to investigate the adoption of a new information system/computer usage behavior (e.g., Abu-Assi et al., 2014; Alnsour & Al-Hyari, 2011; AL-Sukkar, 2005; Cheng et al., 2006; Lu et al., 2003). TAM is mainly derived from the theory of reasoned action TRA (Davis et al., 1989) that was developed by Fishbein and Ajzen (1975). (TRA) Model interprets individuals' behavior in terms of attitudes, norms, and intentions (Ortega et al., 2006). TAM model incorporates two antecedents variables "perceived usefulness and perceived ease of use" determining the acceptability of an information system. It used to understand the variables affecting the degree of internet usage in financial services (Davis et al., 1989). Previous research has employed TAM model to investigate the service quality (Al-Sukkar, 2005), perceived privacy and security (Singh, 2004; Laforet & Li, 2005), customer trust (Chong et al., 2010), and Wireless Internet via mobile devices (Lu et al., 2003). The perceived ease of use and perceived web privacy affect perceived usefulness and behavioral intention towards using Internet Banking while perceived usefulness, perceived ease of use, and perceived web privacy have a direct and indirect influences on behavioral intention (Rawashdeh, 2015).

3.2 Privacy and Security (PPS)

Privacy and security play vital roles in the growth of trust in Internet banking because when customers process financial information and know that their information processing will be highly secure, they feel comfort and gradually confidence in the bank will increase. This attitude indicates that Internet banking systems should provide security mechanisms, decreasing the risk of user-related information leaks leading to fraud (Ameme, 2015). Singh (2004) has reported that customers often need to have full control of their financial behaviors, especially since they know that online information and services grow rapidly, and so the level of risk is high. Featherman et al. (2010) examined ways of reducing privacy risk to enhance the adoption of the e-service. Their results indicated that privacy risk hinders e-service adoption and consumers are always encountered with some degree of risk coming from the uncertainty of Internet banking as a new technology, but this potential risk can be lessened by increasing consumers' perceptions of its ease of use and knowledge of its related security. These arguments lead to form the first hypothesis:

H1: The adoption of Internet banking is significantly influenced by customer's perceived privacy and security.

3.3 Perceived Ease of Use (PEOU)

Perceived ease of use is referred to which extent customers recognize Internet banking as an easy to understand and use (Davis et al., 1989). This definition indicates that in the case of customers lacking experience or finding Internet banking difficult to use, customers will be less likely to adopt it. The fewer skills the system requires, the more the customer is likely to adopt it. Yoon (2010) asserted that PEOU has strong relations with other dimensions concerned with Internet banking adoption such as individual experience and perceived usefulness. By these relations, PEOU takes its importance from its influence on the adoption and development of Internet banking (Rawashdeh, 2015). Social influences, the complexity of technology, individual differences, facilitating conditions, and wireless trust environment circumscribed the usefulness and ease of using Wireless Internet via mobile devices (Lu et al., 2003). Azad et al. (2013) found that electronic banking among Iranian banks is influenced by innovation acceptance, internet development, and fast internet services, methods for use, information knowledge, and design. Therefore, the following hypothesis is proposed:

H2: The adoption of Internet banking is significantly influenced by customer perceived ease of use.

3.4 Web Service Quality (SQ)

Perceived service quality can be defined as a set of perceived judgments resulting from an evaluation process where customers compare their expectations with the service they receive. It may be split into technical quality and functional quality (Wong et al., 2008). Service quality is an essential prerequisite for customer satisfaction and in a virtual environment the task becomes even more challenging to banks (Samutthana & Roche, 2014). Service quality has been seen as a significant factor of success for the firms through which the companies can formulate their competitive advantage, as well as heighten their competitiveness (Hassan, 2015). For any service, most of the banks offered the same services thus service quality is a vital means for banks to differentiate themselves in the marketplace. Sohail and Shanmugham (2003) mentioned that the proper navigational attributes, besides search facilities, have a significant impact on customer perception of an Internet banking site. These notions lead to formulating the following hypothesis:

H3: The adoption of Internet banking is significantly influenced by the web service quality.

3.5 Customer Trust (CT)

The customer's trust of the system refers to the enthusiasm of the customer to be vulnerable to the service providers based on positive expectations. This orientation relies on an exchange of information and services with a partner in whom one has trust (Rotchanakitumnuai & Speece, 2003) and it is vital for a bank to design a proper Internet banking strategy that can build customers trust in Internet banking (Popoola & Arshad, 2015). Customers' trust would be heightened if they felt that they had a high degree of control of their banking transactions (Roy et al., 2001). Ibbotson and Moran (2003) have reported that the maintenance of future earnings and consumers' trust can be achieved via building deep relationships with customers. Yap et al. (2010) proposed a conceptual model to identify the antecedents of trust in Internet banking and the impact of trust on customers' intentions to adopt Internet banking. They found that traditional service quality, traditional bank substitutes, and attitudes towards Internet banking websites had significant influences on trust in Internet banking. Accordingly, we hypothesize that:

H4: The adoption of Internet banking is significantly affected by the customer's trust.

3.6 Customer Feedback (CFB)

Internet banking services are defined as self-services when customers try to conduct their financial processes in parallel. This indicates that the development of the bank's strategies concerning online services must be designed based on the customers' suggestions and expectations. In their empirical study about improving self-service effectiveness using customer feedback at commercial banks, Rasiah and Ming (2010) stressed that a commercial bank's operational processes designed to be effective from the bank's perspective may be seen conversely from its customers' viewpoint. According to their study, commercial banks often use a wrong approach when designing their strategies, where they evolve their strategies from the inside out, rather than from the outside in, and what banks see may be inconsistent with what customers see. This deviation in both perspectives may lead to a great gap which usually leads to the service not improving but creating customer dissatisfaction. Ibbotson and Moran (2003) noticed that customer feedback plays a remarkable role in products and services customization. Internet-based connections can be used as a means of building relationships with customers and they can enable banks to customize and personalize their offerings much more competently. Therefore, we hypothesize that:

H5: The adoption of Internet banking is significantly influenced by customer's feedback.

3.7 Research Model

Based on the literature review and research hypotheses, the study model (Figure 1) has been developed to examine the relationship between the independent variables “perceived privacy and security, perceived ease of use, web service quality, customer trust, customer feedback” and Internet banking adoption by customers of Jordanian commercial banks as a dependent variable.

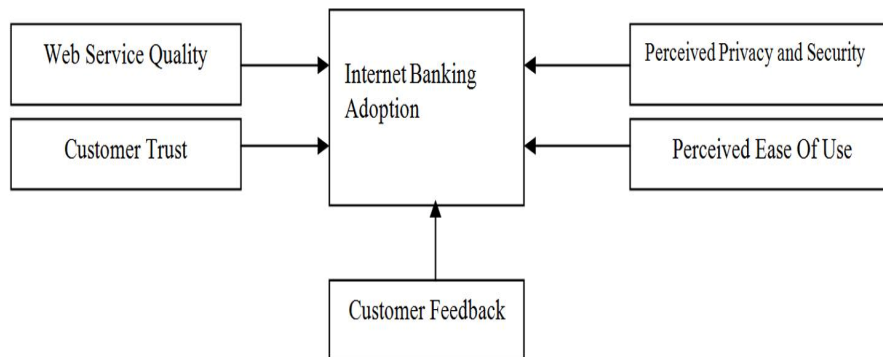


Figure 1. Research model

4. Methodology

4.1 Sample and Data Collection

The targeted population of the study encompasses all customers using Internet banking in thirteen local commercial banks. A total of 600 questionnaires were randomly distributed to the customers residing in the different area of Amman metropolitan. Of the total, 476 questionnaires with a percent of 79% were subsequently used in the analysis. The filled questionnaires by the respondents exceeded the targeted sample required (384). The remaining questionnaires (21%) have been excluded for different reasons; some of them were missing essential data, others were taking too much time or were beyond the study schedule deadline to be filled out, and even others were not filled at all because of some customers' rejections. However, the responded questionnaire percentage was logically determined to achieve the study objectives.

4.2 Measurement and Analysis

The first part of the questionnaire demonstrates the factual data of participants including age, gender, educational level, computer experience, and internet experience. These variables were divided into distinctive categories, and used as interval scales excluding gender. The second part includes the items of the model variables that anchored by a 5-point Likert scale (strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5). In that, the measurements of prior research were employed to measure the relative impact of separate independent variables on customers' adoption of Internet banking in Jordanian commercial banks. Specifically, eight items were used to measure customers perceived privacy, security, and trust. These items were used in previous research (e.g., Cheng et al., 2006; Chong et al., 2010; Giovanis et al., 2012; Yoon, 2010). The six items measuring customers' perceived ease of use were adopted from Wang et al. (2003) and Chong et al. (2010) whereas the items of web service quality were borrowed from Giovanis et al. (2012). The five items of customer feedback were depended on the studies of Kardaras and Papathanassiou (2001), and Yoon (2010). Finally, the items of the dependent variable were relied on Cheng et al. (2006) and Pikkarainen et al.'s (2004) studies.

4.2.1 Testing Reliability

Cronbach's Alpha was used for measuring the total consistency between all items of the instrument and internal consistency among items for each dimension. The minimum alpha of 0.6 sufficed for the early stage of research (Nunnally, 1978). The minimum proposed composite reliability value is 0.70 (Hair et al., 2010). Table (1) showed that the result of the Cronbach's Alpha test was 0.94 for the entire items that greater than 0.70 and each dimension was above 0.60 which is acceptable in social science research.

Table 1. Reliability statistics of study dimensions

Dimension	No. of items	Cronbach's Alpha
Perceived privacy and security	4	0.781
Perceived ease of use	6	0.825
Customer trust	4	0.786
Web service quality	5	0.816
Customer feedback	5	0.806
IB adoption	6	0.864

4.2.2 Testing Validity

For the validity test, the factor analysis using varimax rotation was used to determine the underlying dimensions of the study items (30 items). In the cases where the Eigenvalue for a factor/construct was found to be less than 1.0, the factor was dropped. Secondly, in the cases where the factor loading of an item on its construct/factor was found to be less than 0.50, the item was surpassed (Hair et al., 2010). Table 2 shows that Eigenvalues of all factors exceeded 1.0 and the factor loading of all items exceeded the cut-off level (0.50) and were thus selected.

Table 2. Factor loading and eigenvalue of the variables

Factors with items loaded in each factor	Factor loading	Eigenvalue of rotated factors	Factors with items loaded in each factor	Factor loading	Eigenvalue of rotated factors
PPS		2.44	SQ		2.19
PPS1	0.831		SQ1	0.763	
PPS2	0.878		SQ2	0.831	
PPS3	0.786		SQ3	0.787	
PPS4	0.519		SQ4	0.720	
PEOU		3.212	SQ5	0.600	
PEOU1	0.546		CT		2.44
PEOU2	0.699		CT1	0.715	
PEOU3	0.844		CT2	0.743	
PEOU4	0.735		CT3	0.738	
PEOU5	0.826		CT4	0.743	
PEOU6	0.639				
CFB		1.98			
CFB1	0.729				
CFB2	0.658				
CFB3	0.710				
CFB4	0.738				
CFB5	0.633				

4.2.3 Testing Normality and Multi-Collinearity

The sample size used in this study is relatively large. Therefore, the central limit theorem could be applied and hence there is not a normality problem of the data. Statistically, a research model may be invalid if there is a high correlation between the independent variables. Hence, the variable must be adapted or sometimes deleted. Two primary methods were used to test multicollinearity among the independent variables. First, the calculations of both the tolerance and the variance inflation factor (VIF) were carried out; when the value of the tolerance test is found to be not less than 0.1 and that of the VIF not greater than 10, it can be said that there is not a multicollinearity problem (Kleinbaum et al., 1988). Second, the Durbin-Watson test was performed. When the range of the Durbin-Watson test is located between 1.5 and 2.5, there is no multicollinearity problem. Table 3 shows that all tolerance test values were greater than 0.1 and those of the VIF were between 1 and 10. In addition, in this analysis, the Durbin-Watson test value was 1.664. This entire test assures that there is no multicollinearity problem.

Table 3. Tolerance and variance inflation factors (VIF) of the variables

Dimension	Tolerance	VIF
PPS	.710	1.409
PEOU	.637	1.570
SQ	.358	2.792
CT	.371	2.699
CFB	.506	1.977

5. Results and Discussion

5.1 Sample Profile

5.1.1 Age

In relation to the age of respondents, 25.4% were for age of 30 to less than 35 years old, 22.61% were for age of 25 to less than 30 years old, 18.88% were for age of 35 to less than 40 years old, 16.81% were for age equal or more than 40 years old, and 16.3% were for age less than 25 years old. It can be said that the higher percentages were associated with the ages of younger people. In this respect, the relationship between the age of customer and Internet banking (IB) adoption was found (Ameme, 2015; Njuguna et al., 2012; Pikkarainen et al., 2004). Elderly people are less likely to be adopters of internet banking online systems than young people (Wngwanitchackron, 2002). Abu-Assi et al. (2014) found that all categories of customers ages have a high level of internet banking adoption; customers' ages ranging from 18 to 34 scored the highest level in adopting internet banking. Akinci et al. (2004) found that the majority of IB users was associated with ages ranged from 31-40 while 50% of the non-users were in the 20-30 category.

5.1.2 Gender

For the sex category, results revealed that 75% of the IB users were male, and 25% were female. It can be said that males are more inclined to using Internet banking than females. Males are more likely to embrace internet banking than female (Ameme, 2015; Laforet & Li, 2005; Okeke & Okpala, 2014; Pikkarainen et al., 2004). Abu-Assi et al. (2014) and Akinci et al. (2004) found that females were less likely to use Internet banking than males. In contrast, gender does not affect customers in adopting and using internet banking services (Ameme, 2015; Hennigs et al., 2010) whereas males and females have the same perception relating to the characteristics of internet banking (Njuguna et al., 2012).

5.1.3 Education Level

The results showed that 46% of the respondents had doctorates, 20% had bachelor degrees, 17% had master degrees, 12% had intermediate diplomas, 3% had high diplomas, and 2% of the respondents had high school or below. It can be inferred that a high education level urges individuals to adopt Internet banking. In that, The association between educational level and customer adoption and usage of internet banking services was found (Ameme, 2015; Wngwanitchackron, 2002) whilst the university students, holders of bachelor, and post-graduate degrees are more likely to adopt Internet banking (Abu-Assi et al., 2014). Laforet and Li (2005) found that Chinese using Internet banking were not associated with highly educated users contrasting with the electronic bank users in the Western culture.

5.1.4 Computer Experience

Results indicated that 32.6% of participants had experience equal to or more than 15 years, 28.2% had experience from 10 to less than 15 years, 19.6% had experience from 5 to 10 years while the remaining percentage of respondents had less than five years. That is, the individual's amount of experience with computers affects the usage of IB. The result is consistent with Akinci et al.'s (2004) findings in which they report that IB users were more technology-oriented and convenience-minded compared to non-users of Internet banking.

5.1.5 Internet Experience

Based on participants' responses, 32.6% had experience 15 years or more, 25.87% had experience from 10 to less than 15 years, 22.37% had experience from 5 to less than 10 years, and 19.16% had experience of fewer than 5 years. This indicates that the usage of IB is related to the internet experience. Computer and technological skills hindered the adoption of online banking (Laforet & Li, 2005). Giovanis et al. (2012, p. 24) have reported that individuals who have previous IT experience find themselves to be more compatible with the new service, more promising target group to use internet banking, as an alternative channel to perform their financial transactions in the future.

5.2 Testing Hypotheses

The simple regression analysis was conducted to test the research hypotheses following the criteria established by Hier et al. (2010) considering IB adoption as the dependent variable. Table 4 shows that the standardized coefficient (Beta) values for all independent variables were positive and significant at the confidence level $P \leq 0.05$. Hence, the decision is to accept H1, H2, H3, H4, and H5 for all independent variables excluding customers feedback. Clearly, there is a significant positive relationship between the independent variables of PPS, PEOU, SQ, and CT and the dependent variable (IB adoption) while the negative association is found between (CFB) and IB adoption. These results are consonant with the findings of previous research (Abu-Assi et al., 2014; Azad et al., 2013; Chong et al., 2010; Featherman et al., 2010; Rawashdeh, 2015). Internet banking adoption by Jordanian customers is positively influenced by customers' perceived ease of use, security, and perceived usefulness of IB (Abu-Assi et al., 2014) whilst Chinese IB adoption is mainly influenced by perceived privacy and security (Laforet & Li, 2005). Perceived usefulness and information on online banking were the major factors that influenced IB adoption (Pikkarainen et al., 2004). The results also support Cheng et al.'s (2006) findings in which they found that customers' perceived ease of use and perceived web security directly affected their attitudes towards IB adoption.

Table 4. Results of testing hypotheses

Dimension	(Beta) value	t- value	p-value	Hypothesis result
(Constant)		3.922	.000***	
PPS	.153	2.126	.035*	supported
PEOU	.256	3.364	.001***	supported
CT	.271	2.724	.007**	supported
WSQ	.317	3.127	.002**	supported
CFB	-.186-	-2.183-	.031*	supported

$R^2 = 0.503$, Adjusted $R^2 = 0.485$, (*) $p < .05$, (**) $p < .01$, (***) $p < .001$.

Dependent variable: Internet banking adoption.

6. Conclusion and Marketing Implications

The profitability of banks using Internet banking was higher than nonusers of the Internet, and the small banks focusing on online banking services were less cost than nonusers of IB (Furst et al., 2002). The Internet and ecommerce represent promising avenues for creating marketing and improving customer satisfaction and loyalty. Corporate customers, in particular, are demanding efficient, flexible and customised services from their banks (Kardaras & Papathanassiou, 2001, p. 298). Within the context of Jordanian environment, there is a great need to study the factors influencing the behavioral intention... towards adopting Internet banking so that the banks can better formulate their marketing strategies to increase the usage of Internet banking in the near future (Rawashdeh, 2015, p. 2). In that, the quantitative approach was utilized to address the study objectives. The descriptive analysis of the sample profile indicates that the adoption rate is low (14.5%) and is tracked mainly by customers of high education levels and high ability in using computer applications and having internet experiences. These factors make people more conscious and courageous in regards to utilizing Internet-based applications. In this case, they may look at the perceived risks in a different way compared to non-users of IB. Furthermore, the study found that the unique contribution of the independent variables is respectively accounted for the website quality, customer trust, perceived ease of use, and perceived privacy and security. The dimension of feedback is negatively influenced customers' adoption of IB. Accordingly, commercial banks in Jordan should focus their efforts on the security issues; a bank should persevere what is new in Internet banking that provides more safety since the internet is being unveiled to hacking and unauthorized invasion. For quality, banks should urge a customer to feel that the online service provided by his bank is greater than that provided by a face-to-face encounter or to feel that the online service is better than traditional channels. Therefore, banks may add to its service all dimensions related to the service quality. A bank should design the website with adequate and precise information content. Finally, banks can segment their customers into specific clusters through utilizing the demographic variables of IB to improve their marketing mix efficiently.

7. Limitations and Future Research

Most of the studies relating to the TAM confirmed that PU and PEOU are not the only predictors affecting the acceptance of new technology (Legris et al., 2003). Davis et al. (1989) mentioned that perceived usefulness (PU)

and perceived ease of use (PEOU), themselves, are affected by other predictors and later the TAM model was extended to include subjective norms and the cognitive process as factors influencing PU and user's intention to use a new technology. These factors and others preceding the main factors affecting the acceptance of new technology have not been included in the study model. The study focused on the customers as individuals rather than firms or banks orientations. Furthermore, for a more comprehensive study dealing with the acceptance of Internet banking by customers, the future research can study the viewpoints of customers using Internet banking beside supportive viewpoints provided by banks using this technology that in turn lead to building more comprehensive and integrative perspectives relating to this innovative technology.

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