Audience's View on Service Quality of Museum Apps

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Horizon Report-2015 Museum Edition

**CHALLENGES**

**SOLVABLE**
- Developing Digital Strategies
- Improving Digital Literacy of Museum Professionals

**DIFFICULT**
- Balancing Our Connected and Unconnected Lives
- Measuring the Impact of New Technologies

**WICKED**
- Privacy Concerns
- Maintaining Progress in Technology, Workflows, and Infrastructure

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**TRENDS**

**SHORT-TERM IMPACT**
- Expanding the Concept of Visitors
- Increasing Focus on Participatory Experiences

**MID-TERM IMPACT**
- Increasing Cross-Institutional Collaboration
- Increasing Focus on Data Analytics for Museum Operations

**LONG-TERM IMPACT**
- Expanding the Boundaries of Creativity
- Rise of Private Companies in Museum Education

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**DEVELOPMENTS IN TECHNOLOGY**

**NEAR-TERM** (1 year or less)
- Bring Your Own Device
- Games and Gamification

**MID-TERM** (2-3 years)
- Location-Based Services
- Makerspaces

**FAR-TERM** (4-5 years)
- Natural User Interface
- The Internet of Things
Museum Apps

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Perspective

Audience (User) -> Museum Apps -> Museum

Demand -> Supply
Assumption
Assumption

Users

Before

Service Quality

Museum Apps

After

Expected

Perceived

Museum
Methodology

NTSEC a case study

Theoreticals

- Koole's (2009) mobile learning as a frame
- Kano and refined Kano model as analysis tools

Surveys in two phases

- Expectations: 18 questions in 4 categories + A mind map = 332
- Perceptions: 20 questions in 4 categories = 207
Service Quality

SERVQUAL Model

- Tangibles
- Empathy
- Reliability
- Assurance
- Responsiveness

(Parasuraman, Zeithaml & Berry, 1988)
E-Service Quality

E-S-QUAL
- Efficiency
- Fulfillment
- System availability
- Privacy

E-RecS-QUAL
- Responsiveness
- Compensation
- Contact

(Parasuraman, Zeithaml & Malhotra, 2005)
FRAME
Framework for the Rational Analysis of Mobile Education

(Koole, 2009)
Kano’s Model
Attractive Quality
One-dimensional Quality
Must-be Quality
Indifferent Quality
Reverse Quality

(Noriaki Kano, 1984)
Kano’s Model
Attractive Quality
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(Noriaki Kano, 1984)
NTSEC’s App

Home page
iBeacon to positioning
Guide tours

- 魔幻化學國度
  - 數量3項/時間45分鐘

- 驚奇化學實驗
  - 數量2項/時間15分鐘

- 好食之旅：認...
  - 數量4項/時間15分鐘

- 光的奇幻世界
  - 數量9項/時間45分鐘
Tour options by time

- 15 minutes: 比較的三原色
- 30 minutes: 立體磁場
- 45 minutes: 超級比一比
Self-route
Exhibit texts
Panorama
## Latest posts

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2014-11-25</td>
<td>科教館12月6日聽障者科學教育體驗日之「科學敲敲化」</td>
</tr>
<tr>
<td>2014-11-25</td>
<td>為響應12月3日「國際身心障礙者日」(International Day of Disabled Persons)</td>
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<tr>
<td>2014-11-17</td>
<td>104年度寒假科學營隊，搶先看</td>
</tr>
<tr>
<td>2014-11-17</td>
<td>特展活動-聲生不熄－不一樣的音樂演奏會</td>
</tr>
<tr>
<td>2014-09-19</td>
<td>大眾講座9月27日「繪聲繪影-兒童的聲音繪本」</td>
</tr>
<tr>
<td>2014-09-19</td>
<td>第一「敲」、(瞧)見聲音：</td>
</tr>
<tr>
<td></td>
<td>透過參加「聲生不熄」不一样的音樂演奏會</td>
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Reminder to push

<table>
<thead>
<tr>
<th>時間</th>
<th>推撥提醒</th>
<th>展場</th>
<th>展場 5F</th>
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<tbody>
<tr>
<td>8:30</td>
<td>小桌子科學 圓形劇場</td>
<td>展場</td>
<td>人體工廠 展場 3F</td>
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<td>9:00</td>
<td>小桌子科學</td>
<td>展場</td>
<td>小桌子科學 展場 5F</td>
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<tr>
<td>9:30</td>
<td>小桌子科學 圓形劇場 福衛二號特展</td>
<td>影片</td>
<td>影片 3F</td>
</tr>
<tr>
<td>10:00</td>
<td>福衛二號特展</td>
<td>特展</td>
<td></td>
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</table>
Dictionary

交流電的頻率是指它單位時間內周期性變化的次數，單位是赫茲，與周期成倒數關係。日常生活中的交流電的頻率一般為50赫茲或60赫茲，而無線電技術中涉及的交流電頻率一般較大，達到千赫茲（KHz）甚至兆赫茲（MHz）的度量，例如收音機FM的頻率單位是MHz（百萬赫茲），而AM的單位只有kHz（千赫茲）。

更多資訊

參觀資訊

科學小百科

進階

當日活動

最新動態
History & my collection
Results: Quality attributes

Maps
- information,
- routes,
- navigation,
- panorama, etc.

Exhibits
- texts, demo,
- videos, etc.

Personal
- reminder,
- favorites,
- history,
- social media, etc.

Interactives
- highlights,
- AR / VR,
- learning, push,
- etc.
Results: Service quality levels

- Augmented service
- Actual service
- Core service
Museum Apps

Museum Apps Adjusted

Core
- Limits of standards
- Bottom line
- Non satisfactions

Actual
- Promote high added-value
- Increase potential
- Highly refer to satisfactions

Augmented
- Classify different mobile users in services

User to Museum Apps: Demand
Museum Apps to User: Supply
NTSEC
Levels by users’ views

Core
- Information
  - Navigation to exhibits
  - Texts
  - Demos
  - AR
  - My favorites
  - Visiting history
  - Afterwards reviews

Actual

Augmented
- Navigation to facilities
- Highlights recommended
- Tour options by time
NTSEC
Levels by users
download the apps

Core
Information Self-routed

Actual
Navigation to facilities
Navigation to exhibits
Texts
Demos
AR
My favorites
Visiting history
Afterwards reviews

Augmented
Highlights recommended
Promotion push
Record of my favorites
NTSEC
Levels by users
paid apps

Core

Actual

Augmented

Dictionary
Navigation to exhibits
Texts
Demos
AR
My favorites
Visiting history
Afterwards reviews

Navigation to facilities
Demos
Highlights recommended
Tour options by time

Information
Texts
NTSEC
Levels by frequent users

Core
Information
- Indoor panorama
- Dictionary
- Time set tours

Actual
- Texts
- Demos
- My favorites
- Visiting history
- Afterwards reviews

Augmented
- Self-routed
- Navigation to exhibits
- Navigation to facilities
- Highlights recommended
- AR interactions
Conclusions

• Accurate
• Real time

• Accounts and benefits
• Customized services

• Avoiding similar patterns
• Carrying capacity

• More details
• Highlights by multi-media

Maps
Exhibits

Personal
Interactives
Conclusions

Service quality evaluated by users’ views

Differentiates by levels of users

Adjust attributes by on-site reality

Understand the importance of users’ needs

Technology benefiting users’ needs

Apps + personnel + environmental service quality

Consistently updating
Thank you. 😊
Thank you, again.