AN EFFICIENT AND SAFE ONLINE PURCHASING SERVICE IN SAUDI ARABIA

SELP 695
Systems Engineering Integrative Project

May 6, 2014

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Agenda

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- Perfection

- Respect for people
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- Verification & Validation Methods
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Fact No.1

SAUDI ARABIA HAS 31.2 MILLION PEOPLE
Fact No.2

60% OF THESE ARE UNDER 24
Fact No.3

6 million of these users are on Facebook
Fact No.4

THERE ARE MORE MOBILE PHONES IN SAUDI ARABIA THAN THERE ARE PEOPLE
Fact No.5

The number of text messages sent each day now exceeds the population of Earth.
Fact No.6

Saudi Arabia is the largest user of YouTube on the planet
Fact No.7

Saudis hold 4 of the top 10 positions for video views on Keek.com
Fact No.8

Over 40 billion apps have been downloaded from Apple alone
Fact No. 9

Social Media is not a phase...
It’s a fundamental way Saudis communicate
Fact No. 10

YEARS TO HIT 50 MILLION USERS

RADIO: 38 YEARS
T.V: 13 YEARS
INTERNET: 4 YEARS
IPOD: 3 YEARS
FACEBOOK: 2 YEARS
ANGRY BIRDS: 35 DAYS
Fact No. 11

1/3 of women between 18-34 years old check Facebook as soon as they wake up.
78% of consumers trust personal social referrals. Only 14% trust adverts.
Background Information

- The Internet was introduced in Saudi Arabia in 1997.
- All users access the internet through, King Abdulaziz City for Science and Technology (KAST).
- In 2012, over 13 million people (49% of the population).
  - Were internet users with over 44 million people using mobile devices.
- According to Pay-Pal research, 66% of Internet users purchased online.
Background Information

- There are several factors that explain why Saudi Arabia is reluctant to fully adopt e-commerce systems such as:
  - Infra-structure with underdeveloped communication and technology systems.
  - Religious beliefs.
  - Trust and privacy concerns.
  - Cultural, social attitudes and traditions.
Problem Statement

- This presentation explores how the lack having an efficient and safe online purchasing service in Saudi Arabia, impacts the citizens, residents and business owners.

- The results have a direct effect on consumers, civil authorities, and business owners. The current challenges faced are many such as:
  - Consumer challenges.
  - Key Concerns.
  - Local authorities.
  - Retailers Challenges.
Project Objective

To study the online purchasing system in Saudi Arabia and analyze alternative approaches to design a more secure, trustworthy, user friendly system.
Description of Stakeholders

- Saudi Postal Service.
- Ministry of Commerce and Industry.
- Ministry of Labor.
- Council of Saudi Chambers.
- Consumer Protection Association.
- King Abdul Aziz City for Science and Technology, (KAST).
- Internet Service Providers.
- Shipping companies.
- Society.
System Requirement

- The system **shall** provide direct mailing addresses for homes and businesses.
- The system **shall** minimize shipping and delivery time to customer.
- The system **shall** minimize damages to products during shipping.
- The system **shall** eliminate all instances of non-delivery to customer.
- The system **shall** sustain state of the art technology.
- The system **shall** be user friendly for all internet users.
- The system **shall** provide an easy on-line payment method for customers.
- The system **shall** be available 24 hours for customer and merchant use.
- The system **shall** provide a secure online environment for customer and merchant use.
- The system **shall** provide a tracking number of items purchased.
- The system **shall** provide more than one online payment method.
- The system **shall** provide a customer feedback, review and rating system.
- The system **shall** provide a dispute resolution process for all parties.
- The system **shall** have monitoring and maintenance capacity for security purposes on 24 hour basis.
Proposed Alternative Approach

- The status-quo system.
- Modify the existing system (Aramex).
- Implement a new system.
Proposed Alternative Approach
The status-quo system

<<initial state>>

Shopping → Finding item → Call/text

Yes → Order item

No →

Arrived to the town?

Yes →

Call a shipping company to check the status

No →

Item in the same city?

Yes →

Set a time for receiving a call from the driver

No →

Set a time and place

Customer home while dropping off the

Set a time for dropping off the order

receive a call from the driver to give direction

Customer picking up the order

End the process

<<final state>>
Proposed Alternative Approach

- Modify the existing system (Aramex).
  - Taking delivery direction instructions on the first time.
  - Step up time to deliver.
  - Drop off the package.
Proposed Alternative Approach
Implement a new system

<<initial state>>

Shopping → New user → Sign up

No

Sign in → Continue shopping

Order item → Is it in stock

Yes

No

Proceed to checkout

Review order → Enter shipping address

Yes

No

Verify payment method → Enter payment method

End the process

Checkout

<<final state>>
Analysis of the Proposed Alternatives

The following measures of effectiveness (MoE) are identified using the following criteria:

- **MoE #1: Communication and Coordination**: the ability of the system to communicate and coordinate between customers, merchants, and all other relevant parties.
- **MoE #2: Shipping and Delivery**: the ability of the system to ship and deliver products to customers in a timely manner.
- **MoE #3: Payment**: the ability of the system to facilitate payments among the parties.
- **MoE #4: System Service**: the ability of the system to provide quality customer service to all users of the system.
- **MoE #5: System Safety**: the ability of the system to protect the system with backup and all users’ personal information.
- **MoE #6: System Upgradability**: the ability of the system to support upgrades.
# Measures of Effectiveness (MoEs)

<table>
<thead>
<tr>
<th></th>
<th>Status Quo System</th>
<th>Modify the Existing Aramex System</th>
<th>Implementing a New System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication &amp; Coordination</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Shipping and Delivery</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>System Payment</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>System Service</td>
<td>Low</td>
<td>Low</td>
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<td>System Upgradeability</td>
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<td>Medium</td>
<td>High</td>
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</tbody>
</table>
Shipping Requirements/Use Case Viewpoint:

- Selling shall submit his/her selling policy

- Buyer shall have account in the system

- Buyer shall provide their contact information and address

- System must provide updated tracking system delivery

- System shall have clear return and replacement policy

- Delivery must be between 3-9PM

Actor: System Owner, Seller, Shipping Company, Buyer
Payment Requirements/Use Case Viewpoint:

<<actor>>
System Owner

<<Requirement>>
Buyer shall have account in the system

<<refine>>

<<Requirement>>
Buyer shall provide his/her information payment method

<<constraint>>
{{Payment must be hold to ensure customer process}}

<<satisfy>>

Online Purchasing system Context

<<requirement>>
Seller shall have clear refund policy

<<refine>>

<<requirement>>
Seller shall submit their selling policy

<<satisfy>>

<<constraint>>
{{Payment must be online}}

<<actor>>
Seller

<<actor>>
Bank

<<actor>>
Buyer

<<requirement>>
System shall provide more than one payment method

<<satisfy>>

Payment method
Lean Approach
Customer Shopping ➔ Finding item ➔ Call/text ➔ Answer ➔ (Yes ➔ Order item ➔ Proceed to checkout ➔ Yes ➔ Is item in stock ➔ No ➔ Get shipping company info/and transfer money to seller ➔ Item arrived town ➔ Delivery ➔ Yes ➔ Set a time to receive a call ➔ No ➔ Drop off the item at closest store ➔ Is customer home to receive delivery? ➔ Yes ➔ Customer picking up the item ➔ End the process ➔ No ➔ Check the shipping status ➔ Receive a call from the driver to give direction ➔ Interruption ➔ Set a time for dropping off the item ➔ Driver dropping off the item ➔ VSM Current State (Buyer)
VSM Current State (Seller)

1. User selling item
2. Post the item online
3. Provide information contact
4. Proceed to checkout
5. Customer interested
6. Call the buyer
7. Does the customer show up?
8. Yes
   - Set a time and place to drop off
   - Yes
     - Is customer in the same city?
     - Yes
       - Buyer paid?
         - Yes
           - Item arrived?
             - Yes
               - End the process
             - No
               - Find shipping company to deliver the item and gives the buyer bank info to pay
         - No
           - Call to check the item status
           - Yes
             - Item arrived?
               - No
                 - Recall the buyer
               - Yes
                 - Review the order
           - No
             - Buyer picking up the item
8. No
   - Set a time and place to drop off
   - Yes
     - Is customer in the same city?
     - Yes
       - Buyer paid?
         - Yes
           - Item arrived?
             - Yes
               - End the process
             - No
               - Find shipping company to deliver the item and gives the buyer bank info to pay
         - No
           - Call to check the item status
           - Yes
             - Item arrived?
               - No
                 - Recall the buyer
               - Yes
                 - Review the order
           - No
             - Buyer picking up the item
VSM Future State

User selling item → New user? (Yes/No)

Sign up → Sign in → Post/edit item info online → Item ordered → Is item in stock (Yes/No)

Review buyer mailing address info → Proceed to checkout

Ship the item → Payment will be deposit and held in seller account

Seller can withdraw money from his account → Buyer picking up the item

End the process
Flow

- The product flows through the system without stoppages, interruptions.
- Focus on the customer order and never let it out of sight until customer receives item.
- Ignore all traditional boundaries to form a single lean enterprise.
Pull

- Applying the Pull principle from the Seller requires keeping inventory to a minimum based on customer demand.
- There is very little waste in Pull.
Perfection

- Striving for perfection begins with the seller who verifies the product is in perfect condition prior to shipping.
- Shipper re-inspects the product prior to packaging.
- Delivery time schedule can be tracked.
- Customer receives products in good condition.
Respect for People

- Known as the "People Principle".
- Promotes good working relations.
- Sellers respect for buyers = great customer service.
- Shippers respect for Sellers and buyers = fast pick up and on time delivery.
- Everyone working as a team keeping the focus on the customer.
# Risk Management

<table>
<thead>
<tr>
<th>Rank</th>
<th>Risk Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government restrictions</td>
</tr>
<tr>
<td>2</td>
<td>Flexibility of System</td>
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<tr>
<td>3</td>
<td>System outage</td>
</tr>
<tr>
<td>4</td>
<td>System being hacked</td>
</tr>
<tr>
<td>5</td>
<td>Fraudulent activities</td>
</tr>
</tbody>
</table>

## Likelihood vs Consequence Matrix

```
1  2  3  4  5
1  5  2  1  4
2  5  3  1  3
3  5  3  3  3
4  5  3  3  3
5  5  3  3  3
```

### Notes
- Likelihood and Consequence are rated from 1 (low) to 5 (high).
- The matrix shows the relative risk levels for each combination of likelihood and consequence.
Risk Management

• Risk #1: Government restrictions:
  • Risk Statement: If the alternative does not receive government support Then the solution may not be fully implemented Resulting in possible failure of this case.
Risk Management

• Risk #2: Flexibility of System:
  • Risk Statement: If the solution is inflexible Then the system may become inefficient and expensive over time Resulting in possible obsolescence.
Risk Management

Risk #3: System outage:

*Risk Statement:* If the system has internet outage *Then* the system is not in service *Resulting in* a problem beyond the system’s control making the solution ineffective.
• Risk #4: System being hacked:
  • *Risk Statement:* If the system is hacked Then customer information is compromised **Resulting in** customers losing trust in the system.
• Risk #5: Fraudulent activities:
  • Risk Statement: If the system allows for fraudulent activities Then customer's trust in the system is lost Resulting in failure to apply a correct solution.
Refined Risk Matrix

<table>
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The diagram on the right is a risk matrix with axes labeled 'Likelihood' and 'Consequence'. The matrix is color-coded to indicate risk levels with green, yellow, and red representing different thresholds.
Verification & Validation Methods

- Four levels of validation and verification performed during system development:
  - **Unit testing**: will test the payment and delivery.
  - **Integrated testing**: assures the systems and sub systems work together correctly as one system.
  - **System testing**: assures high level checking of requirements.
  - **Acceptance testing**: performed by the stakeholders as final check point before delivery.
Conclusion

- Change comes slow to KSA, and the process may take time to implement and perfect.
- However today there are over 100 million internet users in KSA.
- Instagram and Twitter receive 70 million visits each month for e-commerce purposes.
- Estimated 1 in 4 persons in KSA active in e-commerce activities.
- Estimates that by end of 2015, KSA will have $13 billion share of e-commerce.
- Looking at the big picture, much of the infrastructure is already in place to facilitate the implementation of an online purchasing service.
Shopping on line is convenient... but I miss pushing and shoving and grabbing sale items from other shoppers' hands!
Work cited

- Central Intelligence Agency. (n.d.). The World Funbook - MIDDLE EAST, SAUDI ARABIA. Retrieved from Central Intelligence Agency:
Thank you