Factors Influencing Usage of the New Technologies in Low Income Households in Kenya

By
Margaret Nyambura Ndung’u
Nyambura@iniitkenya.com
PhD Candidate, School of Informatics and Computing, University of Nairobi
And
Prof. Timothy M. Waema
waema@uonbi.ac.ke
Associate Professor, School of Informatics and Computing, University of Nairobi
And
Prof. Winnie V. Mitullah
mitullahwinnie@gmail.com
Associate Professor, Institute of Development Studies, University of Nairobi

CPRafrica Conference, 18-19 April 2011
Presentation outline

1. Background to the paper
2. Research Framework
3. Research Methodology
4. Findings
5. Conclusion
6. Policy Implications
1. Background to the paper

- There are factors that influence usage of new technologies beyond access.
- These factors have not been fully explored particularly in Low income households.
- They include social, economic, knowledge, culture, political, personal history, psychology environment, etc.
  - These factors influence If the technologies are used and How.
2. Research Framework

• Paper uses the Capability Approach (CA) as the theoretical framework
  – CA argues that human development should be viewed as a process of expanding people's capabilities
  – It is concerned with what people are able “to do” and “to be” as a result of using the resources around them.
  – While access to goods and services is a prerequisite to use, individual differences plays a role on:
    • Whether to use the goods and services,
    • How to use them
    • The value attached to the usage and derived outcomes.
Context of the paper

• Factors evaluated:
  – Age
  – Income
  – Gender
  – Marital status
  – Education level
  – Skills

• New technologies evaluated
  – Internet
  – Email
  – Mobile phones
Conceptual Framework

Individual's external conversion factors → Use of new technologies → Enabled Capabilities → Choice → Development Outcomes

Individual's internal conversion factors
3. Research Methodology

- RIA Survey Data (2007) - 1291 HH

- Survey (2010) -
  - Subset of RIA Survey (2007)
  - Randomly selected 40 households
  - Maximum income of $ 315.6 (KNBS classification)

- Secondary sources
  - Books, journals, economic surveys and online materials
Sample description

RIA(2007)

• 1291 low income households
• Derived from 1461 households across the country: 40% urban, 30% other urban and 30% rural.
• 38.2% male and 61.8% female

Survey 2010

• Total of 40 low income households
• Derived from a pool urban households
• 45% male and 55% female
4. Findings: Usage of the new technologies

- Mobile phones: 100% (RIA (2007) database) 46% (Survey (2010))
- Internet: 28% (Survey (2010))
- Email: 8% (Survey (2010))
## Findings: P-values of the factors

<table>
<thead>
<tr>
<th>Factors</th>
<th>Pearson Chi-Square P-value &lt;0.05 (statistically significant)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internet usage</td>
</tr>
<tr>
<td>Age</td>
<td>0.78</td>
</tr>
<tr>
<td>Gender</td>
<td>0.78</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.12</td>
</tr>
<tr>
<td>Education</td>
<td>0.00</td>
</tr>
<tr>
<td>Income</td>
<td>0.77</td>
</tr>
<tr>
<td>Skills</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Equation 1: Internet usage model
\[
\hat{Y} = -7.5 + 0.004X_1 + 0X_2 - 0.07X_3 + 0.44X_4 + 0.18X_5 + 4.5X_6
\]

Equation 2: Email usage model
\[
\hat{Y} = -23.5 - 0.02X_1 + 0X_2 - 0.16X_3 + 0.41X_4 + 0.25X_5 + 19X_6
\]

Equation 3: Mobile phones usage model
\[
\hat{Y} = -3.37 + 0.01X_1 + 0.003X_2 - 0.21X_3 - 0.92X_4 + 0.12X_5 + 6.91X_6
\]

Where
- \(X_1\) - Age
- \(X_2\) - Income
- \(X_3\) - Gender
- \(X_4\) - Marital status
- \(X_5\) - Education level
- \(X_6\) - Skills
Internet features used in relation to age

- Chat rooms: 7.5%, 7.5%, 2.5%, 2.5%, 2.5%, 2.5%, 2.5%, 2.5%, 2.5%, 2.5%
- E-learning sites: 10%, 10%, 0%, 0%, 0%, 0%, 0%, 0%, 0%, 0%
- Ecommerce sites: 0%, 0%, 0%, 0%, 0%, 0%, 0%, 0%, 0%, 0%
- Facebook, linkedIn: 0%, 0%, 0%, 0%, 0%, 0%, 0%, 0%, 0%, 0%

Age groups:
- 15 to 24 years
- 25 to 34 years
- 35 to 44 years
- Above 55 years
Description: Age in relation to usage

• Individuals’ priorities and occupation at different ages dictated the usage pattern.
• Those in the ages of 25 - 34 yrs were using most features of the Internet.
  – 66.8% of those in formal employment were between 25 and 44 years while 16.7% were below 24 years.
• Formal employment exposed them to Internet opportunities.
Gender in relation to usage

Email usage
- Male: 10.5%
- Female: 5.6%

Internet usage
- Male: 12.3%
- Female: 7.1%

Mobile usage
- Male: 50.5%
- Female: 42.6%

Male
Female
Marital Status in relation to usage

- **Email**
  - Married: 8.4%
  - Single: 16.2%

- **Internet**
  - Married: 9.7%
  - Single: 18.3%

- **Mobile**
  - Married: 51.3%
  - Single: 47.1%
Education in relation to gender

RIA 2007 data

Survey 2010
Education in relation to Internet features

- Chat rooms
- Facebook, LinkedIn
- Ecommerce sites
- E-learning sites

Secondary
- Chat rooms: 16%
- Facebook, LinkedIn: 14%
- Ecommerce sites: 4%
- E-learning sites: 2%

University/tertiary
- Chat rooms: 6%
- Facebook, LinkedIn: 4%
- Ecommerce sites: 2%
- E-learning sites: 2%
Skills in relation to usage

- Confident with technology
- Easily sends/receive SMSes
- Use MPESA/ZAP etc with ease (M)
- Easily make/receive calls (VOIP)
- Pays bills with ease
- Easily send/receive email
- Use instant messaging/chat with ease (I)
- Participates in online discussions (I)
- Uses search engines with ease (I)
5. Conclusion

• The six factors influence usage of new technologies in low income households in diverse ways.
  – Education, skills and gender had the most significant influence on the usage.
    • 70% of the respondents who did not use the Internet gave lack of knowledge of how to use the Internet as the major reason for not using.
  – Increase in income led to increased usage of the mobile phones but not Internet or email
  – Different age groups use different features of the technologies
  – 58.1% of the respondents were married comprising of 35.5% males and 64.5% married females.
6. Policy implications

• Training and skills development in productive usage of the new technologies should be emphasized.
  – 12 years of education is the threshold for individuals to utilize the productive benefits of the new technologies and in particular the Internet.

• Gender inequity in education in low income households should be addressed.
Thank you