ANTECEDENTS OF THE ADOPTION OF MOBILE VIRTUAL NETWORK OPERATOR LICENCE IN THE TELECOMMUNICATIONS SECTOR IN KENYA

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ABSTRACT

The access to mobile money has become an important financial service that helps to satisfy enterprise and personal financial needs helping to cope with Money management. Mobile money and access to related services have become a necessity. The main objective of this study was to investigate the factors that have affected the adoption of the mobile virtual network operator licensees: case of mobile money market in Kenya. The specific objectives were to evaluate and highlight the benefits in the adoption of MVNO (Mobile Virtual Network Operator) recommendations in the Kenyan telecommunications Industry, To examine the need for an industry wide frame work and its effect on the adoption of MVNO licensing in the telecommunications sector in Kenya, to investigate the effect of the current network infrastructure on the adoption MVNO licensing in the telecommunications sector in Kenya, to investigate the impact of mapping practices on the adoption of MVNO licensing in the telecommunications sector in Kenya, specific legal frame work and regulatory mechanisms in Kenya relating to MVNO. The study targeted the established telecommunication providers and along with other telecommunication service providers in Kenya. The target population was mainly Mobile network operators, mobile money service providers and content providers in Kenya with industry experts totaling to 530. A sample of 184 respondents was picked using stratified random sampling techniques based on strata in the management level. The sample size is obtained by calculating the
sample from the target population by applying Cooper and Schindler, (2013) formula. A structured questionnaire was used to collect the data. Data analysis was aided by SPSS. Inferences were drawn using Karl Pearson’s Correlation Coefficient technique. The data was further subjected to regression analysis using multiple regressions coefficient modeling. The study concluded that one of the key factors affecting adoption of MVNO is the availability of an industry wide framework along with the current network infrastructure of networks along with the current mapping practices in the country. Business strategies have also had a key impact on the adoption of MVNO in Kenya. The governments existing polices have also been seen to have some influence on the adoption of MVNO. It was recommended that Telecommunications Regulator in Kenya should champion the major changes in the facilitating the Adoption of MVNO licenses in Kenya This should be reinforced by also ensuring that the process if free from Government interference and influence.

Key Words: Mobile Virtual network Operator, adoption of MVNO licensing, current network infrastructure, mapping practices, legal frame work, regulatory mechanisms

1. INTRODUCTION

1.1 Background to the Study

The Mobile communication market from a global perspective with particular emphasis on western and European markets have reached saturation with approximately 90% penetration. In markets that are maturing subscription has become a commodity and competition is based on increasing subscriber base. Telecom operators are now moving towards the Flat network architectures and this has allowed for sharing of network resources becoming possible in this domain by the introduction or adoption of Long Term Evolution (LTE) and 4G standards. The Flat network architecture is lowering the barrier to network sharing initiatives also enabling the sharing possibilities of Telecom IT systems (Giles, 2015).

1.1.1 Global Perspective of the Adoption of MVNO License

MVNOs are a new, mostly European, GSM phenomenon. The versatile backgrounds of MVNOs can be divided into three groups 1) fixed network operators, 2) mobile network operators in another geographic market and 3) companies with non-telecom business at the geographical market. For an MVNO having no background in telecommunications, it is typical to have a strong brand known for its other operations, e.g. Virgin Mobile. There is no commonly accepted classification for
MVNOs. MVNOs can be divided into subcategories based on the network components owned by the MVNO. All the MVNOs deliver their own SIM cards and take care of the branding, marketing, billing and customer care. The difference arises in whether an MVNO has its own (CAK, 2012).

1.1.2 Regional perspective of the adoption of MVNO license

From a regional perspective, it is said that there are a number of MVNOs or resellers are expected to enter markets in the Middle East and Africa for the first time over the next few years. In many cases, this still depends on whether the MNOs see a clear benefit in hosting MVNO services. Specific examples of the MVNO landscape in Africa include: Morocco- in February 2012, state-owned postal service, Poste Maroc, announced plans to launch an MVNO but has not yet done so, South Africa – Virgin mobile Launched in 2006 as a JV between Virgin Group and Cell C Uses Cell C network 400k subscribers as of August 2012 (80% prepaid), Cameroon -SET’ Mobile” was signing on subscribers since December 2011, and went live in July 2012 with 200,00 subscribers Uses Orange Cameroon network (Cartesian, 2013).

1.1.3 Local Perspective of the adoption of MVNO license

In Kenya there has been no telecommunications provider or mobile virtual network enabler operating locally selling this service and the others following suite and thus entailing adoption of new technologies and services within the networks this is mainly driven by the ability to connect to the corporate network at anytime, anywhere; using any mobile or handheld device. The CAK has said that the government was fully committed to fast tracking roll out of planned national fourth generation long term evolution (4G LTE) mobile network. The LTE project is to be implemented under a public private partnership framework was a key focus of the proposed revised ICT master plan. The authority has backed the sharing of the LTE infrastructure to significantly
cut slash capitalization and operation costs to network providers and service charges to burgeoning internet users now at over 19 million (Mobile broadband subscriptions, 2011).

1.2 Statement of the Problem

According to research done by (KMPG, 2015) For some time MVNOs (Mobile Virtual Network Operator) have been trying to make a splash in the telecoms industry and adapt to its ever changing landscape to capture their share of the mobile market, yet many have failed where only a select few have truly succeeded. This is despite the fact that establishing a MVNO and partnering with MNOs (Mobile Network Operator) can be a win-win situation with many lucrative opportunities for both parties, but there are still unique challenges facing MVNOs that need to be addressed should they hope to differentiate themselves from the growing numbers of providers in their respective markets. This problem has will relate to problems stemming from unclear regulations, lack of network capacity, Existing policies. For an MVNO to be successful they need to overcome the challenges mentioned above and continue to develop points of differentiation and value added services to make them attractive not only to MNOs but to the customers they service.

Kenya is yet to adopt a formal position with respect to MVNOs. Mobile operators and regulators with regards to spectrum licenses, insufficient infrastructure, poor mapping, and existing policies are often reluctant with other service providers. Regulators are now looking at the issue of whether (and to what extent) intervention is necessary. If regulators intervene, they may have to set rates and conditions for access, while taking into account the effect on spectrum availability, license fees and investment. This study was undertaken with a broad objective to evaluate the Antecedents that may assist or prevent the Kenyan telecommunications from making the next leap in terms of infrastructure development and Service Development that is related to the Adoption of MVNO
licenses. Along with other sector factors such as Existing policies, Industry-wide frameworks, mapping practices and the network infrastructure involved.

1.3 Objectives of the Study

i. To assess the effect of an industry-wide framework on the adoption of MVNO licensing in the telecommunications sector in Kenya.

ii. To determine the effect of the current infrastructure of networks on the adoption of MVNO licensing in the telecommunications sector in Kenya.

iii. To evaluate the effect of mapping practices on the adoption MVNO licensing in the telecommunications sector in Kenya.

iv. To evaluate the Effect of Business Strategies on the adoption MVNO licensing in the telecommunications sector in Kenya.

v. Evaluate the moderating Effect of existing policies on the adoption MVNO licensing in the telecommunications sector in Kenya.

2. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Knowledge Gap Theory

The knowledge-gap hypothesis (Tichenor, Donohue, & Olien, 1970) proposes that knowledge is unevenly distributed in society and that Socioeconomic Status (SES) is the key determinant of how much people know about public affairs. The role of SES exhibits in both direct and indirect ways. First, groups with higher status, typically expressed in terms of education, possess greater
knowledge than lower-status groups. Second, high-status groups are better positioned to acquire and process public affairs information from the mass media.

2.1.2 Theory of Policy Implementation

Telecommunication service providers as their names suggest have their core business in service provision to the public, and as such they are strict with their implementations so as to have minimal downtime and impact to their clients. The two main categories of implementation are the top-down and the bottom-up approaches, the top-down approach assumed that implementation begins with policy objectives and implementation will follow in a linear fashion a product of a rational public administration model and which assumes distinct policy formulation and implementation.

2.1.3 Modern Innovation Theory

Modern innovation theory emphasizes different aspects of technological knowledge and hence provides a different view on the issue of technological knowledge and innovation. Clearly all firms operate with some kind of technological knowledge base. This is not a unitary base, and it often consists of three areas of production-relevant knowledge, with different levels of specificity. This means, firstly, that firm’s innovation processes can be problematic when technological innovations ask for competencies, which lie outside the area of competencies of the firm.

2.1.4 Grounded Theory

Grounded Theory is an approach for developing a theory that is "grounded in data systematically gathered and analyzed" (Strauss & Corbin, 1994). Grounded Theory is a research tool which enables you to seek out and conceptualize the latent social patterns and structures of your area of interest through the process of constant comparison.
2.2 Conceptual Framework

![Conceptual Framework Diagram]

## An Industry Wide Frame Work
- Market structures
- License procedure
- Frame work

## Current Infrastructure of Networks
- Network scalability
- Capex demands
- Network capacity

## Mapping Practices
- Technological Innovations
- Service pricing
- Traffic and revenue

## Market Strategies
- Service Offering
- Availability of alternative Services
- Pricing models

## Adoption of MVNO License
- Capex demands
- Network scalability
- Regulator involvement
- Market Structures

## Existing Policies
- Government involvement
- Business practices
- Regulator involvement

### Independent Variable

### Moderating variable

**Figure 1: Conceptual Framework**

### 2.2.1 Industry wide frame work

Framework for electronic communications networks and services, electronic communications as the most important aspect needs to be addressed. In particular, regulatory fragmentation and inconsistencies between the activities of the national regulatory authorities were found to
jeopardize not only the competitiveness of the sector but also the substantial consumer benefits from cross-border competition.

### 2.2.2 Current infrastructure of networks

Information Telecoms & Media estimates that one in four MVNOs don’t reach a second year of operations and we expect that MVNO market will continue to see many new launches but also many closures thus pointing out that the business model of a healthy model and there certain key characteristics an infrastructure availability being a key with the Ability to change business agreements and IT /network-related adjustments both cost-effectively and in a timely fashion and allowing for proper distribution of services through infrastructure (Informa Telecoms & Media, 2013).

### 2.2.3 Mapping practices

Mobile Virtual Network Operators (MVNOs) and Mobile Virtual Network Enablers (MVNEs) need to be able to support a rich array of services in order to differentiate their offer and to deliver traffic via a broader range of carriers. Telecom operators store large amount of customer data ranging from network usage, billing data, marketing data and customer specific details. MVNO are seen to offer key threats as there is a lot of confidential data billing system and business intelligence platforms require large amount of processing and as such will also be linked to the MVNO system. Networking especially I/O operations among IT systems on cloud provides performance optimizations for these system operations (C.A.K, 2012).

### 2.2.4 Market Strategies

The simplified MVNO business objective obviously closely resembles that of MNO, maximizing the profit of the total business as follows, (Profit = ARPU * Customers – Cost) In the case of MVNO the responsibility of ARPU (average revenue per user) generated by customers moves
from MNO to MVNO since the MVNO buys the required network capacity from a MNO. Contracts between MNOs and MVNOs are bilateral and usually based on the total traffic (can also include a fixed fee per user). Two main sources of revenue can be identified: communication services (call/data traffic) and value added services. A new MVNO can base its strategy on providing one or both of these. It needs to consider several items; How to attract customers? What kind of services to offer? How to keep the costs sustainable? Based on this information, the MVNO makes the following choices: customer segment, source of revenue, own technology, MNO partner (Hämmäinen & Kiiski, 2010).

2.2.5 Existing Policies

This is where the requirements of the regulatory body-towards the service providers are defined, along with the requirements of the Telco’s as they adapt to this new technology. According to ETSI - (European Telecommunications Standards Institute) this consists of Portability/Interoperability, Performance, Elasticity, Security, Resiliency, Network Stability, Service Continuity, Operations, Energy Efficiency and Migration, and co-existence with existing platforms (ETSI, 2013).

2.2.6 Adoption of MVNO License

There are there general Models of implementations with there are different levels of CAPEX investments this are the Classic Service Provider (reseller of the GSM operator offers) Resellers merely resell subscription to end users. In most cases, resellers are completely dependent on MNOs for every aspect of service provision, billing and customer care. However, end users will not be able to make a distinction between resellers, other form of MVNOs and MNOs as resellers have direct relationship with end users. MVNOs that operate as resellers are likely to require an ASP license.
2.3 Empirical Review

2.3.1 Industry wide Framework

Regulators in most countries, at their core, perform a traditional set of roles. As highlighted by the ITU-info Dev ICT Regulation Toolkit, the most important duties of the regulator include: implementing the authorization framework; promoting competition (including tariffs); interconnecting networks and facilities; implementing universal service/access mechanisms; managing the radio spectrum; and minimizing the burden and costs of regulation and contract enforcement (Lebanon, 2009). According to (Haucap & Dewenter, 2012) Regulatory approaches towards MVNOs differ quite substantially between jurisdictions. This concerns both the requirements that MVNOs themselves face as well as the access obligations put onto MNOs (Ergas, Waters and Dodd, 2005; Kiesewetter, 2002).

2.4.2 Mapping Practices demands

Virtual network (VN) mapping is a useful tool for mapping to physical Operator networks. Studies extend the idea of mapping VNs from the wired world to the wireless domain by showing its potential applications (IEEE, 2011). Other studies have also shown that Initially, MVNOs focus on marketing and the reselling of MNO services, to which end they just need BSS systems (‘Thin’ MVNO).

2.4.3 Current Infrastructure of Networks

According to past research the definition of and MVNO is MVNOs are providers of mobile communication services that have their own customer base but not their own telecom infrastructure. In order to offer these services, they lease and use the network of a mobile telecom operator (KPMG 2013). Service provider MVNOs – supplementary to the reseller, the service
provider MVNOs manage all customer care processes, including the CRM, customer support, self-care and billing processes from flexible account lifecycle, complex tariff bundles and packages, voice, data and SMS services.

2.3.4 Market Strategies

The simplified MVNO business objective obviously closely resembles that of MNO, maximizing the profit of the total business as follows, \( \text{Profit} = \text{ARPU} \times \text{Customers} - \text{Cost} \) In the case of MVNO the responsibility of ARPU (average revenue per user) generated by customers moves from MNO to MVNO since the MVNO buys the required network capacity from a MNO. Contracts between MNOs and MVNOs are bilateral and usually based on the total traffic (can also include a fixed fee per user).

2.3.5 Existing Policies

From government and regulatory perspective any entity providing a telecom service would require a license/ authorization from the Government for the same. As MVNOs would be providing telecom service to the customers under its own brand, which would be different from that of MNO, the revenue earned by the MVNOs are required to be subjected to a levy of the applicable license fee.

2.3.6 Adoption of MVNO License

There are there general Models of implementations with there are different levels of CAPEX investments this are the Classic Service Provider (reseller of the GSM operator offers) Resellers merely resell subscription to end users. In most cases, resellers are completely dependent on MNOs for every aspect of service provision, billing and customer care. However, end users will not be able to make a distinction between resellers, other form of MVNOs and MNOs as resellers have direct relationship with end users. MVNOs that operate as resellers are likely to require an ASP
license. Enhanced resellers are primarily distributors who resell services provided by MNOs. As with enhanced service providers, enhanced resellers rely on MNOs for access to the radio network and network facilities. The key feature that distinguishes enhanced resellers from enhanced service providers is that enhanced resellers do not have their own SIM cards. While they may still be able to offer their own branded packages, they will not be able to distinguish their services by their MNC.

2.4 Research Gaps

Regulatory gaps refer to the views of regulators towards MVNOs differ across various jurisdictions, where opinions have been both for and against MVNO regulations. Nevertheless, regulators in many countries are considering to what extent the regulatory intervention, including access price and conditions, is necessary, if indeed there is such development (SKMM, 2008). In Kenya there having very new to the area of Mobile virtual operators there is minimal information about any Economic analysis related to the incentives of Mobile Network Operators to provide access to their networks. Although MVNOs are expected to stimulate competition which results in lower prices and higher consumer welfare, in some countries there have been preferred options to mandate Mobile Network Operators to open their networks for MVNO access, and some others leave it to the commercial agreements between the parties which happens to be the case in Kenya. The fact that the MNOs are obliged to provide wholesale access to MVNOs in some countries but not in others brings about the issue whether MNO-MVNO relationship should be regulated or not for more effective competition. Another very key aspect is the definition of Eligibility criteria in that there should be a set of prescribing eligibility conditions for offering a telecom service, the factors in the scenario need to be well researched and established so as to have a proper frame...
work this may either be considered are prior experience of the company in offering telecom service, the net worth and paid up capital of the company.

3. RESEARCH METHODOLOGY

3.1 Research Design

The study adopted a descriptive survey employing cross sectional survey design aimed at establishing the antecedents of the adoption of mobile virtual network operator license in the telecommunications sector in Kenya. The design sought to capture both qualitative and quantitative aspects.

3.2 Target Population

The target population was mainly Mobile network operators, mobile money service providers and content providers in Kenya with industry experts totaling to 530.

Table 1 Target population

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Target population</th>
<th>Sample ratio (10%)</th>
<th>Safaricom</th>
<th>Airtel</th>
<th>Orange</th>
<th>Equitel</th>
<th>Content Providers</th>
<th>CAK</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile money managers</td>
<td>78</td>
<td>0.1</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>-</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>Account managers</td>
<td>78</td>
<td>0.1</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Regulatory Officer</td>
<td>90</td>
<td>0.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Lawyers</td>
<td>89</td>
<td>0.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>9</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Senior managers</td>
<td>86</td>
<td>0.1</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Technical teams</td>
<td>79</td>
<td>0.1</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Vendors</td>
<td>30</td>
<td>0.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>530</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>184</td>
</tr>
</tbody>
</table>
3.3 Sample Size and Sampling Technique

The sampling Frame consisted of managing director, employees in accounts department, employees in purchasing department, and employees in transport and employees in warehouse department since they have accurate information on the topic under study. A sample of 184 respondents was picked using stratified random sampling techniques based on strata in the management level. The sample size is obtained by calculating the sample from the target population by applying Cooper and Schindler, (2013) formula.

\[ n = \frac{N}{1 + N(e)^2} \]

Where: \( n \) = Sample size, \( N \) = Population size, \( e \) = Level of Precision.

At 95% level of confidence and \( P=5 \)

\[ n = \frac{530}{1+530(0.05)^2} \]

\[ n = 184 \]

3.4 Data Analysis and Presentation

Pre-analysis process was done whereby all the collected questionnaires were thoroughly inspected for the purpose of correcting problems which may be identified in the raw data like missing responses which may be equated with ‘do not know’ code (EPA, 2008). A coding scheme was developed by the researcher comprised of numerical codes and scales from the responses. Coding facilitated the researcher to summarize the data and in analyzing of the responses. Data was keyed into the computer and analyzed using Statistical Package for Social Sciences version 21 (SPSS V21) to obtain descriptive statistics which included percentages and frequencies (sussex, 2011). Correlation was employed to find whether a relationship exists between certain variables. Descriptive statistics and inferential statistics such as multiple regressions were used. This assisted
in determining the level of influence the independent variables have on the dependent variable.

The regression was calculated using the basic regression model:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \]

Where;

- \( Y \) = Dependent Variable
- \( \beta_0 \) = Constant Term (existing policies)
- \( \beta_1, \beta_2, \beta_3, \beta_4 \) = Beta coefficients
- \( X_1 \) = Economic benefits and contribution
- \( X_2 \) = Applicability of the existing technologies
- \( X_3 \) = Criteria and methodology for mapping
- \( X_4 \) = Weaknesses compared to the strengths
- \( \varepsilon \) = Error Term

Qualitative data was triangulated and analyzed based on the thematic areas and was mainly used in this report for detailed explanation of the quantitative aspects of the research. The results of the data analysis were presented in frequency distribution table, bar charts and pie charts. The researcher interpreted the data, gave a summary of the findings, made conclusions and gave recommendations.

4. RESULTS

4.1 Response Rate

Out of the 184 respondents, 154 of them participated in the study. This constitutes a response rate of 83.7 percent. Out of these questionnaires, 103 were considered usable for the study. This accounted for 78.2 percent of the respondents. The other 29 questionnaires had highly significant
levels of missing information. The remaining cases represented an adequate response rate for the precision and confidence required in this study. A response rate of 55% and above is good enough for statistical reporting even as supported by Mugenda and Mugenda (2003).

**Table 2: Response rate**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable Questionnaires</td>
<td>103</td>
<td>78.2</td>
</tr>
<tr>
<td>Non-Usable Questionnaires</td>
<td>29</td>
<td>21.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>133</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**4.2 Descriptive Statistics**

**4.2.1 Effect of an Industry-Wide Framework on the Adoption of MVNO Licensing**

The study investigated the effect of an industry-wide framework on the adoption of MVNO licensing in telecommunication companies by probing market structures and statements regarding criteria and methodology. Majority 68 (70%) of respondents indicated that scarcity of spectrum was a factor influencing existence of market structures in the telecommunication sector while a few 35 (30%) indicated high level of required investments. Those who indicated scarcity of spectrum revealed that the key operators were able to acquire more spectrums making the new operators in the market to have it difficult to acquire spectrum. The finding is indicated in Figure 2.
Table 3: Development of the telecommunications and convergent services in the Kenyan market

<table>
<thead>
<tr>
<th>Statements</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>The consumption of voice services will keep decreasing</td>
<td>(84%)</td>
<td>(16%)</td>
</tr>
<tr>
<td>The internet penetration increasing, with specific reference to the mobile networks</td>
<td>(90%)</td>
<td>(10%)</td>
</tr>
<tr>
<td>Audiovisual contents are available on telecommunications network</td>
<td>(78%)</td>
<td>(22%)</td>
</tr>
</tbody>
</table>

4.2.2 Effect of Mapping Practices on the Adoption MVNO Licensing

The study investigated the effect of mapping practices on the adoption of MVNO licensing by studying the there being technological developments in the telecommunications sector at the local that will allow for easy mapping and the technological innovations.

Majority (83%) of respondents indicated that there was a need for minimum number of integration points of a solution while a few (17%) disagreed to the statement.
4.2.3 Effect of Existing Policies on the Adoption of MVNO Licensing

The study investigated the effect of existing policies on the adoption of MVNO licensing by probing the frequency of the government policy imposing specific requirements in relation to the regulatory quality assurance, aspects of regulatory quality assurance, regulation of the convergent services, MVNO should be able to cross-sell with other products and services in their portfolio and level of application of Service pricing in the implementation of an Industry Wide Frame Work and their effect to MVNO adoption.

In the findings of aspects of regulatory quality assurance, majority (62%) indicated in some cases the government policy imposes a regulatory impact analysis. A majority (70%) indicated that the government does not consider regulatory alternatives while (88%) indicated that the government always does consultation. Majority (78%) indicated that the government in some cases is transparency/freedom of information while another majority (84%) revealed that the government does plain language drafting. Majority (90%) indicated that there was always an evaluation of the
results of regulatory program by the government while (72%) indicated that public consultation was in some cases a routine part of making new regulations done by the government.

Table 4: Frequency of the government policy imposing specific requirements in relation to the regulatory quality assurance

<table>
<thead>
<tr>
<th>Aspects of regulatory quality assurance</th>
<th>Always</th>
<th>In some cases</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory Impact Analysis</td>
<td>17%</td>
<td>62%</td>
<td>21%</td>
</tr>
<tr>
<td>Consideration of regulatory alternatives</td>
<td>16%</td>
<td>14%</td>
<td>70%</td>
</tr>
<tr>
<td>Consultation</td>
<td>88%</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>Transparency/freedom of information</td>
<td>13%</td>
<td>78%</td>
<td>9%</td>
</tr>
<tr>
<td>Plain language drafting</td>
<td>6%</td>
<td>84%</td>
<td>10%</td>
</tr>
<tr>
<td>Evaluation of the results of regulatory program</td>
<td>90%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>Public consultation a routine part of making new regulations</td>
<td>12%</td>
<td>72%</td>
<td>16%</td>
</tr>
</tbody>
</table>

4.2.4 Adoption of MVNO license

The respondents felt that the CAK (Communications Authority of Kenya) should re-consider whether to include again mobile access in the list of markets susceptible of ex-ante regulation. Also the CAK (Communications Authority of Kenya) should at least launch an investigation/enquiry to better understand the effective competitive conditions of this market. This is necessary not only for domestic services, but also in relation to roaming services.

The recommendation on relevant markets in itself plays an important role in signaling the boundaries of future exante regulatory intervention. It should be clearly stated in the Recommendation that any regulation outside the scope of the relevant markets identified in the revised Recommendation should be subject to a three criteria test by the NRA which in turn would be subject to Commission and BEREC scrutiny and may entail a Commission veto. This clarification is required to end the legal uncertainty under the present Recommendation over whether the Commission can veto a national decision on the basis of an incorrect application of the three criteria test.
4.3 Inferential Statistics

4.3.1 Regression Analysis

The regression was calculated using the basic regression model

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \]

Where;

\( Y \) = Dependent Variable (Adoption of MVNO license)

\( \beta_0 \) = Constant Term

\( \beta_1, \beta_2, \beta_3, \beta_4 \) = Beta coefficients

\( X_1 \) = Economic benefits and contribution

\( X_2 \) = Applicability of the existing technologies

\( X_3 \) = Criteria and methodology for mapping

\( X_4 \) = Weaknesses compared to the strengths

\( \epsilon \) is the error of prediction.

**Table 5: Regression model Summary**

<table>
<thead>
<tr>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>F Change</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.78</td>
<td>.6084</td>
<td>.56</td>
<td>.64593</td>
<td>2.970</td>
</tr>
</tbody>
</table>

**4.3.2 Anova Analysis**

**Table 6: ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>49.136</td>
<td>1</td>
<td>12.5243</td>
<td>23.871</td>
<td>0.00&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Residual</td>
<td>28.821</td>
<td>102</td>
<td>0.6291</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>77.957</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Y = 0.512 + 1.271X_1 + 1.237X_2 + 1.281X_3 + 0.8593X_4 + e

The economic benefits and contribution is positively related to the adoption of MVNO license. This is shown by the positive sign of the coefficient. The coefficient of economic benefits and contribution is also statistically significant as indicated by a p value of 0.015. The study therefore concludes that economic benefits and contribution is positively influences adoption of MVNO license.

Table 7: Regression Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>Economic benefits and contribution</td>
<td>.512</td>
<td>.160</td>
</tr>
<tr>
<td>Applicability of the existing technologies</td>
<td>1.271</td>
<td>.541</td>
</tr>
<tr>
<td>Criteria and methodology for mapping</td>
<td>1.237</td>
<td>.368</td>
</tr>
<tr>
<td>Weaknesses compared to the strengths</td>
<td>.85931</td>
<td>.357</td>
</tr>
</tbody>
</table>

Dependent variable: Adoption of MVNO license

4.3.3 Moderating effect of Existing polices on the relationship between determinants and adoption of MVNO license

Table 8: Summary of model (Determinants of MVNO adoption against adoption of MVNO license with existing policies as a moderator index)

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error</th>
<th>F</th>
<th>B</th>
<th>Predictor variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.522^a</td>
<td>.273</td>
<td>.267</td>
<td>7.202</td>
<td>49.084</td>
<td>43.826</td>
<td>Constant term</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Determinants of MVNO</td>
</tr>
<tr>
<td>2</td>
<td>.593^b</td>
<td>.352</td>
<td>.342</td>
<td>6.825</td>
<td>35.260</td>
<td>35.880</td>
<td>Constant term</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Determinants of MVNO</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Existing policies</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Determinants of MVNO
b. Predictors: (Constant), Determinants of MVNO, Existing policies
Model 1: F (2, 101) = 49.084; p<.05
Model 2: F (3, 100) = 35.260; p<.05

CONCLUSION

It can be concluded that scarcity of spectrum is a key factor influencing existence of market structures in the telecommunication sector. The key operators are able to acquire more spectrum making the new entrants in the market to face difficulty in acquiring operator license. Mobile Operators puts on the mobile money market and MVNO service provision in the Market make a substantial contribution to economic development. Strict license procedure in the industry wide framework has had a substantial contribution to the MVNO adoption. The current content of the current MVNO License procedure are able to allow for MVNO adoption. The Time Period given or permitted for MVNOs to launch commercial services is adequate and the existing Standard Management Agreement template between the MVNO and MNO has had little substantial contribution to the MVNO adoption. There is need for minimum number of integration points of a solution. Providing total transparent voice and data services are imperative from a marketing/end-user experience perspective, and that it is commercially viable. There is need to provide transparent voice and data services and consumer satisfaction is paramount and also improving the end-user experience of telecommunications services and as such this should be commercially viable venture or need. There are regulatory barriers to introducing national roaming. It Was also highlighted that there is need to have knowledge sharing to Mobile network operators on how they can benefit from the MVNO model by serving untapped segments that their current value proposition that will Also be an additional Revenue Stream for them is unable to attract.

Having a strict service pricing will have a substantial contribution to the MVNO adoption to a little extent. The current content of the current MVNO service pricing frame work should allow for
tariffs and handset subsidies. The current content of the current MVNO License frame work should address performance. From the findings, it was found that government policy imposes a regulatory impact analysis. The government does not consider regulatory alternatives but they do consultation. The government in some cases is transparency/freedom of information and does plain language drafting. There is always an evaluation of the results of regulatory program by the government and in some cases there is public consultation as a routine part of making new regulations. Consultation required by law is one of the aspects of regulatory quality assurance and consultation required by formal government decree or instruction. Informal consultation is an aspect of regulatory quality assurance.

RECOMMENDATION

The following are the recommendation of the study:

To promote the Adoption of MVNO in the telecommunications sector, The communications authority of Kenya should champion the introduction and implementation of an industry wide frame work to allow for a standardized was of regulating and setting up of MVNO’s in Kenya which in turn will be a unique selling proposition. The current infrastructure should be overhauled and standardized this in turn will allow for easier adoption of new technologies in the telecommunications sector which will be a great value mind of clients as the real advantage in addition new services and the reduced transaction cost incurred by the client. However, this should be reinforced by ensuring that the current mapping practices and system are as secure and up to date as possible through, among others, improving fraud detection and prevention of unjustified influence by any out dated policies that there place in the industry at the moment that also need to be deeply reviewed.
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