International Journal of Computer Trends and Technology
ISSN: 2231 – 2803 / https://doi.org/10.14445/22312803/IJCTT-V69I2P102

Volume 69 Issue 2, 5-15, February 2021

Original Article

Framework for Adoption of E-Payment Systems for Small and Medium-Sized Enterprises in Kenya

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Received Date: 10 December 2020
Revised Date: 22 January 2021
Accepted Date: 24 January 2021

Abstract **-** *New monetary requirements have been generated by the growth and emergence of e-commerce, which cannot be adequately met in numerous cases by traditional payment systems. E-payment systems have reformed the business process by weakening paperwork, exchanging expenses and labor costs, and increasing security to both buyers and sellers. Despite these benefits, many Small and Medium Enterprises (SMEs) are yet to incorporate e-payment systems into their businesses in Kenya. Virtually the parties that have made an effort towards the adoption of e-payment systems are investigating different sorts of electronic systems for payment. Therefore, the purpose of this paper is to develop a framework for the adoption of e-payment systems in Kenya for SMEs. The study adopted a survey research design. A purposive sampling technique was used to select a sample of 204 SMEs that represented the entire SMEs population in Kenya. The methods for data collection were content analysis, questionnaires, and interviews. Both descriptive and inferential statistics involving numerical data were used to interpret the collected data. The findings of the study reveal that ease of access and usefulness to e-payment systems were found to influence the choice of e-payment system use. Security issues came out as one of the major challenges in the e-payment adoption process and, finally, various e-payment systems. The other major problem witnessed included the absence of protection legally, the absence of e-payment capacity in collaborative organizations, and the absence of a requirement for e-payment. This can only be effective after the Technologies have been well-integrated and with minimal charges. The study analyzed all these aspects and developed a framework that provides guidelines for e-payment systems adoption in SMEs, guides e-payment systems developers to make informed decisions in the requirement elicitation stage that results in e-payment systems that suit SMEs in Kenya, and provides a benchmark for e-payment systems that are acceptable to SMEs in Kenya.*

Keywords **-** *E-Payment System, E-commerce, Electronic Money Transfer, Mobile Money Transfer, Small and Medium-Sized Enterprises*

I. INTRODUCTION

New monetary requirements have been generated by the growth and emergence of e-commerce, which cannot be adequately met in numerous cases by traditional payment systems. The advancements gave rise to the need to incorporate ICT in the way businesses are conducted. In the early 1990s, a new impression of electronic commerce appeared that involved the utilization of information technology to enhance transactions and communications with the entirety of an association's participants, which comprise employees, financial institutions, suppliers, managers, customers, government regulators, and the entire community [1]. The concept of electronic commerce is used to describe all electronically facilitated exchanges of data between an association and its outside stakeholders [2]. Antwi, Hamza, and Bavoh [3] describe e-payment as the transmission of the financial claim by a payer's on an acceptable party to the beneficiary. These systems of payment that incorporate credit and debit cards, electronic transfering of funds, platforms of mobile payments, and banking through the internet are now being used in the Kenyan market. E-payment is a mechanism of payment that utilizes electronic media that does not include cash money [4]. It is information in inter-organizational that is identified with systems of transactions, connecting different organizations, and connecting to individual clients. It is the latest payment practice for retail where a seller recovers information on payment for services as well as goods and puts this data in an electronic format that makes electronic documents that are processed over the network. All around the world, in money transfer using mobile, the leader is Kenya in mobile Network operator (MNO), the launch of M-Pesa by Safaricom was done in 2007. This is where it joined the agent banking in Brazil and brilliant portable cash of the Philippines in order to make M-PESA. E-payment users are users who make use of e-payment tools as well as channels to finish behavior payment [5]. Services of e-payment allow and assists people to deal remotely with their monetary transactions [6].

Electronic installment instruments are not utilized with equivalent intensity even in developed nations because of different reasons [7]. The first problem is security, which is the primary worry of individuals nowadays in any

technology utilization because the use of each technology is unprotected from data theft, fraud, and stealing. It turns out to be more perilous when the information encompasses huge information on finance [8]. Accordingly, notwithstanding the way that web-based business is a developing field with expanding utilization of its online service of payment, its additional turn of events, as well as future widespread usage, are reliant upon the authentication and security stability of different electronic systems of payment [9]. The second problem is usability, described usability of technology as "how much an individual accepts that utilizing specific payment would be free of effort." The apparent usability in business and fewer complexes to expand the like hood of its reception. These definitions concur on the level of free of effort. Anyway, these overlook use as limitations to the adopters, which are a valuable element of use. Found that for small enterprises, the absence of simple – to - use, inexpensive and standardized interfaces between solutions of payment and costs of accounting of adoption electronic payments are barriers [10]. Despite the many benefits, many SMEs have not adopted the use of e-payment systems majorly because of the challenges accompanying them. These include ease of access, privacy, security, usability, reliability, audit, and simplicity. It is not clear whether a good number of e-payment systems are putting into consideration the above factors, which are critical for the SMEs in their decision-making with regard to the use of e-payment systems. This leaves out a large population of the country's economy since SMEs in Kenya contribute up to 80% of the employment in the country. These factors and other human factors have resulted in disparity in usage as well as preferences of various payment systems by SMEs and, in some cases avoiding e-payment systems altogether. It's not surprising that few SMEs have fully utilized these payment systems leaving them to stack in traditional payment systems despite the benefits that accompany modern systems of e-payment. This paper, therefore, sought to come up with a framework that shall allow the adoption of e-payment systems by Kenyan SMEs.

II. METHODOLOGY AND TOOLS

This study employed a survey research design. Survey research is a detailed type of field study that incorporates the gathering of data from a sample of components drawn from a very much described populace using a questionnaire. The study was conducted on all the sampled SME managers in Kisumu County in Kenya. The survey was found most suitable since the target population was small and medium enterprises in the whole of Kenya. It also provided a numeric description of the entire population and was used as it was the most suitable depending on the nature of the study, required data, and the available time for the study. The study targeted licensed small and medium-sized enterprises in Kenya, which is projected to be 1,560,000 (KNBS, 2017). The sample of the study was obtained by utilizing purposive sampling. Purposive sampling is a non-probability sampling method that does not afford the cost of any reason for assessing the probability that everything in the populace gets an opportunity of being included from the sample [12]. Using the simplified formula, the SMEs sample was estimated to be 204 SMEs. The study use content analysis, questionnaires, and interview schedules as data collection tools.

III. RESULTS AND INTERPRETATION

The data were coded, entered, and analyzed using SPSS version 22. Both descriptive and inferential statistics were performed on data. The related variables were then classified under thematic concepts in order to make them realized easily as the constructs and the sub-constructs of the framework. To evaluate the appropriateness of data under the study for factor analysis, some test was done to examine if the mockup was adequate and suitable for exploratory analysis as suggested in [13]. Sampling adequacy provided information about the groups of items being surveyed in this study. This allowed the research in order to clarify the constructs under the study. The first thing was establishing the Kaiser-Meyer-Olkin (KMO) value [14]. Table 1 summarizes the KMO and Test of Bartlett's results.

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.514
Bartlett's Test of Sphericity	Approx. Chi-Square	1232.693
	Df	741
	Sig.	.000

KMO is considered at the point when the variable cases to proportion are under 1:5, and its value ranges from 0 to 1. [15] Asserts that a KMO value of 0.5 is considered suitable for factor analysis, a KMO correlation of above 0.6 to 0.7 is deemed adequate for analyzing exploratory factor analysis. This study established a KMO value of 0.514, as in Table 1. The value is within the acceptable range. Hence the sample was deemed fit for exploratory analysis. It is revealing Bartlett's Test of .000, which is in the range of ($p<0.05$). Therefore, KMO demonstrates sample adequacy (.514), and Bartlett's sphericity test suggests that the matrix of object correlation is not an identity matrix (.000). Thus from the results of the study, data was adequate and suitable for use in Exploratory Factor Analysis. Table 2 summarizes an explanation of the overall variance within factors.

Table 2. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.375	6.090	6.090	2.375	6.090	6.090
2	2.148	5.507	11.597	2.148	5.507	11.597
3	2.062	5.288	16.885	2.062	5.288	16.885
4	1.899	4.869	21.753	1.899	4.869	21.753
5	1.808	4.636	26.390	1.808	4.636	26.390
6	1.756	4.503	30.893	1.756	4.503	30.893
7	1.614	4.138	35.031	1.614	4.138	35.031

8	1.559	3.999	39.030	1.559	3.999	39.030
9	1.534	3.932	42.962	1.534	3.932	42.962
10	1.412	3.622	46.583	1.412	3.622	46.583
11	1.341	3.439	50.022	1.341	3.439	50.022
12	1.271	3.258	53.280	1.271	3.258	53.280
13	1.245	3.193	56.473	1.245	3.193	56.473
14	1.178	3.022	59.495	1.178	3.022	59.495
15	1.066	2.733	62.228	1.066	2.733	62.228
16	1.030	2.641	64.869	1.030	2.641	64.869
17	1.026	2.630	67.499	1.026	2.630	67.499
18	.987	2.531	70.030			
19	.913	2.341	72.372			
20	.886	2.271	74.642			
21	.785	2.014	76.656			
22	.746	1.913	78.569			
23	.727	1.864	80.433			
24	.693	1.778	82.211			
25	.670	1.718	83.928			
26	.625	1.602	85.530			
27	.591	1.516	87.047			
28	.562	1.441	88.488			
29	.546	1.399	89.887			
30	.513	1.316	91.203			
31	.476	1.221	92.424			
32	.446	1.145	93.569			
33	.443	1.135	94.704			
34	.416	1.066	95.770			
35	.384	.984	96.754			
36	.357	.915	97.669			
37	.315	.807	98.475			
38	.304	.781	99.256			
39	.290	.744	100.000			

Method of Extraction: Analysis of Principal Component.

Table 2 indicates that the first factor accounts for the greatest amount of common variance (6.090%), which represents an Eigenvalue of 2.375. Each of the subsequent factors explains a part of the remaining variance until a point is reached when the Eigenvalue is 1. The factors at this point can no longer contribute to the framework. The factors with an Eigenvalue of 1 and above were viewed to contribute an adequate amount and were considered in the framework. The factors at this point do not correlate with each other. Consequently the factors that contributed to the framework development includes 1-17 with their respective common variance and subsequent Eigenvalue are as indicated: Factor 1, 6.090% and 2.375, Factor 2, 5.507% and 2.148, Factor 3, 5.288% and 2.062, Factor 4, 4.869% and 1.899, Factor 5, 4.636% and 1.808, Factor 6, 4.503% and 1.756, Factor 7, 4.138% and 1.614, Factor 8, 3.999% and 1.559, Factor 9, 3.932% and 1.534, Factor 10, 3.622% and 1.412, Factor 11, 3.439% and 1.341, Factor 12, 3.258% and 1.271, Factor 13, 3.193% and 1.245, Factor 14, 3.022% and 1.178, Factor 15, 2.733% and 1.066, Factor 16, 2.641% and 1.030 and Factor 17, 2.630% and 1.026 respectively. The factors 17 to 39 were excluded from the study since their Eigenvalue was less than 1 and were considered to explain less variance than a single variable as in Table 2.

A. Communalities

The study further sought to scrutinize the loading of each variable across factors through the determination of their commonalities. This is similar to Pearson's r, usually stated as a percentage of variance that can be described by the factor. Communality usually ranges from 0 to 1. The study extracted and found commonalities of 39 variables as in Table 3.

Table 3. Communalities

	Initial	**Extraction**
Gender	1.000	.703
Age	1.000	.714
Designation	1.000	.759
Experience	1.000	.530
Level of Education	1.000	.762
Enterprise Age	1.000	.664
Enterprise Category	1.000	.659
Mobile Phone Payment	1.000	.603
ATM Use	1.000	.640
Credit Cards Use	1.000	.766
Debit Cards Use	1.000	.666
Mobile Phone Payment Use	1.000	.745
Internet Payment	1.000	.661
Accessibility	1.000	.692
Integrity	1.000	.734
Usefulness	1.000	.704
Not Confidentiality	1.000	.730
Not Accessible	1.000	.689
Not Integrity	1.000	.673
Not easy to learn	1.000	.672
Not Available	1.000	.620
Confidentiality	1.000	.568
Not Useful	1.000	.636
Ease of Use	1.000	.708
Efficiency	1.000	.680
Easy to Learn	1.000	.516
Not Simple	1.000	.697
Satisfactory	1.000	.718
Accountable	1.000	.717
Not Ease of Use	1.000	.691
Not Efficient	1.000	.673
No Satisfaction	1.000	.674
Not Accountable	1.000	.707
Simplicity	1.000	.630
Availability	1.000	.704
Not Recommend	1.000	.626
Cost Not Considered	1.000	.657
Recommend	1.000	.674
Cost Considered	1.000	.654

Method of Extraction: Analysis of Principal Component.

Table 3 indicates that the commonality of 1 means that all of the variances in the framework is clarified by factor or variables. This is revealed in the column named initial.

These values are all included in the framework development. As manifested in the table, the percentage of Variance for each variable that is accounted for by seventeen factors is not the same. In the extraction column of Table 3, the commonality is different and is less than 1. This is because only the 17 Factors greater than 1 with Eigenvalues were considered. It is indicated that 76.2% of the variance in Designation of an entrepreneur has been accounted for while 51.6% of Easy to learn the e-payment System has been accounted for. This implies that the communality of an individual variable as it communicates to each of the 17 factors was taken into consideration.

B. Principal Component Analysis

The study further sought after establishing the correlation between a variable and a factor whether a single factor was involved or several factors were orthogonal. The results were as summarized in Table 4.

Table 4: Analysis of Principal Component

	Component															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Credit Cards Use	.746																
ATM Use	.586																
Mobile Phone Payment	-.566																
Internet Payment	.517																
Not Confidentiality		.571															
Debit Cards Use			.584														
Recommend																	
Not Efficient				.526													
Confidentiality					.547												
Not Accessible																	
Not Recommend						.524											
Not Integrity									.554								

Method of Extraction: Analysis of Principal Component.

a. 17 components extracted.

Table 4 reveals 39 variables that load on the 17 factors or components that were extracted. Variables with higher factor loading implies that the variable is closely associated with the factor. The gaps in Table 4 represent loadings that are less than 0.5 0r 50%. Factors that load together for each component and their respective factor loading values are revealed. The loading is spread to 17 components (factors). Table 4 indicates that Credit card use has a factor loading of (.746), ATM use (.586), Mobile Phone Payment (-.566), and Internet Payment (.517) all load together on the factor component one (1). The study also found out that the factors: Not Confidentiality with the loading of (.571) loads on factor component two (2). The factors Debit card use has a loading of (.584) loads to form factor component three (3). The factor not efficient with the loading of (.526) loads to form factor component four (4). The factors Confidentiality with the loading of (.547) loads to form factor component five (5). The factors did not recommend a loading of (.524) loads to form factor component six (6), and the factors not integrity with the loading of (.554) loads to form factor component nine (9). Component 7, 8, 10, 11, 12, 13, 14, 15, 16, and 17 had no loading, contain factors whose values were suppressed as the absolute values less than 0.50. By suppressing the absolute values less (0.50), the study therefore only used fewer factors for every component in the framework that had very strong variable relations with associated factors. Thus the factors that had variables loading less than (0.5) were all dropped from each respective component.

The variable Credit Cards Use with a loading of (.746), ATM Use with the loading of (.586), Mobile Phone Payment with the loading of (.566), Internet Payment with the loading of (.517) all load to form component 1. These variables have an element of revenue collection and can as well be renamed as Revenue Systems sub-construct. The variable Debit Cards Use with the loading of (.584) loads to form component 3. This variable can be renamed as expenditure Systems sub-construct. It is further observed that Revenue sub-construct and expenditure sub-construct has a key element of e-payment Technology and therefore renamed as e-payment Technology; hence components one (1) and three (3) variables can be combined together to form e-payment Technology as a construct Table 5 summarizes loading factors.

Table 5. E-payment Technology Factor Loading

Factors	Loading	
	1	3
Credit Cards Use	.746	
ATM Use	.586	
Mobile Phone Payment	-.566	
Internet Payment	.517	
Debit Cards Use		.584

These core E-payment Technology elements that were acknowledged in use are vital in e-payment systems adoption in SMEs. Revenue Systems: ATM use, Use of Credit cards, Mobile phone payment, internet payment as component 1 variables, and their corresponding factor loading are as in Figure 1.

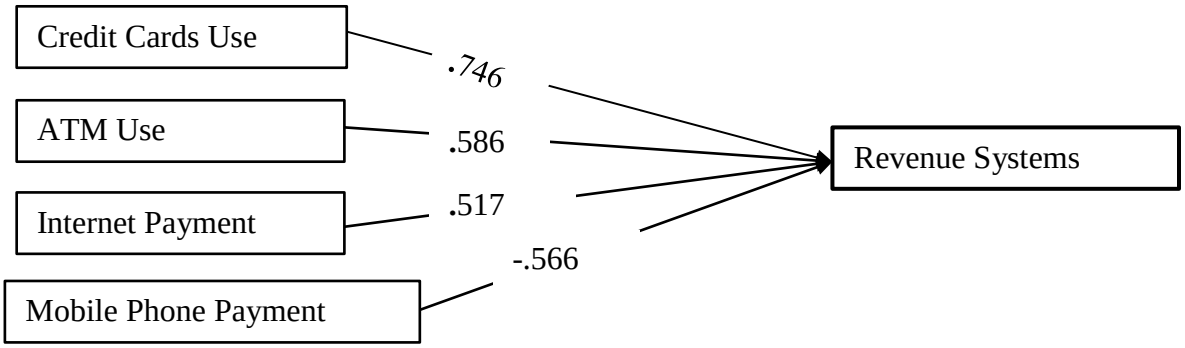

Fig. 1 Revenue Systems Sub-Construct

Expenditure Systems comprised the use of Debit cards as component 3 variable, and its factor loading is as in Figure 2.

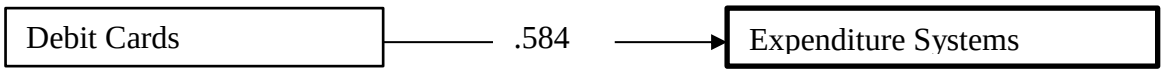

Fig. 2 Expenditure Systems Sub-Construct

Components 1(Revenue Systems) with average loading of (.746+.586+.517+.566)/4 =2.415/4 =.604 and component 3 (Expenditure Systems) with the loading of .584 can further be recombined and renamed as E-payment Technology as in Figure 3.

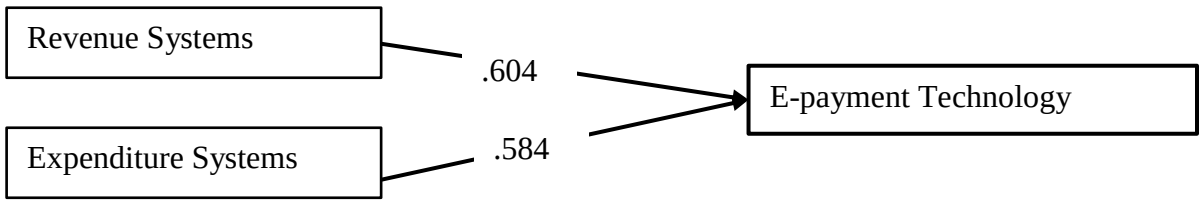

Fig 3. E-payment Technology Construct

The E-payment Technology Sub-Framework in Figures 1, 2, and 3 reveal that the core E-payment Technology found in use in SMEs were Revenue Systems: Credit Cards Use with a factor loading of (.746), ATM Use with a factor loading of (.586), Mobile Phone Payment with a factor loading of (-.566), Internet Payment with a factor loading of (.517) and Expenditure Systems: Debit Cards Use with a factor loading of (.584). The weights of each sub-construct in the E-payment Technology sub-framework were computed as follows: First by summing the average loadings of Revenue Systems sub-construct (.604) and Expenditure sub-construct (.584), which gives (1.188). A ratio of what each sub-construct contributes to the E-payment Systems construct was thereafter computed by taking the loading factors of each sub-construct and dividing by the sum loadings of sub-constructs, which was: Revenue Systems ($\frac{0.604}{1.188}$), corresponding to a weight of (.508) and Expenditure Systems ($\frac{0.584}{1.188}$), corresponding to a weight of (.492), as in Table 6.

Table 6. E-Payment Technology Variables Weights

E-Payment Technology	Loading	Total loading	Agv load	Weight
Revenue Systems		1.188	.604	.508
Credit Cards Use	.746			
ATM Use	.586			
Mobile Phone Payment	.566			
Internet Payment	.517			
Expenditure Systems		.584	.584	.492
Debit Cards Use	.584			

Table 6 can graphically be represented as in Figure 4.

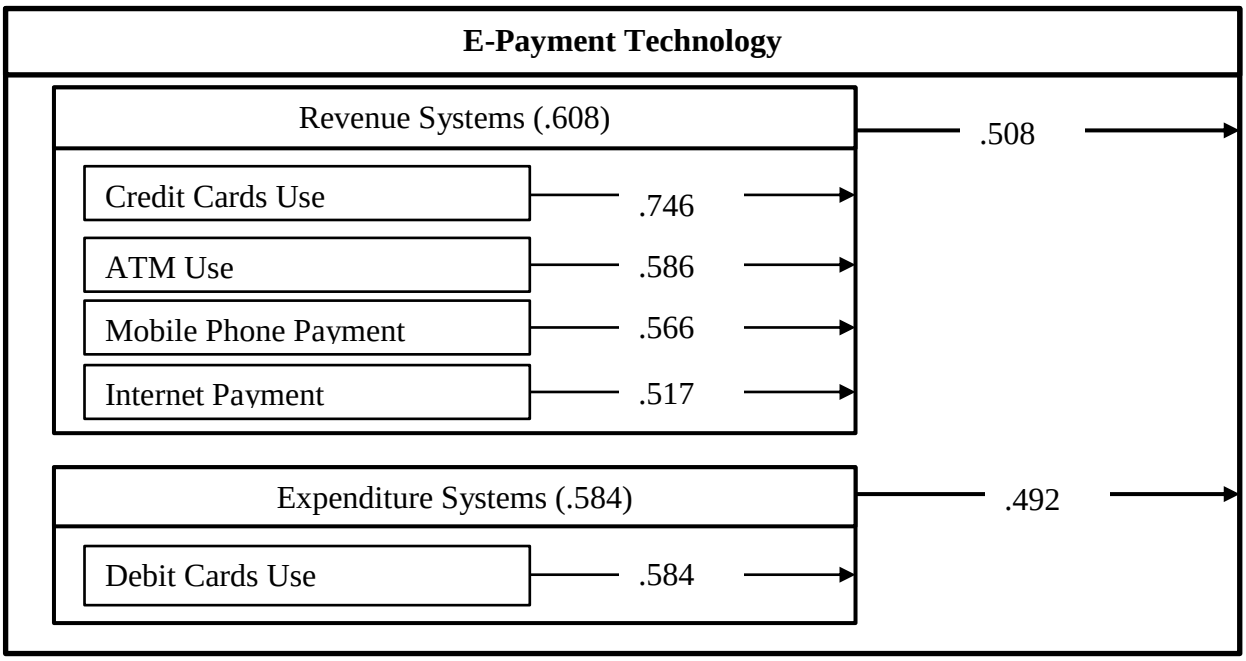

Fig. 4 E-payment Technology Sub-Framework

It can be noticed in Figure 4 that: E-payment Technology = Revenue Systems (.608) + Expenditure Systems (.492). Components two (2), five (5), and nine (9) have key components of Security, i.e., component two (2) addresses the ability of e-payment system having no Confidentiality, and component five (5) addresses its Confidentiality concerns this two components 2 and 5 can be combined and renamed as Confidentiality issues, while component nine (9) addresses the ability of e-payment system having no Integrity, this component can be renamed as Integrity Issues. The Confidentiality Issues and Integrity Issues components can further be combined and renamed as a security construct. The security variables and their respective loading are as in Table 7.

Table 7. Security Construct

Factors	Loading								
	1	2	3	4	5	6	7	8	9
Not Confidentiality		.571							
Confidentiality					.547				
Not Integrity									.554

Table 7 extracts the two levels of security factors with their respective loadings. Factor 2, loads with (.571) to formability of having no confidentiality, factor 5 loads with (.547) to formability of having confidentiality, the two factors with an average of (.571+.547)/2 which 1.118/2 (.559) as Confidentiality Issues and factor 9, loads to give the ability to have no integrity (Integrity Issues). Figure 5 gives a summary of the variables and sub-constructs they form. These sub-constructs are then combined to form the e-payment systems security framework.

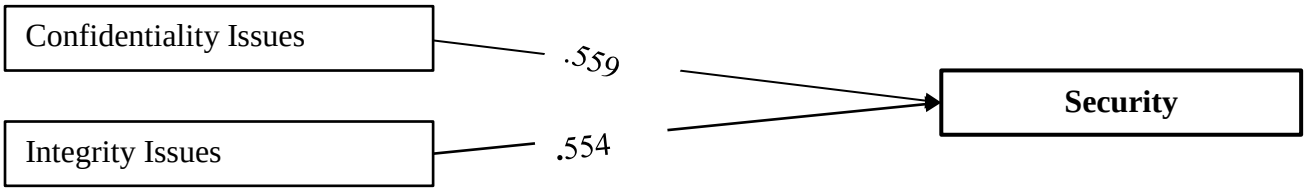

Fig. 5 Security Sub-Constructs

The factors which were identified in Figure 5 for the conceptualization of the Security constructs were as follows: Confidentiality Issues and Integrity Issues. The Average weight of each sub-construct in the Security construct was computed as follows: First, by summing the loadings of all the variables in the sub-construct (.559+.554), giving (1.113). Confidentiality Issues (.559/1.113 (.502) and Integrity Issues (.554/1.113), giving (.498) as in Table 8.

Table 8. E-payment Security weights

E-payment System Security	Loading	Total loading	Weight
Confidentiality Issues	0.559		0.502
Integrity Issues	0.554	1.113	0.498

Table 8 can graphically be represented as in Figure 6.

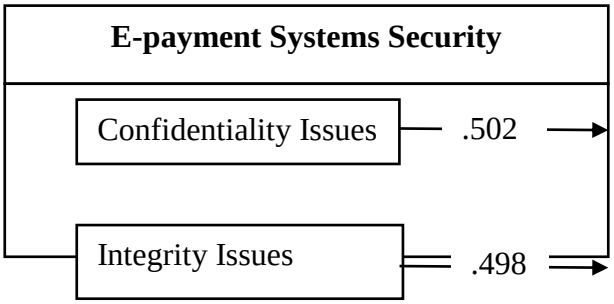

Fig. 6 Security Sub-Framework

Components six (6) involved variables not recommended, a variable that defines a key component of Entrepreneurs' perception of e-payment systems. For the purpose of this study, this variable (factor) is renamed as usability acceptance as in Table 9.

Table 9. Usability Acceptance Loading

Factors	Loading								
	1	2	3	4	5	6	7	8	9
Usability Acceptance						.524			

Figure 9 indicates that usability acceptance factor loading is (.524); this factor will contribute to its wholesomeness in the framework development as a prime construct. The components, which were identified in Figure 5.6 for the conceptualization of the E-Payment Security constructs with an average of (.502+.492)/2=0.994/2= 0.497 and Table 5.9 for Usability Acceptance with the loading of .524 can then be recombined to form E-Payment Systems Drivers sub-construct as in Figure 7.

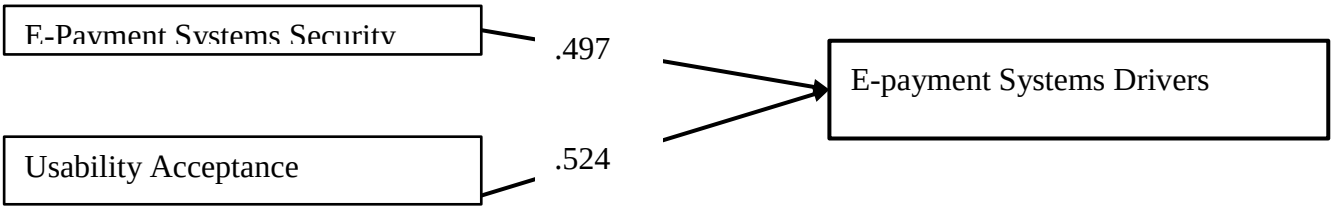

Fig. 7 E-Payment Systems Drivers Construct

A ratio of what each sub-construct contributes to E-Payment Systems Drivers was thereafter computed by taking loading factors of each sub-construct and dividing by the sum loadings of sub-constructs, which was: E-Payment Systems Security Systems ($\frac{0.497}{1.021}$), corresponding to a weight of (.487) and Expenditure Systems ($\frac{0.524}{1.021}$), corresponding to a weight of (.513), as in Table 10.

Table 10. E-Payment Systems Drivers Variables Weights

E-Payment Systems Drivers	Loading	Total loading	Agv load	Weight
E-Payment Systems Security		0.994	.497	.487
Confidentiality Issues	.502			
Integrity Issues	.498			
Usability Acceptance		.524	.524	.513
Not Recommend	.524			

Table 10 can be represented graphically, as shown in Fig.8

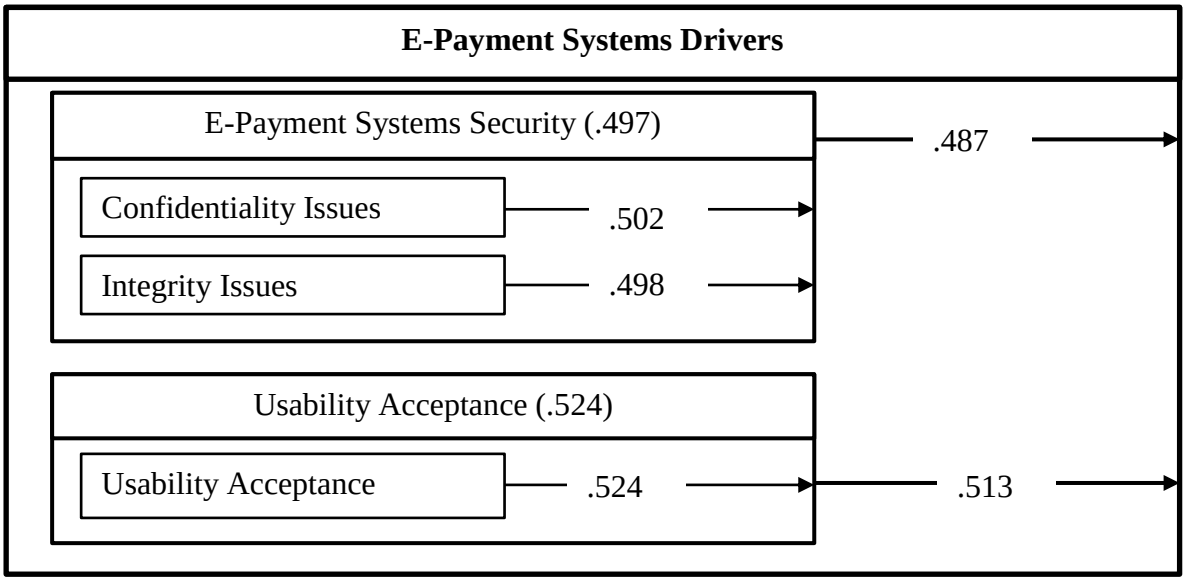

Fig. 8 E-Payment Systems Drivers Sub-Framework

Based on the discussions on this sub-section and the respective findings, Table 5.11 summarizes sub-constructs, constructs, and their respective factor loadings and weights they contribute to E-Payment Systems Adoption Framework (ESAF) for SMEs in Kenya. This is achieved through the combination of the key constructs.

Table 11. Framework Constructs Loadings

E-Payment Technology	Loading	Total loading	Agv load	Weight
Revenue Systems		**1.188**	**.604**	**.508**
Credit Cards Use	.746			
ATM Use	.586			
Mobile Phone Payment	.566			
Internet Payment	.517			
Expenditure Systems		**.584**	**.584**	**.492**
Debit Cards Use	.584			
E-payment System Security		**1.113**	**.557**	
Confidentiality Issues	0.559			**0.502**
Integrity Issues	0.554			**0.498**
Usability Acceptance			**0.524**	**0.524**
Not recommended	**0.524**	**0.524**		

C. E-Payment Systems Adoption Framework (ESAF)

The technique for constructing a new concept can be demonstrated from a domain given. Grounded theory is suitable for the development of framework because of its major features of being developed as classic. This method helps in building a process-oriented description, context-based and phenomenon explanation, Instead of an objective, static description, strictly articulated in terms of causatives. This section describes the construction of the E-Payment Systems Adoption Framework (ESAF) for SMEs in Kenya. It gives an integrated approach for combining various core components towards achieving an optimized E-payment Framework for SMEs. These factors were extracted through the rotation process of the factors explained. The study thus identified the main constructs as E-Payment Technology, E-payment System Security, and Usability Acceptance as summarized in Table 10. E-Payment Technology construct has two sub-constructs: Revenue Systems (.604) and Expenditure Systems with a weight of (.584). Get the exact average weights of each construct on the framework were considered and calculated as follows: (.604+.584)/2 = 1.188/2, which is (.594). E-payment System Driver also has two sub-constructs: E-payment System Security (Security) with a weight of (.557) and Usability Acceptance with a weight of .524. To get the exact average weights of the sub-construct on the framework, the following calculation was done: (.557+.524)/2 = 1.081/2, which is (.5405).

When summing up the contribution of each construct in the framework that is (.594+ .5405) giving a total of 1.1345. This (1.1345) is then used to calculate the effective contribution of each construct towards the adoption framework. When the effective weights of the constructs to the framework are summed up, the total should not exceed a value of one (1.000) is obtained. The results of the calculations are as shown below:

E-Payment Technology = (.594/1.1345) =.524 and E-payment System Drivers (.5405/1.1345) =.476. When the values are added, they give a value that does not exceed one (1.00), implying that they are within the agreeable range of between 0 and 1 that is E-Payment Technology (.524) + E-payment System Drivers (.476) = 1.000.

The **OESAF** framework shown in Figure 6 was developed from the overall contribution of each sub-framework in the final framework. The sub-framework was combined to come up with the **OESAF** framework that can be employed to achieve seamless e-payment adoption in SMEs in Kenya.

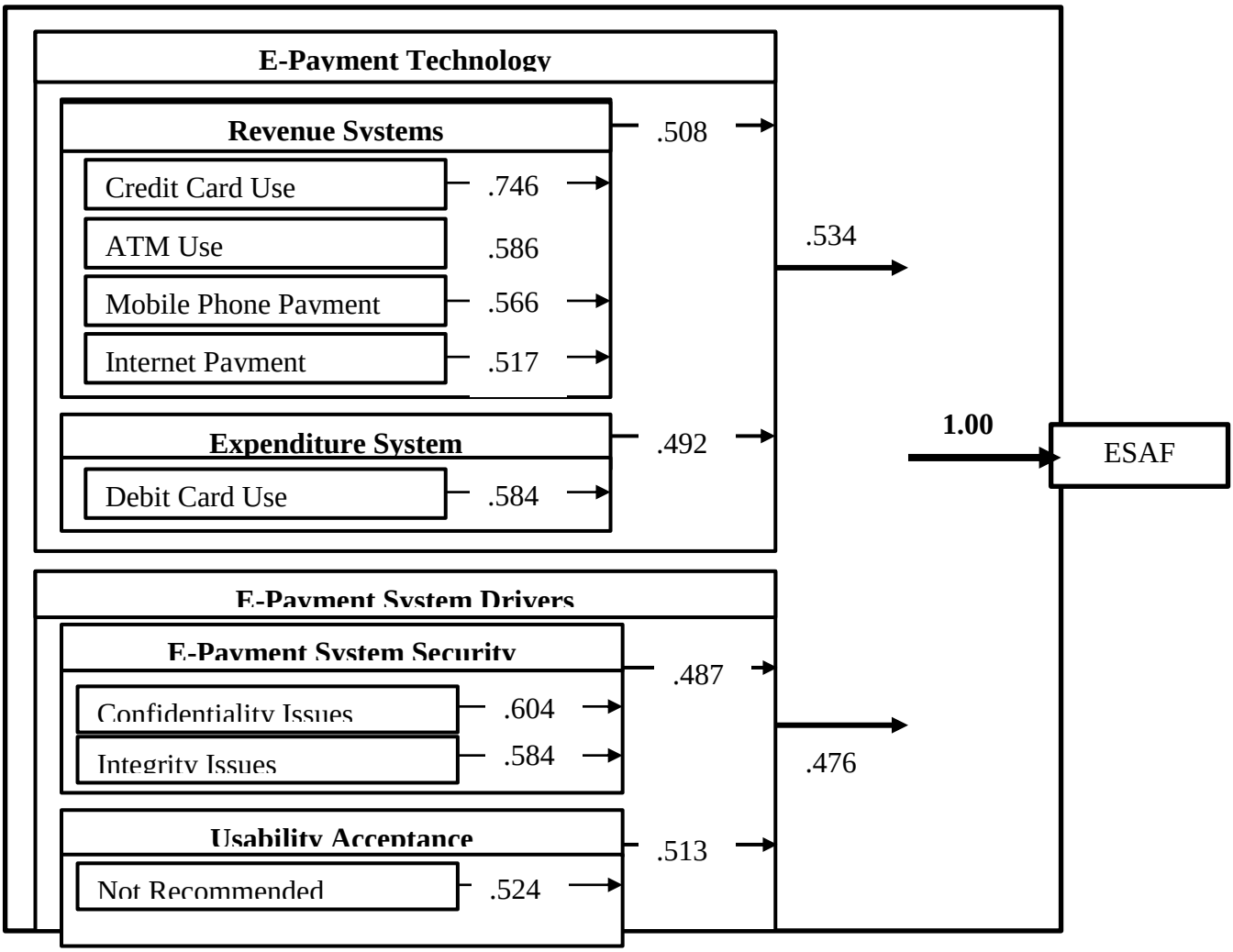

Fig. 7 ESAF Framework Architecture, Author (2021)

The **ESAF** framework developed in the study (Figure 7) can be employed to guide the E-payment adoption process in SMEs in Kenya. The overall weights of the constructs in the framework which vital for adoption include E-payment Technology (.524) and E-payment System Driver (.476), as in Figure 5.7. The usability acceptance has the highest weight of the constructs in the framework. This implies that it is a fundamental component required for the E-payment adoption process in SMEs. This needs to be given first consideration before the others and forms the backbone of effective interconnection between other constructs. The idea was if the SMEs entrepreneurs could be in a position to recommend the usage of electronic systems of payment to friends, their response was negative, implying that there is much to be done on usability and user acceptance in usage of electronic systems of payment. The E-payment System Drivers has a weight of (.524), including an element of security on the framework. Security issues came out as a major concept toward the adoption process and finally various e-payment systems, which contributed up to (.524). This can only be effective if the Technologies have been well integrated and at minimal charges.

D. ESAF Validation

Validation activity is the portion of the procedure of framework development. This phase was carried out to ensure the framework designed is adequately precise for a reason it was intended for. The importance of framework validity is crucial when it is undertaken with stakeholders. The study realized that failure of involving the SMEs and the IT experts then there is a likelihood of constructing an invalid framework. The process of validating involved a focus group discussion through an organized seminar. This gave a phenomenal occasion to talk about and get feedback on the acceptability of the framework. Validation theory was to ascertain that the participants of the research decide if the way the researchers interpreted the connotation and dealings concurs with theirs. The process is also undertaken to check on the quality of the research study and the possibility of biasness of research. This study involved Experts (Entrepreneurs and ICT champions) in validating and sharing findings. This was also done through collaboration with different investigations on the comparable or similar populace. To achieve this, the study used prototyping and domain experts. The study developed an OESAF framework that was presented to the experts for interrogation.

The constructs of the framework were presented to experts in order to assess if 1) presented constructs gives a perfect visualization that supports the study, 2) if the constructs signify the area of study 3) if the constructs given attention can be modeled to fit in the world that is real, as well as 4,) if the framework developed and presented would be accepted in the targeted domain. The seminar involved (8) entrepreneurs in SMEs and (6) IT experts, as in Table 11.

Table 11. Experts Demographic Data

		Frequency	**Percentage (%)**
Respondents	SME Entrepreneurs	8	57.14%
	IT Experts	6	42.86%
Total		14	100%

The outcomes indicate that 57.14% of the respondents were SME entrepreneurs, and 40% were IT experts. A higher number of SME entrepreneurs were included since they were the main part of the study that requires the use of an e-payment system in their business. The IT experts were included for the purpose of technological concerns and how it can be applied in the adoption process. After the seminar presentation, the researcher used the question asking protocol to get the member's concerns and feedback about the framework and its concepts. The questions of interest were: can the presented framework give a representation of the real-world concepts, is it an accurate representing of the theories supporting the study, is it easy to use or apply to the real world, and can it be acceptable? The response to these questions were {1= Not Accepted, 2= I am not sure, and 3= well mapped} tabulated and a reliability test computed as summarized in Tables 12 and 13.

Table 12. Responses Mean Scores

	Mean	**Std. Deviation**	**N**
can the presented framework give a representation of the real-world concepts	2.64	.633	14
is it an accurate representing of the theories supporting the study	2.64	.633	14
is it easy to use or apply to the real world	2.71	.611	14
can this framework acceptable	2.57	.756	14

Grand mean=2.64

The results in table 5.12 indicate that a mean of (2.64) and std dev. (.633) was achieved on whether the concepts of the framework give a representation of the real-world concepts, a mean of (2.64), and std dev. (.633) was also achieved on the matter: Accurate representing of the theories supporting the study, a mean of (2.71) and std dev. (.611) was realized on easy use or application of the framework to the real world and a mean of (2.57) and std dev. (.756) on whether the framework was acceptable. The grand mean recorded is (2.64). If this is evaluated on a scale of 1-3, it follows that the acceptance score is over 70%. This is also supported with A Cronbach's Alpha Coefficient. Scores were correlated and expressed as a Pearson r as in Table 5.13.

Table 13. Acceptance Reliability Test

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.921	.924	4

Table 13 reveals that A Cronbach's Alpha Coefficient of 0.921 was generated. [16], notes that the tested device is considered dependable if the Cronbach's Alpha Coefficient value is above 0.70. Nonetheless, thresholds that are lower are once in a while utilized in the literature. The technique was utilized by correlating the scores attained in an item as well as the scores attained using the same instrument with other items [17]. To add, a higher coefficient suggests that items correlate highly among themselves, and there is consistency among the items in estimating the interesting concept [17]. [12], notes that steady, unwavering quality is concerned about protecting predictable outcomes with repeated measurements on a similar respondent and with a similar instrument. The Cronbach's Alpha Coefficient of 0.921 was achieved on the framework test, and this considers the framework to be reliable and acceptable for use.

IV. CONCLUSION

The development of e-payment is growing. Some of the respondents in this research study showed that they had implemented e-payment to some level. The e-payment use level is still low, and most SMEs are as yet utilizing conventional methods of payment for monetary clearing. Extending utilization levels is significant, as this will prompt growing adoption levels, eventually bringing about the general turn of events. The adoption of e-payment is affected by the factors related to security, meaning that it is the most important factor that impacts e-payment adoption or use. Both the perceived and genuine worries about IT security impact e-payment utilization or adoption.

V. RECOMMENDATIONS

Despite it is limitations, the research ought to be used as a basis of reference by researchers and analysts to affirm the discoveries in different areas and practicing enterprises as a rule for strategy plan on electronic payment adoption. Based on generalizations of the study findings, the researcher suggests a short course on apprenticeship for an entrepreneur in Kenya that will nurture an entrepreneurship culture and great organization practices among small and medium businesses to cultivate their ability to grasp e-payments in Kenya.

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