CHANGING FOOD CONSUMPTION BEHAVIOR IN SAUDI ARABIA

Loyola Marymount University
SELP-695 Integrative Project
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Agenda

- History & Background
- Problem Statement
- Project Objectives
- Top Level Requirements
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- Educate People
- Stakeholders
- Shura Council
- System architecting
- Risk Management
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- Ethics
- Campus Kitchen
- Conclusions
- Lessons Learned
- References
Ahmed... do you think ten camels will be enough?
History

- The economic boom started in KSA when King Faisal died 1975
- King Khaled increased salaries 3 times by 30% in 1978 -1980
- The population in KSA increased by 1.5% in 2015 (29.9 million),
- 7.4 million people in KSA are low income (4 million below poverty line) in 2015
- 5000 families get food from charities
- One of the worst rated countries in food wasted (60% of the food wasted)
Background

- Saudi government pays $800 million to clean food waste in cities
- Saudis are wasting around 13 million tons yearly
- Saudi culture considers this type of waste as:
  - Generosity and hospitality
  - The habit of “more is better”
# Comparison Between KSA and the US

<table>
<thead>
<tr>
<th>Country</th>
<th>Saudi Arabia</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food Wasted</strong></td>
<td>At Home 29% Others 31%</td>
<td>At Home 13% Others 18%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60%</td>
<td>31%</td>
</tr>
<tr>
<td><strong>Cost of Removing Waste</strong></td>
<td>$800 million</td>
<td>$1 billion</td>
</tr>
</tbody>
</table>
Problem Statement

- Food Waste is against Islam
- People lack knowledge
- The waste causes growing environmental impact
  (Incineration and sewage)
Problem Statement

- People are misunderstanding the concept of generosity and hospitality
- Companies lack knowledge of social and environmental responsibility
- Food trash spoils landscapes
Objectives

- Decrease food waste by 30% by 2019
- Educate people about the importance of helping others
- Change public perception about food consumption
- Change corporate understanding of social responsibility
Top Level Requirements

1. The new system shall reduce the amount of wasted food by 30% by 2019
   1.1 The system shall prepare a speech for the King to give
   1.2 The system shall prepare a speech for the top Imam to give
   1.3 The system shall develop a media educational campaign
   1.4 The system shall organize seminars for citizens
   1.5 The system shall prepare an education program for schools to explain King’s and top Imam’s speeches

2. The new system shall improve the food availability (and quality) for low-income families by 30% by 2019
   2.1 The system shall set new regulations for restaurants and hotels

3. The new system shall increase taxes on food (50% on soft drinks and sweets, 10% on basic staples)
## Verification & Validation

<table>
<thead>
<tr>
<th>Requirements/Verification</th>
<th>Test</th>
<th>Demonstration</th>
<th>Inspection</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>The system shall prepare a speech to the King</td>
<td>King gives the speech</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The system shall prepare a speech to the top Imam</td>
<td></td>
<td></td>
<td></td>
<td>The Top Imam gives the speech</td>
</tr>
<tr>
<td>The system shall develop a media educational campaign with at least 10 TV ads</td>
<td></td>
<td>Publication of ads and TV programs</td>
<td></td>
<td>Numbers of articles and ads</td>
</tr>
<tr>
<td>The system shall organize two seminars for citizens every month in mosques</td>
<td></td>
<td></td>
<td></td>
<td>The count of seminars</td>
</tr>
<tr>
<td>Test</td>
<td>Demonstration</td>
<td>Inspection</td>
<td>Analyze</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---------------</td>
<td>------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>The system shall prepare an education program for all schools to explain King’s and top Imam’s speeches once every week.</td>
<td>Discuss the problem with students</td>
<td>Ministry of Education gives responsibly for group of employees to inspect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The system shall set new regulations for restaurants and hotels. Compliances to be inspected monthly at random</td>
<td>Publication by the Food and Drug Authority</td>
<td>Inspection waste food of twenty facilities monthly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Alkhairat Group (AG)

Wedding Catering Company

- Started in 2014 as collection of unused food and distribution to the poor
- During Ramadhan, AG collects food from hotel buffets
King Salman and Imam Abdulaziz Al Sheikh are recommended to give persuasive speech addressing this problem to people.
King Speech

- Demonstrate the problem
- Set the objectives of reducing the wasted food
- Effects of trash and pollution for the future generation
- Helping poor people
- Appreciate what God gives us
- Take a video inside his palace
Educate People:

- Saudi Shura Council (equivalent to Parliament) to discuss the problem

- Seminars in all mosques reinforce the massage of the King and Top Imam
- Media Campaign
- Education in schools
High Taxes on Food

- Government Taxes in Foods:

1. Fast Food (50%)
2. Soft Drinks (50%)
3. Sugar and Sweets (50%)
4. Meat and Rice (5%)
5. Fruits (5%)
Regulations on Hotels and Restaurants
Stakeholders

RIYADH SCHOOLS
WE MAKE LEADERS

Saudi Food & Drug Authority

Environment Authority
Shura Council (Parliament)

- National Council founded by King Abdulaziz in 1924 (12 members) in Mecca
- The head of Shura was Abdulgadir Al-Shebi
- King Abdulaziz renamed the council title to Shura Council in 1926
- King Fahad increased the number to 150 members
- King Abdullah allowed 30 women
- Highly educated people
- Members debate what people need
- Members debate the best plan for economic and social development
- Members vote on the legislation
- The head of Shura council discusses problems and solutions with King Salman
Shura Council

SFDA

Ministry of Culture and Information

Ministry of Education

Environment Authority

OV1

Ministry of Justice
Architecting OV2

- Food and Drug Authority
- King Salman
- Ministry of Justice
- Ministry of Education
- Ministry of Information and Media

Connections:
- 001: Food and Drug Authority to Shura Council
- 002: Shura Council to Food and Drug Authority
- 003: Food and Drug Authority to King Salman
- 004: King Salman to Shura Council
- 005: Shura Council to Ministry of Justice
- 006: Ministry of Justice to Ministry of Education
- 007: Ministry of Education to Ministry of Information and Media
# Architecting OV3

<table>
<thead>
<tr>
<th>Number</th>
<th>From</th>
<th>To</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>F&amp;D Authority</td>
<td>Shura Council</td>
<td>Discuss the solution</td>
</tr>
<tr>
<td>002</td>
<td>Shura Council</td>
<td>The King</td>
<td>Ask for his support</td>
</tr>
<tr>
<td>003</td>
<td>The King</td>
<td>Shura Council</td>
<td>Accept</td>
</tr>
<tr>
<td>004</td>
<td>Shura Council</td>
<td>F&amp;D Authority</td>
<td>Response</td>
</tr>
<tr>
<td>005</td>
<td>Shura Council</td>
<td>MoJ</td>
<td>Set regulations</td>
</tr>
<tr>
<td>006</td>
<td>Shura Council</td>
<td>MoE</td>
<td>Add curriculum</td>
</tr>
<tr>
<td>007</td>
<td>Shura Council</td>
<td>MoI</td>
<td>Deliver the idea</td>
</tr>
</tbody>
</table>

F&D = Food and Drug  
MoJ = Ministry of Justice  
MoE = Ministry of Education  
MoI = Ministry of Information
## Risk Management

<table>
<thead>
<tr>
<th>No.</th>
<th>Risk</th>
<th>Likelihood</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rejection by Shura Council</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Rejection by the King</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Rejection by Ministry of Education</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Lack of Volunteerism</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Ads not effective</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>No</td>
<td>Risk</td>
<td>Mitigation and Prevention</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| 1. | Rejection by Shura                  | - Effective lobbying to the council members about the benefits of the new policy  
|    |                                     | - Royal Decree                                                  |
| 2. | Rejection by the King               | - Effective request to the King asking for his support          |
|    |                                     | - The project will cost little                                 |
| 3. | Rejection by Ministry of Education  | - Effective illustrating about the advantages of building new generations with behavior of reducing or eliminating waste |
| 4. | Number of volunteers                | - By demonstrating how volunteering can influence both personal and social life. |
| 5. | Ads agencies                        | - Ads must be creative and highly persuasive in order to attract the public |
Why Cultural Resistance

- People judgment
- Tradition
- Nouveau Rich mentality
- Carelessness
Ethics

Wasted Food causes:

- Poor people to suffer from hunger
- Excessive trash and pollution
- Waste of recourses and high costs

"Shameful, crazy, this is just not right". Food Rescue Staff
Ethics

- In Quran: Chapter 5 AL-Araf Number 31:
  God Says: “To whom who believe (Children of Adam) you shall be clean and dress nicely when you attend the mosques and eat and drink moderately; Surely, God does not love the gluttons”

- Prophet Muhammed said:
  “When you see one who has more, look to the one who has less”
Educational Efforts
Campus Kitchens

- Campus Kitchen for Schools started in 2001 in the United States
  - Recovered 5 million lbs of food
  - Prepared 2.5 million meals
  - Partnered with 49 schools in the US

- Campus Kitchen provides:
  - Student-managed kitchens in schools
  - Leadership opportunities for students
  - Education program for students and parents
  - Volunteer work
  - Teamwork
Conclusions

- In Saudi, people must learn the importance of Saving Resources
- Ministry of Education should provide courses to schools
- Citizens must learn better food management
- Parents should increase their children’s awareness
- Children should increase their parents’ awareness
- Saudi Arabia is one of the worst food wasters
- After successful implementation of the strategy, obesity number will decrease due the taxes imposed.
Lessons Learned

- Future generations have the right to live in a healthy environment
- Systems Engineering leadership is helpful not only in engineering projects but also in social challenges
- Systems Engineering helps me in dealing with complex systems
- Systems Engineering cuts the cost of any project
- Lean thinking helps in eliminating waste not only in manufacturing but also in our real lives
Thank You
References

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