Factors affecting e-government acceptance in Pakistan: an empirical investigation

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Abstract

The current study aims to explore the technology adoption and its users' perceptional approach in a public sector of Pakistan via applying the behavioral and technological antecedents. The proposed model in this study contains the constructs as perceived ease of use (PEOU), Trust in technology (TIT), social influence (SI), information quality (IQ) and employees' behavior intention to use e-government (BI) and the concerned determinants are presumed to envisage the intentional level of public officials to use wireless technology in a Pakistan point of view. The current study follows the theoretical approach which includes the TAM and UTAUT model in order to find out the degree of the intention of employees' to apply the innovative technology in the working atmosphere. The proposed model has been tested by an empirical means that contains the 341 samplings for data analysis of the public sector employees of (NADRA) to carry out and fill the survey questionnaires (items). The SPSS version 24 was applied to meet the final results of the concerned study and the hypotheses were tested by using the regressions and correlations. In the present study, questionnaires were distributed up to 500 among the employees of the lower and middle-rank employees at Sukkur, Larkana and Hyderabad region and the response rate remained 68.2%. The results finding in the study sought to determine that PEOU, TIT and IQ factors show the positive significant association with the behavioral intention of employees to adopt the innovative technology in the public sector. This study also includes the limitation, future recommendation, practical implications and significance in a Pakistan perceptive.

Keywords: E-government, NADRA, Perceived ease of use, Intention to Use.

Introduction

This existing study is relating to the use of electronic government services (e-Government) in the public sector of Pakistan and the whole investigation focuses to interpret the intentional approach of the technology users. The totality of discussion centralized to focus on the end determinant of the employees' behavioral intention to use electronic government services (IB) in Pakistan[1]. The significance of technological use is an undeniable reality in the contemporary era of the scientific age that is based on the user's trust with the e-system[2]. The degree of reliability can stimulate the intention of users to use e-Government services by a worker of the public sector organization and motivates them to use innovative technology[3]. The advancement in technology has been speeded up its progress in recent years to allow the development and improvement in the management process of an organization[4]. Therefore the world communities mobilized the initiatives to ensure the reliability of e-services of government which reveals to be a chief scientific vehicle to sustain an interaction to stakeholders[1]. The adoption of innovative technology remained the chief focus of the researchers to interpret the users' attitude to adjust the information technology in the working atmosphere and the government efforts also supported to make the system easy via adoption of training and new appoint experts within the concerned work environment[5]. Likely, the researcher argues that the reliability of the users of an online means of technology is recognized as an influential agent in the way to adopt the electronic government[6]. An effective service provision of a newly adopted technology in a public sector relies on the users' intention to meet the beneficial use of the technology and their satisfactory can encourage the use of system to become more advantage able to others.

The better provision of e-government services ensures effective communication by an online means to public employees, citizens and business sectors[7]. The existing study endeavored to highlight the factors concerning the intention of employees to use e-government services in the public sector of Pakistan in which the behavioral approach of users is to be assessed. There are a number of theories that came into force to present a number of constructs to investigate the intentional approach of an innovative technology user where users' perception was been interpreted and empirically analyzed[8]. In this manner, there are number of scholars to support trust is the key antecedent to influence the behavioral intention of the user to adopt the e-government services[9]. The notion of the reliability of the technology user belongs to the behavioral approach that becomes an uneasy task to evaluate the intention of employees in its real sense in the public sector to use e-services thus the

constant investigation is required in this regard[10]. Likely, numerous researchers argue that trust is a major predictor to impact the intentional level of the e-government users henceforth it is significant to interpret the reliability level of the users in the way to adopt the innovative technology in an organization[2]. The employees trust-building makes it easy to adopt e-services use in the public sector and materialize the popularity of the innovative technology[4]. Thus, numerous research support that trust deficit resists the users to adopt the technology and it turns away the intention of e-service users to materialize their interest[11]. The upgrading of government interaction and communication to its stakeholders can stimulate e-government utilization and associated with the best employment advantages pertaining to the utilization of such online means of technology[12]. On the basis of former evidence and importance in the way of adoption of e-government it is crucial to comprehend the course of technological adoption whether the users' reliability is valuable to technological adoption[10].

The number of researchers argues the reliability of a technology user prevails because of confidentiality e-government service consumers to adopt online means of services[8,10]. Trust-building is a chief diverting agent e-government users' intention thus the researcher supports the reliability to motivate the electronic government users to use the technology[13]. This study has focused on the antecedents related to investigate the perception of the users of e-Government and proposed constructs manipulate the intention of employees to adopt the use of electronic services in the government sector[8]. The prevailing study is significant to the Pakistani standpoint as it investigates the intentional level of public employees in the NADRA in order to assess the degree of confidentiality of e-government users in the organization[14]. Furthermore, by applying the multiple regression and Pearson correlation tests discover the relationship of independent and dependent constructs and investigate the effect of independent variables PEOU, TIT, SI, and IQ with criterion variable employees' behavioral intention to use e-government (BI).

Literature review: The existing study provides a wide literature on the users' trust in e-government services in Pakistan, which utilizes the antecedents like intention to use e-government, perceived ease of use, social influence and information quality constructs in order to interpret the attitude of information technology adoption in the public sector. E-government is essential for the provision of e-services that give birth to the proximity of relationships to users' lives and impacts of the emerging interactions with their governments[7]. Research strived to explore the constructs that would influence the verdict to adopt this technology[4]. It highlights the earlier scholarly services regarding the relationship between the above mentioned constructs that assist to manage the conceptual framework model of this study[8]. Furthermore, previous studies will boost up in constructing the proposed model for empirical research and the criteria was followed in the extant research

under same criteria[4,10]. Researchers' different opinions define electronic government as the provision of a service by online means in the public sector via the internet and digital instrument to provide the information to citizens in the place of traditional channels[15,16]. E-government is considered electronic information and online services-oriented technology to replace the traditional or manual work mechanism[17]. Likely, E-government has been defined as a wireless means of services to users to substitute the traditional work and it provides online services to the government to government, citizen and business sector[18]. It is significant to define e-government to comprehend the stakeholder's expectations, needs and sound plan concerning online services to ensure the provision to them[19]. E-government also divides into two directions of demand and supply in which the demand side is concerned with the acceptance of users and supply-side denotes the government's provision[20]. E-government in the public sector can be defined as the provision of online services by the government to public servants and interconnect the government departments and assure the accessibility of information and instruction via wireless means to offices in order to make easy the job performance[21]. There are Multidimensional of the concepts of electronic government relating to the prevailing study as summated below: i. Assessing the public employees intentional level to use e-government services in an empirical means in Pakistan perspective; ii. Assuring the provision of online facilitation to public officials to interconnect the public officials to government and citizen; iii. Improving the potentiality of employees to use the system via assessing the perception of a user to judge the degree of reliability; iv. Rising the motivational approach to developing the technological atmosphere via e-participation and provision of information through a wireless government; v. Guiding to maintain the demand and supply gap in e-office and discovering the implications on the workers and highlighting the opinion on the digital divide concerning employees.

These three major categories of electronic services of government ensure the provision of the interconnectivity of government to citizen, business sector and employees. In this perspective, government to citizen (G2C) denotes the relationship between people and governments, government to business (G2B) relationship interlink the accessibility of government to business sectors and government to employees (G2E) interconnects the public employees to government whereas the extant study is concerned to the government to employees (G2E) relationship[8]. The proposed model of the existing study contains the five constructs that influence employees' intention to use e-government (PEOU, TIT, SI, IQ, and BI)[8]. The proposed constructs of this study have been derived from the earlier theories concerned with related domain and research as the variable of the frame conceptual frame model borrowed from the diverse sources as the determinants PU and BITU have been taken the technology acceptance model (TAM) Davis (1989) and variable social influence (SI from the UTAUT[22].

The majority of the studies were carried out to apply the proposed factors in the developed world that highlight the dire need to conduct the relating research in the third world country like Pakistan to meet the scarcity of research to sustain the relationship these proposed constructs (PEOU, TIT, and SI) with the Behavioral intention to use (BITU)[23]. Behavioral Intention to use e-government (ITU) implies a designation of mind to intend and social perception to use the government's e-services by a consumer, client, and customer[8]. The existing study evaluates the behavioral intention of e-government users to use online technology in the public sector[4]. There is a number of researchers endeavored to apply the determinants to investigate the behavioral intention of public employees to meet the acceptance and make the use of the technology of an innovative nature[13]. In the literature review of the prevailing study argues the constructs concerning the trust of employees relating to e-service to discover the behavioral intention of public officials to implement the wireless based service in order to establish an effective administration and quality governance. The intention to use technology depends on the trust-building of a user in the organization thus the majority of studies urged to gauge and discuss the user's trust in order to motivate employees attention to use e-services in the public sector and allows citizens and nonstate actors to be benefited from the online public service delivery and develop their commitment in the decision making of public policy[10].

The number of researchers points out the implication of the construct PEOU to discover the trust of the user via investigating the intention of employees in the form of perception of an easiness of technology acceptance[7,8]. The developed hypotheses relating to PEOU impact the users' intention and sustain the influence in the trust-building of the employee to use electronic government. Perceived ease of use (PEOU) designates an effortless utility and perception of easiness to use the technology and it implies the users' perception to use technology in which the user comprehends the use of technology easy to apply in one's job's performance[24]. The construct PEOU implies the level to which a user believes that using a particular system will be effortless[25].

The factor PEOU is the mainly important positive determinant to intention to use e-government services[10]. The majority of researchers in developed countries have discovered an important relationship between PEOU and PU with the intention to use electronic government (ITU) (Fang et al., 2005)[26]. The study proposed by the researcher Davis et al., (1989) in his designed technological acceptance model (TAM) to use the constructs (PEOU and PU) in predicting the intention to use (ITU) electronic government services. In earlier studies have established that trust is a significant determinant in addressing the intention to use e-government (ITU)[27,28]. The majority of researchers proposed a hypothesis to cultivate the relationship (PEOU, TIT, IQ, and SI) with behavioral intention to use to evaluate the trust-building of the users of e-services[7,28]. The research designated that Trust in technology is the chief bridge to extinguish the gulf of trust deficit of the user and energize the respondents' behavioral intention of e-service acceptance and use the system in the public sector organization. UTAUT has four direct constructs as performance expectancy, Trust in technology, social influence, and facilitating condition[29]. There arenumber of theories that aid in examining employees' intention to technology adoption, as previous studies were mainly based on the TAM model, and model UTAUT[22,25]. In this study, the constructs PEOU, TIT, SI, IQ, and BIT determine the structures that influence user accreditation for e-services in Pakistan. Moreover, there are a number of researchers measuring PEOU, SI, and TIT, with behavioral intention to use e-government (IB)[4].

Social influence means a compact society in which social perceptions is being influenced. Social influence highlights a social perceptions or social intensity. It is a serious situation for governments, as it gives emphasis to the social waves of perceptions concerning to services of government[8]. Social influence in e-government adoption stands for that it highlights the degree to which important people in users' life believe that he should use e-government services. On the basis of the results, it reveals that Kelman's three processes of social influence have direct effects on the attitude of users and indirect belongings with the behavioral intention via attitude[30]. Social influence is the influencers pertaining social perception of people related to e-government. Social influence reveals a close society that is to be influenced by means of social perceptions[8].

Social influence plays an influential role in the adaptation of information technology and handling a significant area for a better comprehending 'the world of the real nature' application of the technology acceptance model (TAM). Social influence relates to individual social perceptions to adopt and implement the information technology that would assist to investigate the trust in e-government services. The quality of information is the user's deep prediction and perception of the inclusiveness of information[31]. Information quality refers to the evaluation of users to ensure the provision of the information on the basis of validity, accuracy, and timely delivery or accessibility via a designed web site. It is encouraged through the information quality to wireless technology users and assists to motivate the users to adopt information technology (IT)[31].

The successful adoption of e-government and its execution can be impacted by the determinant of the information quality (IQ)[32]. Information quality can be considered as an important mediator to make organizations effective and vigorous vicinity relating to the research of Management Information Systems (MIS)[11,22]. The results relating to the current study highlight that the constructs PEOU, TIT, SI, and IQ sustain a positive relationship with the dependent variable Behavioral intention to use e-Government in Pakistan. There arenumber of researches to investigate the intentional approach of online technology users via measuring the determinant information quality (IQ)[4,8].

E-government and employees' behavior intention to use e-government (BI): The intention is a perception of employees to use electronic services in the government sector. The degree of reliability of the user is an influential agent to stimulate the intention of public workers' to use electronic services[21,27]. Trust building succeeds in thegovernment's e-projects that motivate the user to intent to utilize the technology in the future. In this regard, researchers support to urge the government in order to create the level of reliability of the user earlier than applying the innovative technological application and it needs to sustain assurance trustworthiness within the government agencies, departments, nongovernment sectors and business spheres[33]. The theory of reasoned action is extended by trust e-government to predict the user's intention to use e-government and the number of theories concerning the technological adoption discovered enormous factors that possess the influential impact the intention to use (ITU) technology[8]. The exiting study recommends examining the employees' intentional approach to use electronic services that can assist to meet the obstacles by investigating the perception of a user. The proposed determinants of the prevailing study would investigate the public employees' intention to adopt e-services from Pakistans perspective. The e-government directorate came into effect under the Ministry of Information Technology in Pakistan in 2000[1,34]. The extant literature is relating to employees' perception to perceive the trust-building of the user in the public sector NADRA to utilize the e-services, which applies to discover intention through different proposed variables (BI, PEOU, SI, TIT and IQ).

The nature of employees' intention and its benefit can be summated up as: i. The intention is the degree of perception of public employees and investigating the intention is vulnerable; ii. The positive intention encourages the expectations of employees to use the technology in future; iii. Facilitation, training, and incentives integrate the employees' intentions with technological adoption and reliability of user is ultimate feedback of government to favor employees; iv. The intention is dynamic and an abstract in its nature thus intentional assessment is a difficult task that requires constant investigation and a periodical measurement of human behavior. Moreover, Culture and norms also influencing factors to impact the person's attitude towards technological adoption; v. This study seeks to break down the complex concept of intention to understand the structures to assess the behavioral intention of public employees to adopt e-government services in Pakistan and integrates the effects of confidence in the intention of the user of innovative technology. vi. The proposed conceptual framework model examines the employees' trust in the use of the assessment of perception regarding the adoption of electronic government and justifies the hypotheses development and survey questionnaire.

Developing countries utilize e-government applications to meet the diverse form of tasks such as e-recruitment systems, online health technologies, e-voting systems, e-learning, and other wireless means of services in order to assure easy accessibility and reliable use of technology. The government of Pakistan launches number of initiatives to materialize the e-projects and sustain demand and supply of technological use in the country and e-projects in Pakistan is drafting under five years plans[1]. E-government motivates the majority developing countries in the Asian context as the government of Pakistan encourages taking initiatives to deliver e-service provision[13]. According to the electronic government development index (EGDI), 2018 mentions the unfavorable position of e-government in its Asian context[7].

Summary of literature: In the literature of the extant study concluded with the following findings: i. Literature paid deep attention to the constructs of the behavioral intention of employees (BI) to use e-services; ii. Trust relies on the perception of employees and their trust-building on innovative technology and proposed factors were used by the majority of earlier researchers to assess the viewpoint of technology users; iii. Major antecedents influencing the behavioral intention of public employees (BI) are PEOU, SI, TIT, and IQ. iv. The importance of the existing study reveals the trust of public employees to explore the antecedents, to investigate the study by empirical means.

Methodology

The framework model: The model of the prevailing study is based on the number of theories such as (TAM, TRA, and UTAUT) model. Moreover, a number of researchers also applied these constructs in their respective studies[8,35]. The existing study proposed a set of antecedents (PEOU, SI, TIT and IQ) that are hypothesized to inquire about the Employees' Behavioral Intention to use electronic government (BI).
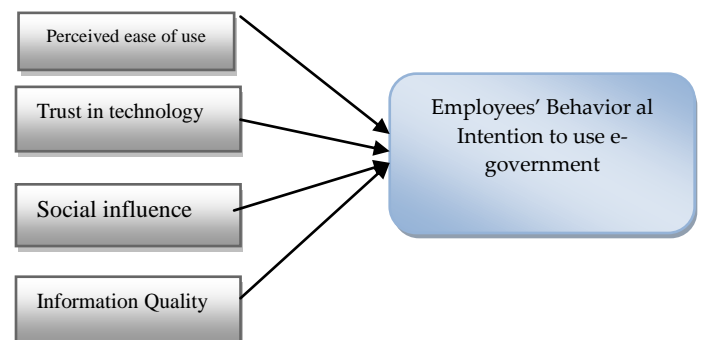

Figure-1: Proposed conceptual model.

The questions and hypotheses: The extant model is based on the previous model in which proposed factors derived and model designed under the jurisdiction of a slight modification; the current study will attempt to answer the following two research questions: i. *RQ1. What are the determinants influencing the extent of the users reliability to use e-Government services. ii. RQ2. What are the factors to influence the intention of employees to adopt electronic services.*

Hypotheses Development: i. H1. There is a positive and significant relationship between perceived ease of use (PEOU) and Behavioral Intention of Employees to use e-government (BI). ii. H2: There is a positive and significant relationship between the trust in technology (TIT) and Employees' Behavioral Intention to use e-government (BI). iii. H3: There is a positive and significant relationship between the Social Influence (SI) and Employees' Behavioral Intention to use e-government (BI). iv. H4: There is a positive and significant relationship between information quality (IQ) and dependent factor Employees' Behavioral Intention to use e-government (BI).

Results and discussion

The current study encompasses the research of quantitative nature and contains the positivist philosophical approaches and cross-sectional study. However, in the same line of study has been used by the number of researchers earlier under different geography and area of investigation[36]. In the primary step, it is to be confirmed the proposed items to go with the nature of the study. Five-point scales (1for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree, and 5 for strongly agree) were distributed by the researcher to collect data for the completion of the study questionnaire. Where, except for demographic all the questions were carried out by the five point Likert scales for data collection. Table-3 mentions the means and Standard deviation of items of the proposed factors of this existing study. The prevailing study possesses the twenty-three items brought in the use in order to observe the Intention of employees to use (BI) e-Government in the government sector. In addition, three percent of the mean is considered appropriate while resting items exceed three.

Table-1: Demographic Characteristics.

Variables	Description	Frequency	Percentage
Gender	Male	295	86.5
	Female	46	13.4
Age	21-30	40	11.7
	31-40	247	72.4
	41-50	39	11.4
	51-60	15	4.3
Marital Status	Single	67	19.6
	Married	260	76.2
	Divorced/widow	14	4.1
Education	Bachelor	109	31.9
	Master	230	67.4
	M.Phil/Ph.D.	2	0.5
Job Experience	Less than 1 year	68	19.9
	1-5 years	239	70.0
	6-10 years	28	8.2
	11-15 years	6	1.7
	7+	6	1.7
	NONE	74	21.7

It is important to verify the multivariate correlation to examine the variables relationship. Thus, researchers investigate the independent variables and the dependent variable's relationship through Pearson's Correlation. Results indicate a significant relation at the level of 0.1 whereas three variables of the conceptual model supported and one construct social influence (SI) remained insignificant positively correlated with the criterion variable.

Table-2: Pearson correlation.

	BI	PEOU	TIT	SI	IQ
BI	1				
PEOU	.597**	1			
TIT	.576**	.507**	1		
SI	.260	.258**	.260**	1	
IQ	.561**	.571**	.554**	.185**	1

The all constructs correlation remains between (.258 to .597) whereas correlation of the PEOU (.597), TIT (.576-.507), SI (.258-.260) and IQ (.571-.185) confirmed. The correlation at highest is found in PEOU (.597) and social influence is the lowest one (.258-.260). The multiple regression analysis discovers the impact of independent variables as (PEOU, TIT, SI and IQ) with and a dependent variable behavioral intention of employees. Hence, the proposed model in this study encompasses the six variables present in the line of the technological adoption domain. The results of the existing research match and remain between (.258 to .597) in which the construct PEOU=.597 as a powerful determinant whereas social influence (SI) is the less supported factor that lies between 258-.260. Investigating the intention behavior was predicted by the three independent constructs factors like PEOU, TIT, and IQ to give a significant positive relationship with behavioral intention (BI). The relationships of hypotheses were based on the independent and dependent variables relationship in which the current study was carried out in an empirical means from Pakistan's perspective. For the testing of data validity, Pearson's Correlation and multiple regression analysis were applied.

Table-3: Regression and Hypothesis status.

Variable	Standbeta	*t* value	Significance level	H	Hypothesis status
PEOU	.655	5.213	.000	H1	Supported
TIT	.379	4.694	.000	H2	Supported
SI	.048	1.317	.189	H3	Not Supported
IQ	.303	3.410	.001	H4	Supported

This study suggests that positive significant association between the construct of independent and dependent factors prevails, for instance, PEOU and employees' behavioral intention (BI) using e-government[37]. Currently, the current study is in line with previous studies[8,24]. In the number of studies, PEOU and TIT measured with the intention to use (ITU)[4,36]. In the electronic services of government research trust hypothesized as a major predictor of intention to use (ITU) e-government services[4,8]. Trust in technology is the level of individual reliability concerning the interactions with the Internet to be expectable and trusted. The findings of the prevailing study result in the hypothesis revealed that social influence has not been correlated significantly with the dependent construct. Social influence can be defined as the degree by which a person considers others to think users of the technology should adopt the system[36]. The positive relationship has been found between information quality (IQ) and Employees' Behavioral Intention to use electronic government (BI). Likely, there is numerous research that measures information quality (IQ) with the intention to use (ITU) through a light modification of language[24]. The positivist philosophical approach was carried out in this study and the cross-sectional and deductive survey was followed. Moreover, Quantitative methodology has been inculcated and a structured measurement instrument was pursued from the domain literature to evaluate the Employees' Behavioral Intention to use electronic government (BI). In the line number of earlier researchers, this study pursues the same methodology inorder to investigate technological users' perceptions[36]. Prevailing research followed the importance of respondents relating to the worker of the public sector NADRA for data collection among the middle and lower-level employees. The demographic questions included in the study under the head of age, level of education, gender, marital status, and job experience. There numerous researchers such as applied the proposed items of the study in their respective scholarly services[8,10]. Finally, 23 items were included in the study to measure the 5 constructs as these were first used by the earlier researchers[25,36]. The survey questionnaires were presented in the language like English in Table-3 to present the standard deviations and mean. The population for the existing study is concerned with public employees in NADRA that assist to investigate the technological adoption of the user in which data was collected. The universe of study is different working units of three regions (Hyderabad, Sukkur, and Larkana) of Sindh, Pakistan. For the data collection, 500 questionnaires were distributed in which 341 (68.2%) sample size for the final usage returned and estimation of the working staff was carried out through diverse sources whereas, data was collected by the respondents of middle and lower employees.

Conclusion

The existing study encompasses the proposed conceptual framework model that contain the factors (PEOU, TIT, SI and IQ) to impact the behavioral intention (BI) of the public sector workers and these proposed determinants of the conceptual framework model relating to investigate the intentional approach of the technology acceptance of a user. The proposed variables (PEOU, TIT, IQ, SI, and ITU) in this study are concerned with the domain of the technology adaptation. The intention to use was envisaged by three independent constructs as PEOU, IQ, and TIT to reveal the positive significant relationship with the dependent variable intention to use. The hypothesis maintained on the basis of the relationship between independent variables and the dependentfactors. The findings of the study revealed the positive significant relationship between the independent and the dependent variable. The current research is relating to the conceptual framework model to be tested statistically in an empirical means in which existing condition of employees' intention of employees regarding the use of e-government services in a Pakistan perspective

Research Implications, Limitations, and Future Direction: This present study can provide general literature in a Pakistan perspective relating to discovering the perceptional approach of public employees of (NADRA) to use innovative technology. It can be fruitful in order to comprehend employees' attitudes in terms of the acceptance of the technology. The findings of the current study urge the government to encourage technological information measures in the public sector and public awareness of the technology use must be motivated. It also helps to investigate employee confidence, in which the root cause behind the technology adoption dilemma can be discovered. Implications in the concerned study endeavors and urge more effort to Pakistan government to assure the social influence via promoting public awareness towards the useful services to e-government Web sites and public participation initiatives must be promoted.

The current study encompasses the cross-sectional study, voluntary participation of the respondents and data from a single source have been applied. Reliability and validity issues may increase with information obtained from respondents through a questionnaire, which is based on the subject's self-report. Establishing employee trust relationships related to technology adoption innovation may cause users' unique emotions to react differently in the organization. With the same equipment, future researchers can expand the region at the national level without having to focus on individual cities in the province. Future researchers can validate the model of this study in an Asian country because it has similar social and cultural values.

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