Using TAM to Evaluate the Effect of intensive usage of Digital Payment in Egypt

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Abstract:

The growth of digital payments has been aided by the government's pledge to provide monetary assistance to the public by making payments directly into bank accounts. Consumers have access to all available cash or lines of credit for a given transaction with digital payment. Digital payment methods encourage pulse transactions, particularly online, and consumers are more inclined to buy an item they see on sale online because purchasing it with a credit card would simply take a few clicks. The Central Bank of Egypt (CBE) has assessed its progress in facilitating electronic payments. Egypt's electronic payment business has undergone a number of recent improvements. This study used the technology acceptance model (TAM) to investigate people's behavioral intentions to use digital payment and e-commerce to assess their technological proficiency in Egypt. The technological acceptance model may be used to explain users' desire to embrace a digital payment assessment system according to the findings of this study. Partial least squares-based path modeling with latent variables is a methodology that allows estimating complex cause-effect relationships using empirical data. the purpose of this paper is first, a finite mixture path modeling methodology for separating data based on the heterogeneity of estimates in the inner path model, second, prediction objected segmentation as it performs well in discovering unobserved heterogeneity informative measures . They are implemented in a software application for statistical computation. Analyze the results of finite partial least squares to finite mixture path modeling segmentation and prediction objected segmentation.

Keywords: Digital Payment, TAM, Partial Least Square, Finite Mixture Path Segmentation, Prediction Objected Segmentation.

1. Introduction:

The majority of consumers paid for products and services with cash or checks, with cash being pre-

[1] A look into the future: How COVID-19 changed payments Thursday 28 May 2020 08:38 CET | Editor: Andra Constantinovici | Voice of the industry © 2020 Daily News Egypt. Provided by SyndiGate Media Inc. (Syndigate.info).

[2] Digital Transformation of SMEs: The Future of Commerce In Partnership With Presented By visa 2019

ferred for smaller purchases and checks for larger transactions. While cash is still the most prevalent form of payment in various parts of the world, it has grown less common as the introduction of general-purpose payment cards has made it easier for individuals and businesses to buy and sell. Consumers can now make electronic payments using credit, debit, and prepaid cards and a variety of gadgets ranging from watches to mobile phones .

There is one major and rising means of payment in the fastest-moving digital world: "Digital Payments." is a relatively new idea that entails a monetary transaction between two or more people using the internet or digital platform rather than physically exchanging money. It is a platform that allows people to send and receive money without having to interact physically. It can be done using a mobile phone or computer from anywhere in the world at any time. The purpose of digitizing payments is to ensure that all monetary transactions are accurately recorded and that the public's hard-earned money is not lost or stolen.1

The concept of digital payment systems has offered the public many advantages in making quick and frequent payments. The first and most important benefit of using digital services for transactions is that it helps society maintain social distance and protects people's lives from infection or viruses. Digital payments help suppliers increase their sales and experience by accepting digital payments directly into their bank accounts in towns or villages where it is difficult to buy and sell essentials with cash. [1]

Customers, retailers, governments, and other account holders can use an Electronic Payment System (EPS) to perform transactions digitally instead of utilizing cash or cheques.2 EPS supports transactions using credit, debit, and prepaid cards, as well as any other device that supports digital payment as well as devices that leverage application programming interfaces (APIs) and open banking models. Several service providers offer unique payment solutions for face-to-face transactions involving two people in different locations.[2]

The rise in e-commerce usage during the COVID-19 epidemic has heightened the need for a better understanding of the hazards and opportunities presented by the rising connection between digital commerce and digital banking. Governments should engage with banks and mobile money providers to guarantee that agent networks continue to operate in places where they are most needed. [3]

Governments must implement appropriate and proportionate regulatory frameworks, including participation in credit reporting systems, financial consumer protection, and data protection, to stimulate innovation and the health of the industry. [4] the local market, there are about forty FinTech companies, many of which are still suffering due to the FinTech culture's lack of acceptance among Egyptians, as well as insufficient Internet infrastructure and a lack of proper laws. [5,6] Egypt is among the top 4 active African countries in the FinTech Industry, when it comes to concentration of FinTech startups in the continent.[7]

The Technology Acceptance Model (TAM) is a customer-centered approach to measuring new technology uptake. [8] When consumers are introduced to new technology, the model argues that a variety of factors influence their decision on how and when to use it. Fred Davis defined perceived usefulness (PU) as "the degree to which a person believes that employing a certain system would improve their job performance." It refers to whether or not someone considers a piece of technology to be beneficial for the task at hand.

• Perceived ease-of-use (PEOU) - Davis defines this as "the degree to which a person believes that

utilizing a specific system will be painless". If the technology is simple to use, the hurdles will be overcome. No one has a positive opinion of something if it is difficult to use and has a convoluted interface.[9]

This study's data analysis was split into two parts. The first phase is divided into two halves. The content, convergent, and discriminant validity of structures are assessed as the initial stage in evaluating a model. The structural model and hypotheses are tested in the second step. Various diagnostic concerns with the gathered data, including as missing data, outliers, and common method bias, should be checked before moving on to the next step of the analysis (CMB). [10] The second phase is divided into three parts: first, a finite mixture route modeling methodology for separating data based on the heterogeneity of estimates in the inner path model; second, prediction objected segmentation, which excels at detecting unobserved heterogeneity informative measures. Third, it examines the outcomes of finite mixture partial least squares path modeling segmentation and prediction objected segmentation using finite mixture partial least squares.

A tool for calculating complex cause-effect relationships using empirical data is partial least squares-based path modeling with latent variables. It is frequently impractical to assume that data is collected from a single homogeneous population. For segment-specific partial least squares analysis, sequential clustering techniques frequently fail to produce useful results. As a result, the goal of this paper is to present two methods for separating data based on the heterogeneity of estimates in the inner path model: first, a finite mixture path modeling methodology for separating data, and second, prediction objected segmentation, which performs well in discovering unobserved heterogeneity informative measures. They are implemented in a statistical computation software application. Third, it examines the outcomes of finite mixture partial least squares path modeling segmentation and prediction objected segmentation using finite mixture partial least squares.

2. Literature Review

Rima Fayada*, David Paperb (2015) ,[11] addresses one of the limitations of the original TAM and potentially confirm its robustness. it is aimed at supporting the robustness and generalizability of the TAM. **Mirjana Pejić Bacha*, Amer Čeljob, Jovana Zoroja (2016),[12]** have several contributions. First, factors that influence acceptance of BIS in companies will be examined in order to enrich scientific literature in the area of BIS adoption. Technology Acceptance Model will be extended in the fields of technology driven strategy, information quality and project management in companies. Second, current level of usage of BIS will be measured in USA companies, thus providing new information about the current level of implementation. **Vernell Deslonde, Michael Becerra (2018),[13]** utilized a qualitative dominant crossover mixed analysis that examined why school counselors an online college, career, and financial planning tool. TAM is comprised of four constructs: perceived ease of use, perceived usefulness, attitudes, and actual behaviors. Bandwidth, training, and connectivity influenced some counselors' attitudes toward usage and productivity. **Shin Liao, Yun-Wu Wu (2018), [14]** applied technology acceptance model (TAM) to explore the behavioral intention of students in technological colleges and universities and use a web-based performance assessment system as a tool to evaluate their technical proficiency in e-book production. This research concludes that the technology acceptance model can

be applied to explain users' willingness to adopt a web-based assessment system. Harryanto (2018), [15] The purpose of this research is to see the application of modified TAM model by entering the experiential variable as a moderation variable to see one's intention in the use of technology especially internet banking. Data obtained through the distribution of questionnaires to customers. The study population is bank customers registered as users of internet banking services. **Ni Made Dhian Rani Yulianti1) & I Nyoman Adi Wiguna (2020), [16]** analyzing the acceptance of mobile application KlikIndomaret in Denpasar using the Technology Acceptance Model (TAM) approach. The TAM variables used are perceived usefulness, perceived ease of use, perceived credibility, perceived self-efficacy, and perceived financial cost as the independent variables. The type of research used a quantitative approach with the collecting data method using a questionnaire and sampling amounted 105 respondents. **Che Siti Lazrina Md Lazim (2021), [17]** represents result in examining the useful of TAM model to explain the factors that influence acceptance online learning behavior. Students' acceptance behavior towards online learning has been influenced by mediating of attitude between perceived ease of use and perceived usefulness. This relationship validates the original TAM model where perceived ease of use and perceived usefulness are hypothesized directly to affect the attitude. **Julies David Bryan*, Tranos Zuva (2021),[18]** merges TAM and TOE and proposes a Building Information Modelling (BIM) TAM-TOE model. TAM and its all-encompassing forms have a high ability to clarify the innovation reception while the meaning of the T-O-E system is likewise perceived in clarifying technology adoption. The marriage of these two models brings a new and unique developed redesign that takes TAM and T-O-E models to a more extensive level to advance and encourage improved informative and prescient focal points of IT adoption. **Mustapha Osman Opoku1, Francis Enu-Kwesi2, (2020), [19]** examine the relevance of the Technology Acceptance Model (TAM) in information management research, and how it has been extended in relation to its perceived usefulness and perceived ease of use. The review showed that TAM is still recognized as the right model for quantitative based information management research, and to a lesser extent qualitative information management research and desk studies. The review identifies that the technology acceptance model has emerged as one of the influential models that is used to understand and predict users' acceptability, behavioral intention to use and actual use of a system. **Mailizar Mailizar, Damon Burg (2021) , [20]** investigate factors that impact behavioural intention of university students on e-learning use during the COVID-19 pandemic. An online questionnaire was utilised to gather data from 109 students enrolled in one of the universities in Indonesia. The Technology Acceptance Model (TAM) was the primary framework employed for analysis, in which system quality and e-learning experience were included as external constructs to seek out a much better model to improve the understanding of students' intention to adopt e-learning. **Erkek İsmail Burak, Altınba□ak-Farina İpek (2021), [21]** provided the understanding of the determinant variables affecting attitude and intention of home-bounded and economically worrying consumers to use mobile banking, during the pandemic. It is revealed that usability, performance, enjoyment and security of mobile banking applications has a positive and financial risk perceptions of applications have a negative impact on the attitude and intention to use mobile banking.

3. Research Models and Hypotheses:

Over the last decade, TAM has been employed to

analyze e-service and IT use, but neither can consistently provide a superior explanation or behavioral prediction [3]. To explain the elements that drive technology adoption in the sectors of digital payment and e-commerce, a number of theoretical concepts have been created, including intention theory [22]. This intention model has been shown to accurately predict people's willingness to accept digital payments and e-commerce. The model consists of five components that have consequences for Egyptian consumers' acceptance of digital payments. Perceived usefulness (PUSE), perceived risk (RISK), attitude (ATTITUDE), government supports (GS), and perceived ease of use (EOU) are all the antecedents of digital payment, according to this model. These theories help in identifying and analyzing the elements that influence the intention to utilize digital payment in Egypt.

3.1 TAM model

The Technology Acceptance Model (TAM) is a customer-centric method of measuring the uptake of new technologies. [23] TAM considers only the relationship between attitudes, government pressure, and perceived risk, specifying perceived usefulness and ease of use as the main factors influencing intensive use.

The Technology Acceptance Model (TAM) is a customer-centered approach to measuring new technology uptake. TAM was created with the goal of simulating users' acceptance of information systems and technology.

Perceived Usefulness (PUSE) and Perceived Ease of Use (EOU) were two specific beliefs that were assessed in the basic TAM model [24] .The subjective possibility that using a specific system will improve a potential user's action is defined as perceived usefulness, while perceived ease of use relates to the degree to which the potential user expects the target system to be simple to use. Other elements, referred to as external variables in TAM, can influence a person's belief in a system.

3.2 TAM Hypotheses

This section discusses the five hypotheses. In the order that they appeared in the extended TAM, the pairs of tested constructs are discussed in relation to each hypothesis.

3.2.1 Hypothesis One: Perceived Ease Of Use:

Ease of use (EOU) according to Davis [25] refers to the degree to which a person believes that utilizing a specific system will be painless. TAM assesses how much mental work is necessary to use the target applications by prospective users. The mental ease expected by IT draws more adoption behavior; innovations with perceived user interface complexity and a steep learning curve are considered dangerous to adopt. Consequently, the following hypothesis is proposed in this study: H1. Consumers' adoption intention of adopting digital payment is positively influenced by perceived ease of use.

3.2.2 Hypothesis Two: Perceived Risk:

Perceived risk is a type of subjectively expected loss. In this study, a perceived risk describes to one's opinion of the various dangers that may be encountered when using digital payment [26]. The dangers associated with digital payments constitute a significant disadvantage. These risks result in significant financial losses for both businesses and customers. Risks of Fraud in Digital Payments are characterized as "unwanted behaviors occurring in an operating system" [27].

H2. Perceived risk of using digital payment has a negative effect on consumers 'adoption intention.

3.2.3 Hypothesis Three: Government Support:

The aid offered by the government to stimulate the spread of technological advancements is referred to as government support [28]. government backing is essential for a country's technical discoveries to spread. According to Tan and Teo [29],

the level of aid provided by the government can influence the adoption of new technologies. Consequently, government aid can intervene and play a leading role in disseminating an idea. Based on the level of support provided, it is feasible to forecast one's willingness to accept technology. Consumers are expected to embrace digital payment once they learn they are supported by the government. In this regard, the following theory is proposed: H3. Government backing has a positive impact on the intensive use of digital payment and consumers' e-commerce adoption intentions.

3.2.4 Hypothesis Four: Attitude

Attitude is a tendency in response to an event in a favorable or an unfavorable way. Previous studies on digital payment acceptance have indicated attitude as a determinant factor of behavioral intention toward digital payment usage. Attitude is found to be a dominant factor to influence behavioral intention. [30] Drawing upon the findings of those studies, we formulated the following hypothesis. H4: Attitude significantly and positively affects the usage of digital payment.

3.2.5 Hypothesis Five: Perceived Usefulness

Perceived usefulness (PUSE) is described as the degree to which users believe that digital payment can support them to achieve their objectives. [31]Previous studies showed that perceived usefulness had the most significant influence on attitude. Based on the prior studies, we proposed the following hypotheses. H5: Perceived Usefulness (PUSE) significantly and positively affects Attitude toward using digital payment.

4. Utilizing TAM to evaluate the usage of digital payment in Egypt :

A questionnaire instrument was created in this study to examine the given hypothesis. The instrument was designed with two primary components. The first part covers socio-demographic factors, such as gender and age, to gather basic information about the participants.

4.1 Investigation Questionnaire's Design

The constructs of the suggested model, which consisted of the components, and their related items, were used to generate the second section of the questionnaire. A five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5) was used. The hypotheses factors are listed in Table 1.

Table 1 . The hypotheses factors

GOVERNMENT SUPPORT	
GS1	The government is pressuring me to adopt the use of digital payment
GS2	The government is helping in giving all kinds of assistance to guarantee consumers' rights of e-commerce transactions
GS3	Support from the government is important to encourage me to use more e-commerce
PERCEIVED USEFULNESS	
PUSE1	The goods and services retailers are pressuring me to adopt e-commerce
PUSE2	I purchase online because it is a good choice among the available alternatives
PUSE3	purchasing online involves a low risk of being infected by COVID-19
PUSE4	e-payment system saves you time and money
PUSE5	e-payment systems are better than cash
EASE OF USE	
EOU1	E-commerce is easy to use
EOU2	Learning to operate e-commerce is easy
EOU3	I think that I would be able to use the e-commerce well for shopping
EOU4	e-payment systems can be easily understood and readily adopted
ATTITUDE	
ATTITUDE1	I used payment methods of cash
ATTITUDE2	I trust the security of online banking services
RISK	
RISK1	I have major barriers to online banking
RISK2	I lost money due to digital fraud
RISK3	I have been a victim of online security threats
PERCEIVED INTENSIVE USE	
IU1	I prefer using internet banking
IU2	I use debit/credit online as the payment method
IU3	I use debit/credit instore as the payment method
IU4	I use the following payment method electronic bank transfer
IU5	I use the following payment method debit/credit electronic payment
IU6	I am concerned about conducting personal financial transactions online such as household bills, purchases, or services online

4.2 Data Collection

The participants were given an online version of the questionnaire. The snowball sampling strategy was used to select the participants at random

because it was the most appropriate method for this investigation. Snowball sampling addresses various additional sampling process pitfalls, involves less planning, and requires less labor than other sampling procedures. This fact is because, in addition to minimizing sample bias, it is easier to begin talking with a small group, especially when addressing unknown persons [32]. The questionnaires were sent to the researcher's contacts as well as individuals who met the population's age and residency requirements (above 18 years of age and residing in Egypt). Each participant was expected to recommend another person to fill out the survey. For two weeks, the questionnaires were distributed. A total of 110 questionnaires were collected. Males made up 42.7 percent of legitimate respondents, while females made up 57.3 percent. The respondents ranged in age from 24 to 44 years old, with the majority of an answered questionnaire. Table 2 shows the socio-demographic characteristics of the respondents.

Table 2. The socio demographic characteristics

Items		Percentage
Gender	Male	42.7%
	Female	57.3%
Age	18 - 24	13.6%
	24 - 44	67%
	45 - 54	16.5%
	Above 55	2.9%

4.3 Statistical Analysis

According to Hair Jr, Hult [33], a measurement model refers to the connection between a latent structure and its associated items. Convergent validity and discriminant validity are the two types of validity required to evaluate a measurement model. The degree to which two or more maximally different measures of the same concept agree is called convergent validity. On the other hand, discriminant validity refers to the degree to which one construct differs from other constructs. The two classes of effectiveness in this study are described in the following subsections. As an analytical tool, this work used the Structural Equation Modeling (SEM) methodology with Partial Least Squares (PLS) algorithm. PLS investigates psychometric characteristics and offers evidence of whether or not relationships exist (Fornell and Larcker, 1981) [34].

4.3.1 Convergent Validity:

Measurement model helps to establish reliability and validity of all constructs used in the proposed model.[33] recommended that indicators with loading below 0.40 should be dropped to allow for a better AVE and composite reliability. Five indicators were dropped from the model as shown in table 3 and figure 1.

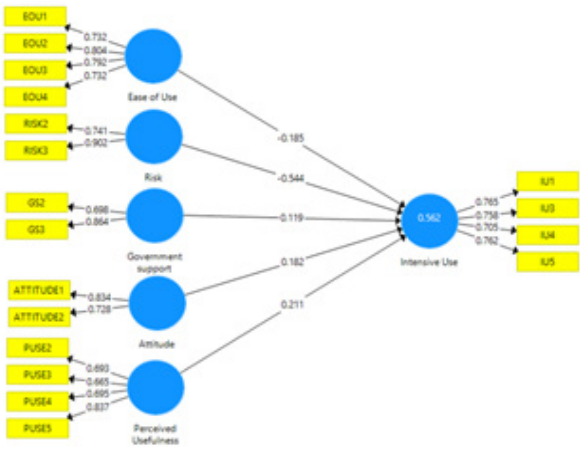


Figure 1: Measurement model

The values of composite reliability values should be greater than 0.7, and AVE greater than 0.5 as the threshold for satisfying these criteria [33,34]. The results in table 1 after some modifications indicate that the study satisfied these requirements for convergent validity and internal consistency of the scales.

Table 3: Descriptive Statistics, Reliability and validity analysis

Construct	Item	Descriptive Statistics			Reliability & Validity		
		Mean	SD	CV	Loading	CR	AVE
Attitude	ATTITUDE1	3.95	0.734	18.58%	0.834	0.759	0.613
	ATTITUDE2	2.84	1.047	36.87%	0.728		
Ease of Use	EOU1	4.15	0.919	22.14%	0.732	0.85	0.586
	EOU2	3.86	1.116	28.91%	0.804		
	EOU3	4.12	1.043	25.32%	0.792		
	EOU4	3.83	1.069	27.91%	0.732		
Government support	GS1	3.89	0.902	23.19%	Removed	0.761	0.616
	GS2	4.01	1.156	28.83%	0.698		
	GS3	3.41	1.302	38.18%	0.864		
Intensive Use	IU1	4.11	1.647	40.07%	0.765	0.835	0.559
	IU2	3.1	1.305	42.10%	Removed		
	IU3	2.73	1.227	44.95%	0.758		
	IU4	2.49	1.063	42.69%	0.705		
	IU5	3.08	1.104	35.84%	0.762		
	IU6	3.17	1.069	33.72%	Removed		
Perceived Usefulness	PUSE1	3.96	0.713	18.01%	Removed	0.815	0.527
	PUSE2	4.08	0.922	22.60%	0.693		
	PUSE3	4.23	1.028	24.30%	0.665		
	PUSE4	4.02	1.169	29.08%	0.695		
	PUSE5	3.67	1.254	34.17%	0.837		
Risk	RISK1	2.06	1.038	50.39%	Removed	0.809	0.682
	RISK2	2.51	1.044	41.59%	0.741		
	RISK3	2.4	1.362	56.75%	0.902		

4.3.2 Discernment Validity

Discriminant validity examines how much a construct differs from other constructs. It is usually established by examining cross-loadings or using Fornell-Larcker criterion. Table 4 shows the results of Fornell-Larcker criterion, the square root of each construct's AVE were reported on the main diagonal of the table, whereas the rest of the values are the inter-correlations between the construct. The idea behind this test is that the square root of each construct's AVE should be greater than its highest correlation with any other construct. It is common to have an indicator loading to different constructs; however, it is crucial that the indicator's loading on its associated construct is higher than its correlation with other constructs. Following the previous guides of the Fornell-Larcker criterion and cross loadings, the discriminant validity is established.

Table 4: Discriminant validity (Fornell-Larcker criterian)

	Attitude	Ease of Use	Government support	Intensive Use	Perceived Usefulness	Risk
Attitude	**0.783**					
Ease of Use	0.189	**0.766**				
Government	0.182	0.473	**0.785**			
Intensive	0.492	0.102	0.265	**0.748**		
Perceived	0.297	0.601	0.448	0.382	**0.726**	
Risk	-0.478	-0.127	-0.194	-0.698	-0.32	**0.826**

4.3.3 Descriptive Statistics and Multiple Correlations

Table 5 shows the descriptive statistics and correlations between the main variables. It can be shown that Ease of Use has mean (M), standard deviation (SD), and coefficient of variation (CV) as (M=3.9899,SD=0.798,CV=19.99%) with insignificant correlation with Intensive Use.

Table 5: Descriptive statistics and multiple correlations

	Ease of Use	Risk	Government support	Attitude	Perceived Usefulness	Intensive Use
Ease of Use	1		.485***	.209*	.608***	0.104 NS
Risk		1	-0.184 NS	-.462***	-.296**	-.684***
Government			1	0.175 NS	.458***	.264**
Attitude				1	.354***	.469***
Perceived					1	.356***
Intensive						1
Mean	3.9899	2.4545	3.7121	3.3939	4	3.1035
SD	0.79773	1.00278	0.96914	0.70448	0.80258	0.94559
CV	19.99%	40.85%	26.11%	20.76%	20.06%	30.47%
Skewness	-0.713	0.592	-0.655	-0.262	-0.661	-0.552
Kurtosis	0.626	-0.542	0.37	-0.84	-0.277	-0.481

***P < 0.001; **P < 0.01; *P < 0.05; NS = Not Significant.

Furthermore, Risk has descriptive statistics as (M=2.455,SD=1.003,CV=40.85%) with a significant negative relationship with Intensive Use since (r=-.684,P<0.001). Government support has descriptive statistics as (M=3.712,SD=0.969,CV=26.11%) with

a significant positive relationship with Intensive Use since (r=.264,P<0.01). Attitude has descriptive statistics as (M=3.394,SD=0.704,CV=20.76%) with a significant positive relationship with Intensive Use since (r=.469,P<0.001). Finally, Perceived Usefulness has descriptive statistics as (M=4.00,SD=0.803,CV=20.06%) with a significant positive relationship with Intensive Use since (r=.356,P<0.001). The values of Skewness and kurtosis are within the range (+2,-2) indicate that the associated variables are normally distributed (Trochim & Donnelly, 2006; Gravetter & Wallnau, 2014) [38].

5. Structural model assessment

After determining the validity and reliability of the measurements, the next step is to evaluate the structural model. Examining the structural model, as shown in table 6, includes path coefficients, collinearity diagnostics, coefficient of determination (R2), effect size (f^2), predictive relevance (Q2), and goodness of fit criteria. Figure 2 show the reseach model with the estimated path coefficients along with the corresponding p-values. It can be observed that Risk has significant negative effect on Intensive Use since (β=-0.544,t=7.947,P<0.001,95% CI for β=[-0.659,-0.391]), so that the second hypothesis is accepted.

Table 6: Hypothesis testing

Path	B	t-value	P-value	95% CI for β		Remark
				2.50%	97.50%	
H1: Ease of Use -> Intensive Use	-0.185	**1.63**	0.103NS	-0.463	-0.048	Not Supported
H2: Risk -> Intensive Use	-0.544	7.947	**0.000*** **	-0.659	-0.391	Supported
H3: Government support -> Intensive Use	0.119	1.221	0.222NS	**-0.052**	0.318	Not Supported
H4: Attitude -> Intensive Use	0.182	2.335	0.02*	0.025	**0.332**	Supported
H5: Perceived Usefulness -> Intensive Use	0.211	2.438	0.015*	0.083	0.425	**Supported**

***P < 0.001; **P < 0.01; *P < 0.05; NS = Not Significant.

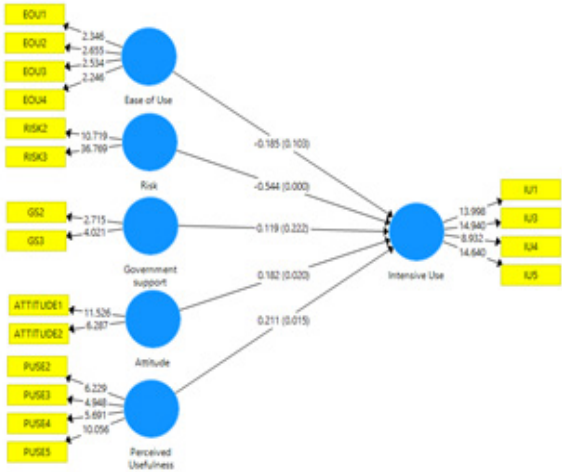


Figure 2: Structural model

Moreover, Attitude has statistically significant positive effect on Intensive Use since (β=0.182,t=2.335,P<0.05,95% CI for β=[0.025,0.332]), therefore, the fourth hypothesis is accepted. Furthermore, Perceived Usefulness has statistically significant positive effect on Intensive Use since (β=0.211,t=2.438,P<0.05,95% CI for β=[0.083,0.425]), therefore, the fifth hypothesis is accepted. Finally, both ease of use and government support have no statistically significant effect on Intensive Use since P-value is greater than 0.05.

Table 7: Global validation

Construct	F Square	VIF	R Square	R Square Adjusted	Q Square	GoF
Attitude	**0.057**	1.341	0.562	0.539	0.246	0.579
Ease of Use	0.045	**1.729**				
Government	0.024	1.373				
Perceived	0.056	1.818				
Risk	0.49	1.378				

The results of structural model assesment in table (7) indicate that about 56% of the variation in Intensive Use is explained by the variation in the independent variables with Cohen's effect size for each as follows; small for Attitude (f2 =0.057), Ease of Use (f2 =0.045), Government support (f2 =0.024), Perceived Usefulness (f2 =0.056), and large for Risk (f2 =0.49). All values of VIF were below the

threshold of 5 indicating the absence of collinearity problem. We evaluated predictive relevance by assessing Stone-Geisser's Q2. We executed the blindfolding procedure and calculated the Q2 values as (Q2 =0.246). This value was greater than zero, thus indicate predictive relevance for endogenous latent variables in our PLS path model (Hair et al. 2017) [33]. Tenenhaus et al. (2005),[36] proposed the Goodness of Fit (GoF) as a global fit indicator. The criteria of GoF for deciding whether GoF values are not acceptable, small, moderate, or high to be regarded as a globally appropriate PLS model. The value of the GOF (0.579) is greater than 0.36 indicating high fit, so, it can be safely concluded that the GoF model is large enough to considered sufficient valid global PLS model.

Partial least squares-based path modeling with latent variables is a method that allows the use of empirical data to estimate complex causal relationships. The assumption that data is collected from a homogeneous population is often unrealistic. For this reason, the objectives of this paper are , first: a finite mixed-path model methodology for data separation based on the heterogeneity of estimates in the internal path model, and second: predictive object segmentation because it works well to discover informative measures of unobserved heterogeneity.

6. Finite mixture partial least squares (FIMIX-PLS) segmentation

Finite mixture partial least squares (FIMIX-PLS) segmentation is a method to **detect** unobserved heterogeneity in **an internal** (structural) model. It captures heterogeneity by estimating the segment **membership probability** for each observation and simultaneously **estimating** the path coefficients for all segments.

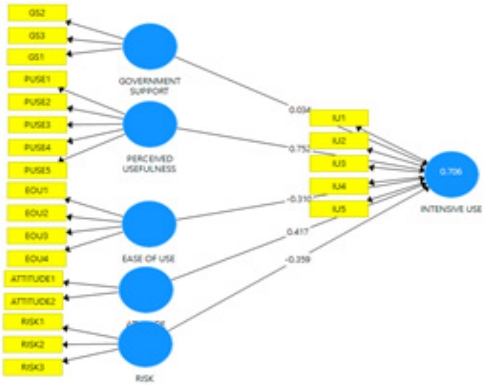


Figure 3 : segment 1

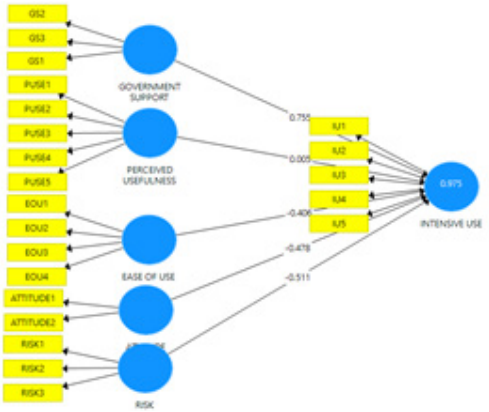


Figure 4 : segment 2

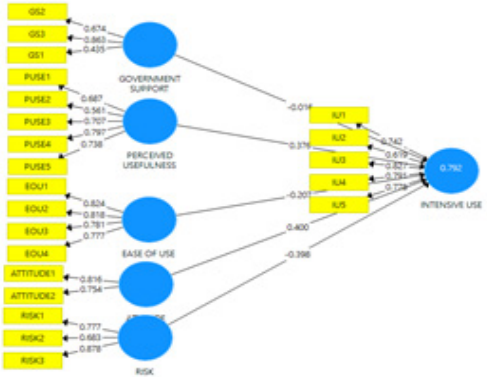
The model is portioned in two segments according to the size of the sample size with a weighting scheme centroid critria [36]. segment 1 71.6% and segment two is 28.3% as shown in figure (3,4) This techniques leads to better results of R^2 in both segments rather than the original sample as shown in table (8)

Table 8 . Finite mixture partial least squares (FIMIX-PLS) segmentation

	Segment one	Segment two	Original sample
Segmentation	71.6%	28.4%	
R square	0.706	0.975	0.562

7. PLS prediction-oriented segmentation (PLS-POS)

PLS prediction-oriented segmentation (PLS-POS) (Becker et al. 2013) is a distance-based segmentation method. It follows a clustering approach with a deterministic assignment of observations to groups and uses a distance measure for the reassignment of observations; as such, it has no distributional assumptions.



Fiure 5. Segment one

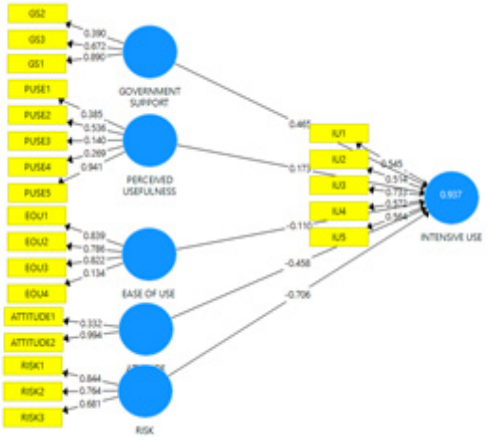


figure 6. Segment two

The model is portioned in two segments according to the sample size [38] , segment 1 63% and segment two is 36% as shown in figure (5,6) and sum of target construct wieghted R square criteria .This techniques leads to better results of R^2 in both segments rather than the original sample as shown in table (9)

Table 9. PLS prediction-oriented segmentation (PLS-POS)

	Segment one	Segment two	Original sample
Segmentation	63%	36%	
R square	0.792	0.937	0.562

8. Conclusion:

This paper uses the TAM (technology acceptance model) as a foundation to investigate the relationship between perceived utility, perceived ease of use, risk, attitude, and government support in Egypt's extensive usage of digital payment. The measurement model analysis' major goal is to find dimensions with high reliability and discent validity.

The data analysis for this paper was divided into two phases. The initial phase is divided into two parts. The content, convergent, and discriminant validity of structures are assessed as the initial stage in evaluating a model. The structural model and hypotheses are tested in the second part. Various diagnostic concerns with the gathered data, including as missing data, outliers, and common method bias, should be checked before moving on to the next step of the analysis . The second phase is divided into three sections. The first is a finite mixture route modelling tool for dividing data based on the heterogeneity of estimates in the inner path model, and the second is prediction objected segmentation, which excels at unobserved heterogeneity informative measures. Third, it examines the outcomes of finite mixture partial least squares path modelling segmentation and prediction objected segmentation using finite mixture partial least squares.

The measuring model contained five hyphotheses with 23 variables. Following confirmatory factors analysis and variable reduction utilising validal-

ity analysis, the final count was 19 variables. The theories' reliability is also assessed in this paper by measuring internal consistency across dimensions. According to the findings, government support (H3) and ease of use (H1) have no bearing on Egypt's extensive usage of digital payments. In Egypt, risk (H2) has a negative influence on digital payment usage, whereas attitude (H4) and perceived usefulness (H5) have a positive impact on digital payment usage.

Two segmentation strategies are utilised to improve the R square of the model: Finite mixture partial least squares (FIMIX-PLS) segmentation and PLS prediction-oriented segmentation (PLS-POS). These methods produce improved R square outcomes in both cases.rather than the original sample .

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