

Analysis and Implementation of M-commerce in Education for Developing Countries (Uzbekistan case)

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Abstract

M-commerce is one of the ways IT can significantly contribute to boosting economy of the developing countries. M-commerce project has a high potential in the developing countries and especially in the case of Uzbekistan because it is very novice concept and most importantly it will enable payment for online services via mobile, using reverse billing. In addition, number of Internet and mobile users increase steadily each year in the republic.

Due to the fact that main computer and internet literate audience in Uzbekistan is young people, a web portal providing youth appealing content, and at the same time taking advantage of mobile technologies would become a highly viable business idea.

Therefore this study is aimed to evaluate m-commerce readiness in Tashkent, Uzbekistan. The evaluation has been undertaken from 2 perspectives: business and IT. Business aspect involved industry analysis, revenue model and demand analysis. IT research was carried out on methods to implement appropriate development approaches, resulting in selection of evolutionary prototyping combined with Web Site Design Method (WSDM) and methods to implement the SMS notification.

The research undertaken allowed concluding that there is a high demand for a type of web portal proposed. This implies that given project has solid ground for success as both as a business idea and youth oriented web resource.

1. Introduction

Undoubtedly, IT is a key to success and further advancement of any country. It plays even a greater role in developing countries due to the robust results it can bring in a short period of time, it is very important for a country to take advantage of this opportunity and focus on implementing technology policies “to encourage long-run economic growth” [2], which Uzbekistan is doing at the moment. Uzbekistan’s

policy is clearly for further development of IT, and already there is a legislative base for e-commerce transactions, which provides grounds for realizing e-commerce initiatives.

E-commerce in this case in one of the methods IT can enhance the economy overall. M-commerce – a variation of e-commerce – is innovative and potentially very successful. Duryee mentioned that selling physical goods even such as tickets, perfume, gifts via mobile becomes more practiced nowadays. And to this day customers spend billions of dollars on ring tones, graphics, mobile games and other digital content. Many specialists are sure that mobile will definitely become one of the “most prevalent devices” even as a mean to buy goods. [3]

There are many ways to take advantage of mobile technology, already there is a notion of mobile learning, mobile content is widely offered for delivering downloadable ring tones, pictures, videos and people are able to pay for travel tickets using their mobile phones [4]. One more way of making money on mobile technology is value added services such as certain kinds of SMS alerts for which the customers pays a certain fee.

Analysis of local youth oriented online resources has proved that there is a lack of local online resources that would provide necessary information for young people to make well informed decision in choosing their career. Therefore, this project aims to fill this gap by introducing a youth oriented web portal that would contain content demanded by young people, particularly oriented at choosing career path and further education, and moreover implementing elements of mobile commerce through implementation SMS notification and SMS advertisement.

2. Industry Analysis

Due to the reason that project involves the development of the youth portal with implementation of mobile content through SMS there are several issues to be considered in the Industry analysis. The issues

include analysis of m-commerce initiatives, analysis of local resources, and analysis of mobile content feature feasibility and methods of SMS sending online.

2.1 Analysis of m-commerce initiatives

In general m-commerce initiatives can be classified as mobile digital content providers (ring tones, pictures, video and other entertainment), physical goods retailers (those taking advantage of mobile technology and selling physical goods through mobile), mobile advertising (custom SMS, MMS advertising), value-added services providers. Very often such initiatives combine several types as for example Air2WEB Inc.

Air2WEB Inc., a leading provider of mobile marketing and messaging applications, introduced FEED Tribes - a new mobile commerce and marketing system that combines “carrier-agnostic text-message payment capabilities with a multi-channel communication and promotional platform.” Using FEED Tribes consumers can use their mobile devices instead of cash, checks, or credit cards to pay for products and services at shops. FEED Tribes allows customers to get to retailers' location-based, real-time promotions, news, and events and therefore creates a locally centered network – so called tribe – by which customers can find what they want in the local area by identifying their choice through text messages, RSS feeds, e-mail, or personalized home page on a regional FEED Tribes website.[5]

Netspace has already implemented the idea of charging customers for internet transactions made via phone to their Verizon [US mobile carrier] accounts rather than credit cards. [6] This introduces a new way of payment, which is highly suitable in the case of Uzbekistan because online payment system using credit/debit cards cannot be yet implemented. However there are no barriers for implementing payment via mobile, a main requirement here would be cooperation with mobile carriers. It is potentially solution to the problem of e-commerce transactions in Uzbekistan.

SMS advertising is a powerful opportunity for marketers however it is very important to take cautious approach to it. Diamond [7] realizes that although mobile technology allows directly communicate with the customers, the message has to be of a certain value to the customer otherwise it is similar to spamming and the customer will be as irritated with such spam as with email spam. Diamond also identifies two specific customer concerns: 1. customer does not want to be bothered and annoyed; 2. customers are worried about loss of privacy and threat of identity theft. These

should be addressed while developing a mobile marketing campaign.

The best example of successful and cautious marketing to customers was adopted by Meijer – a chain of gas stations. They let their customers know via text message about upcoming gas price increases 3 hours before the actual increase and plus provide locations of their closest gas stations. And customers have a choice of driving to the closest Meijer gas station to fill their tanks. It is very important to use similar methods that will fit in and deliver value to the consumers, resulting in customer satisfaction.

Lessons to be learned are obvious: cautious marketing minding value of information to the customer, opportunity of alternative payment via mobile carrier, customer concerns for privacy and identity theft.

2.2 Competitor analysis

Local online resources devoted to education, entertainment and topics appealing to young audience are very limited in Uzbekistan. Their number and content are particularly inadequate in comparison to the resources available in more developed countries, where young people have vast information supporting them in making well informed decisions such crucial as the choice of university. However, recently Uzbek government tried to promote development of youth oriented sites (Presidential decree #191 “On establishing of public educational information network in Uzbekistan” [8])

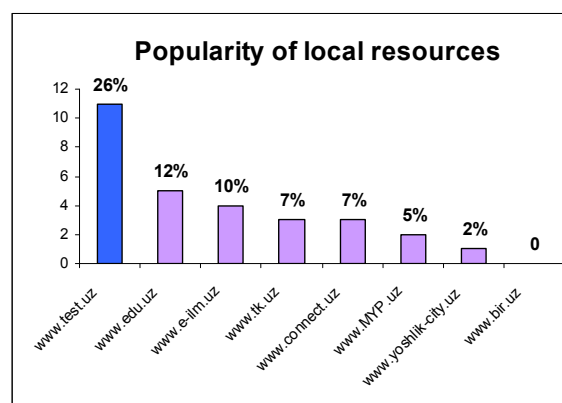


Figure 1. Popularity of local resources

Local online resources include a number of university websites (Westminster International University in Tashkent (www.wiut.uz), Uzbek National University (<http://NUU.uz>), and others), as well as websites specifically targeted at youth such as MYP.uz (National Youth Portal), Kamolot (Youth

movement site), and sites with education related content – Edu.uz (Portal of Ministry of Higher and Secondary Specialized Education), Connect.uz (Uzbekistan Educational Portal), Test.uz (National Testing Committee website), www.e-ilm.uz (online entrance sample exam testing from Platinum Connect). Mobile carriers are also seen as competitors since they provide mobile content.

Local websites proved to be inadequate and in its early development stage, however there are a number of local e-commerce initiatives that implement various revenue strategies including 1. Transaction based, however money is collected via physical means, i.e. on delivery; 2. Banner advertisement; 3. Privileged advertisement display; 4. Reverse Billing – mobile content providers such as Jmi.uz, Nikita (mostly ring tones, photos and videos)

While conducting survey among 9, 10 graders regarding local youth-oriented online resources awareness showed that very small number are aware of them. The highest awareness has www.test.uz (26%), majority of the respondents told that they used this resource to pass the sample entrance examination questions online to test their knowledge. (Figure 1).

It can be inferred that competitor web-sites proved to be inadequate, specific and not popular among the respondents. The proposed web-portal will be combination of entertainment and informational resource. Its ability to provide what is exactly needed to the target audience and plus its additional SMS services will guarantee its success among target audience.

2.3 Analysis of feasibility of mobile content through SMS

Mobile service is the most rapidly developing branch of communications in Uzbekistan.[9] According to UzACI (Uzbekistan Agency of Communications and Information) the number of Internet users comprises 1 mln 80 thousand people and number of cellular service users comprises 1 million 300 thousand for the first quarter of 2006 in Uzbekistan [10]. Moreover, specialists claim that judging by a sharply increasing trend of mobile users in Uzbekistan, in the nearest future it is expected to be a tremendous increase in the number of mobile users – only in capital it is expected to double, and it is also expected that the number of users will increase in regions too. [11]

Taking into consideration the information above and also the fact that young people already comprise a

significant portion among mobile subscribers and Internet users, it can be concluded that there are very favourable conditions for introducing mobile content to subscribers of the to-be-developed website.

Many specialists expected m-commerce to create a boom similar to the one that the Internet has created, however it did not take place due to “lousy user experience, bad user interfaces, slow-speed networks, security issues and the problematic distribution of money between content providers, retailers, carriers and handset vendors” [12]. Therefore to-be-developed website takes into consideration the above mentioned issues and proposes to take advantage of SMS, rather than MMS as a mean to provide mobile content (which can take form of alerts, targeted advertising, subscribed content), due to the following factors [13]:

- Simple interface – SMS is well known and easy to use
- SMS Messages can be Sent and Read at Any Time, since today a lot of people carry mobile phones with them all the time
- SMS Messages can be Sent to an Offline Mobile Phone, since SMS system of the mobile operator will store the SMS message and later send it to the recipient’s phone
- SMS Messaging is Less Disturbing While You can Still Stay in Touch
- SMS Messages are Supported by 100% GSM Mobile Phones and They can be Exchanged between Different Wireless Carrier
- SMS supports reverse billing, which enables payment to be made conveniently

A good example of a business that effectively deployed SMS is E-bay. It introduced mobile alert to its members when they are outbid for a certain item. The e-Bay members are charged only \$2.99 per month for the service, which is justifiable for the convenience provided. [12]

3. Revenue Model

As defined by Turban et al. [14] the project falls into the category of mobile commerce sites, as it enables “e-commerce transactions and activities conducted in full or in part in a wireless environment.”

The project is a commercial web site and it will seek to generate revenue through the following revenue models:

Table 1. Overview of local educational web resources

Name	Advantages	Disadvantages
University websites in general	Have detailed information about university and faculties	Does not have information on entry pass marks and subjects required on test for every faculty
National Youth portal – www.myp.uz	Specifically targeted at youth. Supposed to have broad content on youth oriented topics	Strictly on Uzbek language, no other languages available, most of the pages still under construction. Content is written in official language
Official web-site of “Yoshlik” Hokimiyat http://www.yoshlik-city.uz	Provides list of some Tashkent universities and colleges	Content is too official and limited to very small number of pages devoted to sport, health, student dormitories and others. In general it does not provide information of topics on demand Available only in Uzbek language
Kamolot – www.kamolot.uz	Bright design Good content on education, entertainment, music download	Inconvenient navigation Currently under construction
Portal of Ministry of Higher and Secondary Specialized Education – www.edu.uz	Official information of not high practical use	Oriented on education only
Uzbekistan Educational Portal – www.connect.uz	Information on projects and contests, e-library Good navigation	The language usage is inconsistent – on the main page there are news in English and Russian at the same time, though
System of distant learning and testing – www.e-ilm.uz	Enables fee-based sample entrance exam taking using Platinum Connect cards	Content is mostly oriented on education and poor.
Mobile carriers (www.mts.uz, www.beeline.uz, www.coscom.uz)	Provides free SMS services such as and fee based information and entertainment services – weather, currency exchange rate, jokes, recipes and others	Such content rarely used by subscribers
Global Study – www.Study.uz	Provides detailed information on education abroad, scholarships, local preparation courses	No information on local universities and local events.
The higher educational establishment in the republic of Uzbekistan – http://Zamin.freenet.uz	Gives an overview on almost every higher educational institution in Uzbekistan, also provides information on faculties	Not up-to-date, education centered
Business Information Resource www.Bir.uz	Although the resource is mainly business oriented, however contains useful information on grants, scholarships, events (exhibitions).	Mostly business oriented
Mobile Content providers: Jmi.uz, Nikita, FlashFon	Project of Inform Mobil Tashkent. Entertainment resource – ring tones, anecdotes, mobile themes, pictures, games, dating Implemented reverse billing	Limited to entertainment only

Subscription fees – some of SMS alerts will be free of charge for the users, however certain SMS alerts will require payment. The payment will take a form of reverse billing. (Reverse billing has been already discussed in the above sections).

Advertising fees – Users will be offered an option to receive free SMS advertisements in the area of their interest. (Example can be: sales on particular items). On the other hand the advertisers will pay an advertising fee for sending advertisement. This option has advantage over a similar service provided by the mobile carrier, as it will deliver messages to a certain group of people interested in particular advertisements. This option is of great advantage for the advertisers, because they target a specific segment, and segment that is actually interested in this service.

Another option is charging advertising fees for locating banner of other companies on the site. Example can be AdSense with Google, where Google “delivers relevant text and image ads that are precisely targeted to your site and your site content” [15] and allows earning money on that.

The project also can take advantage of reverse billing, in order to collect fees from its customers for services provided on the web portal such as premium content, SMS notifications. Reverse billing refers to a method of collecting money from the subscriber, when the fee for mobile content is included to the user’s monthly mobile phone bill or is deducted from his/her prepaid card credits.

4. Demand Analysis

4.1 User profile

A primary research – survey among 9 and 10 graders – was undertaken to identify demand for the proposed web portal and it yielded the following results:

Figure 2 summarizes level of computer literacy among 9 and 10 graders of school #158. It can be seen that majority of the respondents have already had some sort of experience with Internet (81% can check email and find needed information online, 79% can use chats, 48% and 36% can participate in forums and blogs respectively) and only 9% of respondents not being able to use Internet at all. The respondents were also asked to indicate the purposes of their online browsing and it revealed that 73% were using it for entertainment, 62% used it to find reports, 27% looked for information on universities,

13% and 2% looked up information on exhibitions and conferences respectively (**Figure 3**).

It is generally felt that although the majority respondents indicated that they searched Internet for entertainment purposes, at the same time a large proportion have also indicated that desirable content for the web portal would be mainly of educational nature (advice on entering the university, information about universities, career advice).

4.2 Mobile content service suitable for the web portal

The survey also revealed that a little over three quarters (76%) of respondents (9, 10 graders) have mobile phones (**Figure 4**), and among mobile phone owners a significant proportion of 94% expressed interest in receiving SMS advertisements (alerts) (**Figure 5**), given it is free of charge and of the content they specified in their profile. For example, if a young person interested in receiving mobile alerts on new movies available in cinemas, he would specify it in his profile and receive SMS alerts on upcoming premiers. In such case the business (here, it would be cinema) will pay for such advertisement to the web portal.

During focus group discussion with university and school students several ideas regarding mobile content to be on demand were generated and they include the following:

Additional functionality (paid service for subscribers)

- important email notification
- job offers notifications
- events notification (exhibition, contest deadlines, and etc.)
- SMS cards – birthday and etc.
- SMS advertisements of a chosen category (free of charge for subscribers)
- SMS notification on films’ premiers, what, where, how much
- SMS notification on clothing sales (for expensive boutiques and supermarkets)
- online sample entrance tests to local universities

Study presented in **Industry Analysis** suggests that there is an increasing use of mobile communications in Uzbekistan, and that there are number of local sites that do not provide sufficient content. All of this implies that there are favorable conditions for developing a youth web portal on a condition that it would have complete information and services on issues that interest young people.

The demand for the site will be guaranteed by the following factors:

1. Actuality of content
2. User-centered design (including not only overall “look and feel” of the site, but also navigation)
3. Novelty of SMS alerts on subscribed events, and payment via mobile carrier (reverse billing)

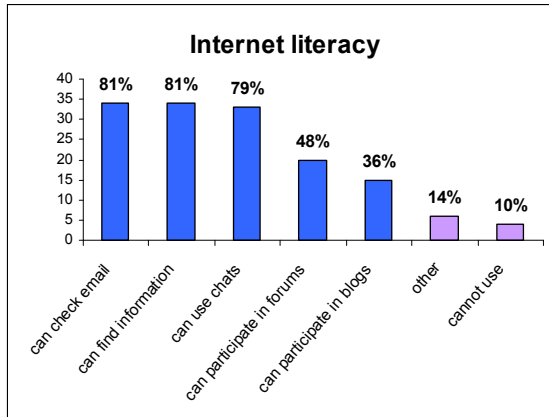


Figure 2. Internet literacy

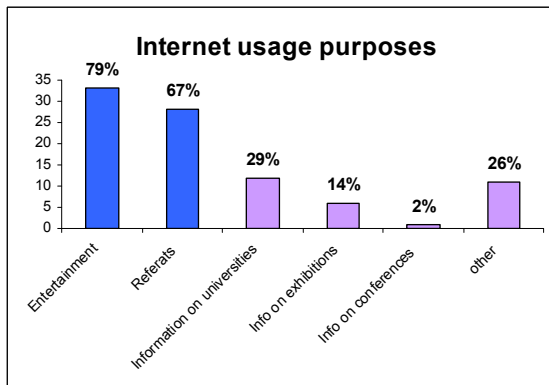


Figure 3. Internet usage purposes

5. Development Approach

Competent approach to the development of the web site will guarantee its success. Therefore to ensure user centered design and development it is suggested to use Web Site Development Method (WSDM), suggested by O.M.F De Troyer and C.J. Leune, which is integrated into evolutionary prototyping. The main reason for choosing WSDM is its user centeredness. In a data driven method the starting point of the modeling approach is available data, whereas in WSDM approach, the starting point is the set of potential visitors (also known as

audience or users) of the Web site. In WSDM the users are classified into user classes and the "available data is modeled from the viewpoint of the different user classes". The result is Web site which is better tailored to its different users' needs and will therefore have a higher usability and give greater satisfaction. [16]

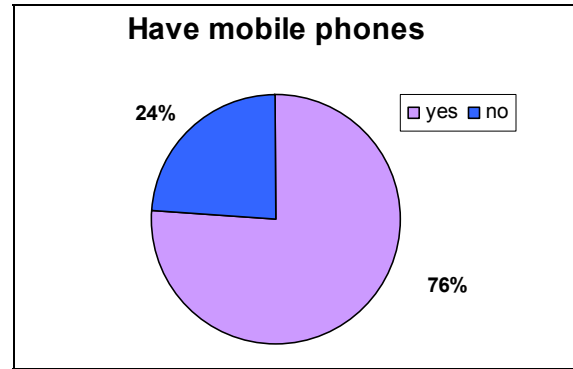


Figure 4. Mobile phone possession

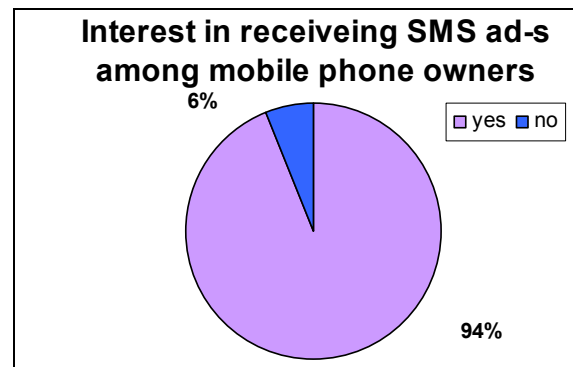


Figure 5. Interest in receiving SMS advertisement

5.1 Project Lifecycle

The WSDM method integration into the project lifecycle is discussed below.

5.1.1 Web portal Concept

- Youth oriented web portal with CMS and SMS notification feature. The content of the web portal is mainly academic, career, entertainments related.

5.1.2 Requirements Analysis

User classification. In this step, the audience of the web portal is identified in order to identify the requirements. This was done by evaluating the target audience for which the web portal was built. The target audience was divided by activities they would perform on the site [16]. The activities and parties involved were represented in a following schema:

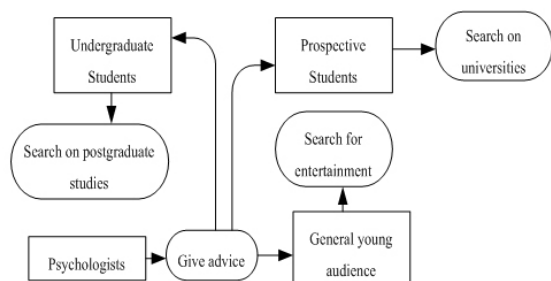


Figure 6. User activities

User Classification was made as follows based on a schema provided: prospective students (including high school students (9-11 grade)), undergraduate students, general young audience, psychologists and academic staff (teachers, lecturers from different universities). The following activities of the user groups can be identified: search on universities, search on postgraduate studies, search for entertainment, give advice.

Different types of users will have different information requirements, and this should be taken into consideration while designing the web site. For example, a prospective student must be able to follow navigation path which enable him find desired institution and details on faculties. Although different users might have common information requirements, it might be necessary to present information in different ways to different types of users. Prospective students, especially secondary school students are not familiar with the university lexicon. Therefore, such users should have option to see the information in local language and university specific issues should be explained in detail. At the same time, the enrolled students are familiar with the university lexicon. They might also prefer to see the information in the locally common language (in this case Russian or Uzbek). However, the same information might also be useful to foreign students (there are a number of students from abroad, Korea, Afghanistan, for example). [16] Therefore, the same information should also be available in English. And level of foreign students' experience of Internet usage is normally higher than of local students, especially English-speaking, due to the reason the IT has started developing not that long ago in Uzbekistan. Therefore, the complexity of information organization on the site should be based on the type of user targeted.

User Class Description. During this stage, user classes are analyzed in more detail. The analysis

focuses on two issues: first - information requirements of the different user class requirements (the conceptual "what"); second - *characteristics* of the user classes. These characteristics will condition how the information should be presented for a particular user class (the conceptual "who"). [16] The following user classes were identified for the youth web portal:

Prospective Students

These users are looking for general information about the different universities, programs and courses that may help them to make decisions about where and what to study, what career to pursue. Normally, they are young (between 15 and 24 years), not familiar with the university lexicon and speak the local language. The level of experience with the Internet may range from "no experience" to "very experienced".

- **Local Uzbek speaking** They prefer the Uzbek language for communication, but some have a good understanding of Russian, too. Experience with Internet ranges from inexperienced – moderate.
- **Local Russian speaking** They prefer the Russian language for communication. Experience with Internet ranges from inexperienced – moderate.
- **Foreign Students** English language is preferable. Experience with Internet ranges from moderate-advanced

Undergraduate Students

These students need specific information about the courses available on Master's degree and higher and all needed documentation and testing. They would need flexible ways to search for this information. These students can be: the Local-Student (Uzbek speaking), Local Student (Russian speaking) and the Foreign-Student.

- **Local Students (Uzbek speaking)** are familiar with the academic lexicon, the academic rules and customs. They have a moderate level of experience with the Internet. They prefer the Uzbek language for communication, but some have in general a good understanding of Russian, too.
- **Local Students (Russian speaking)** are familiar with the academic lexicon, the academic rules and customs. They have a moderate level of experience with the Internet. They prefer the Russian.
- **Foreign Students** form small percentage, but they will be using the resource to find information on local universities and

schools. English language would be preferred.

General young audience

These users mostly search internet for entertainment purposes, such as music download, games, chat, and dating. They might include prospective students, college/school dropouts, unemployed young people seeking job, employed young people (blue collar/white collar).

Psychologists

These users will be specifically employed by the web portal in order to participate in forums, write relevant articles, and give advice (for example, career advice) to the main audience of the site.

Academic staff

These users will be invited and rewarded for participation in the forum, writing advice articles.

Requirement Specification. Requirement summary catalogue included requirements generated as a result of focus group discussions and survey among the target audience of the web portal (for more detail, refer to Business methodology). Functional requirements Summary Catalogue is as follows (Legend: E – essential, D – desirable, N – nice to have; U – user):

5.3. Design of Architecture and System Core Navigational Design

On this stage a *Conceptual Navigation Model* is constructed. The Navigation Model consists of a number of *navigation tracks*, one for each user class. “A navigation track expresses how users of a particular perspective can navigate through the available information. This is described in terms of *components* and *links*. The following components are distinguished - *information components*, *navigation components* and *external components*.” (Figure 7).

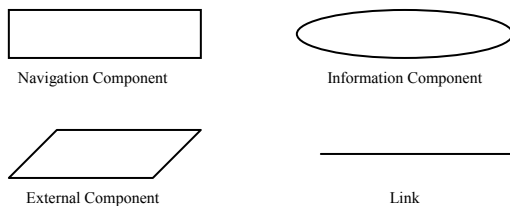


Figure 7. Graphical representation of the navigation concepts. [16]

According to mentioned above user class specifications the following are 2 examples of navigation tracks are presented in the figure 8.

In order to implement the user centered navigational design for certain types of users on the home page the user is asked to identify himself by following a relevant link: *Prospective Student*, *Undergraduate Student*, and *General Audience*. Following these links the user will be directed to relevant pages of interest, for example prospective student will be directed to a page containing relevant guidance and links to Bachelor programs pages, career pages.

Along with this navigation there will be also a traditional navigation pane (including links to all pages of the web portal) for those users who want to browse the web portal.

6. Methods of Enabling Sending SMS from the Portal

The following are the methods, by means of which the SMS sending can be enabled on the web portal:

6.1 Using a Mobile Phone or GSM/GPRS Modem [17]

A GSM/GPRS wireless modem works with GSM/GPRS wireless networks and it is similar to a dial-up modem. It uses SIM card from wireless carrier. So, it is possible to connect either a mobile phone or GSM/GPRS modem through a serial cable/USB cable/Bluetooth link/infrared link. The SMS sending is done through series of so-called AP commands. The example of AP commands is:

```
AT
OK
AT+CMGF=1
OK
AT+CMGW="+85291234567"
> A simple demo of SMS text messaging.
+CMGW: 1
OK
AT+CMSS=1
+CMSS: 20
OK
```


Table 2. Requirements Specification

#	Priority	Owner		Description
Data requirements– what data the system must store and process				
1	E	U		Detailed information on how to study abroad
2	E	U		Rating of local and foreign universities
3	E	U		Instructions on entering the university
4	E	U		Minimum exam results score for budget or self-finance modes of study
5	D	U		Percentage of those who managed to enter a particular university
6	D	U		Entrance exam sample test
7	E	U		Universities, Colleges – rating, short description, contact info, link to official site, faculties, subject required to pass
8	E	U		Conferences, contests – description, deadlines
9	E	U		Financial Aid – advice “how to apply”, information on grants, scholarships, description, deadlines,
10	E	U		Academic programs – information on exchange programs, study abroad, local projects
11	D	U		Personal development – articles
12	D	U		Psychological tests on choosing career pathway, IQ, abilities and skills
13	E	U		Review of popular jobs, career pathways, success stories for each career pathway
14	D	U		Advice from those who achieved success
15	N	U		Internship, employment opportunities listing
16	E	U		Career advice – how to choose career, how to pass interviews, how to construct CV, success stories
17	D	U		Online dating, profiles search
18	E	U		Information on places to go – entertainment centers, cinemas, bowling clubs, bars, parks,
19	E	U		news: local sports, educational, young people in Uzbekistan
Processing requirements - what system needs to do with data				
20	E	U		Register users
21	E	U		Authorized login users
22	E	U		Personal cabinet with mailbox, personal photo gallery
23	E	U		SMS notification on important email, job offers, events (exhibition, contest deadlines, and etc
24	D	U		SMS Advertisements sending, for users who have specified particular preferences
25	D	U		Events timetable – for conferences and etc.
26	E	U		Content Management System for the web portal - allow change the content of the web site, Add advertisements
27	E	U		Development of personal cabinet for users
28	E	U		Integrating blog, forum, chat and dynamic timetable into the CMS
29	D	U		Allow search the web site
30	N	U		User profiles search
31	D	U		RSS feeds news: sports, educational, fashion, celebrity, films, economic world events international news horoscope cultural news, exhibitions, museums
32	E	U		Different language modes should be available

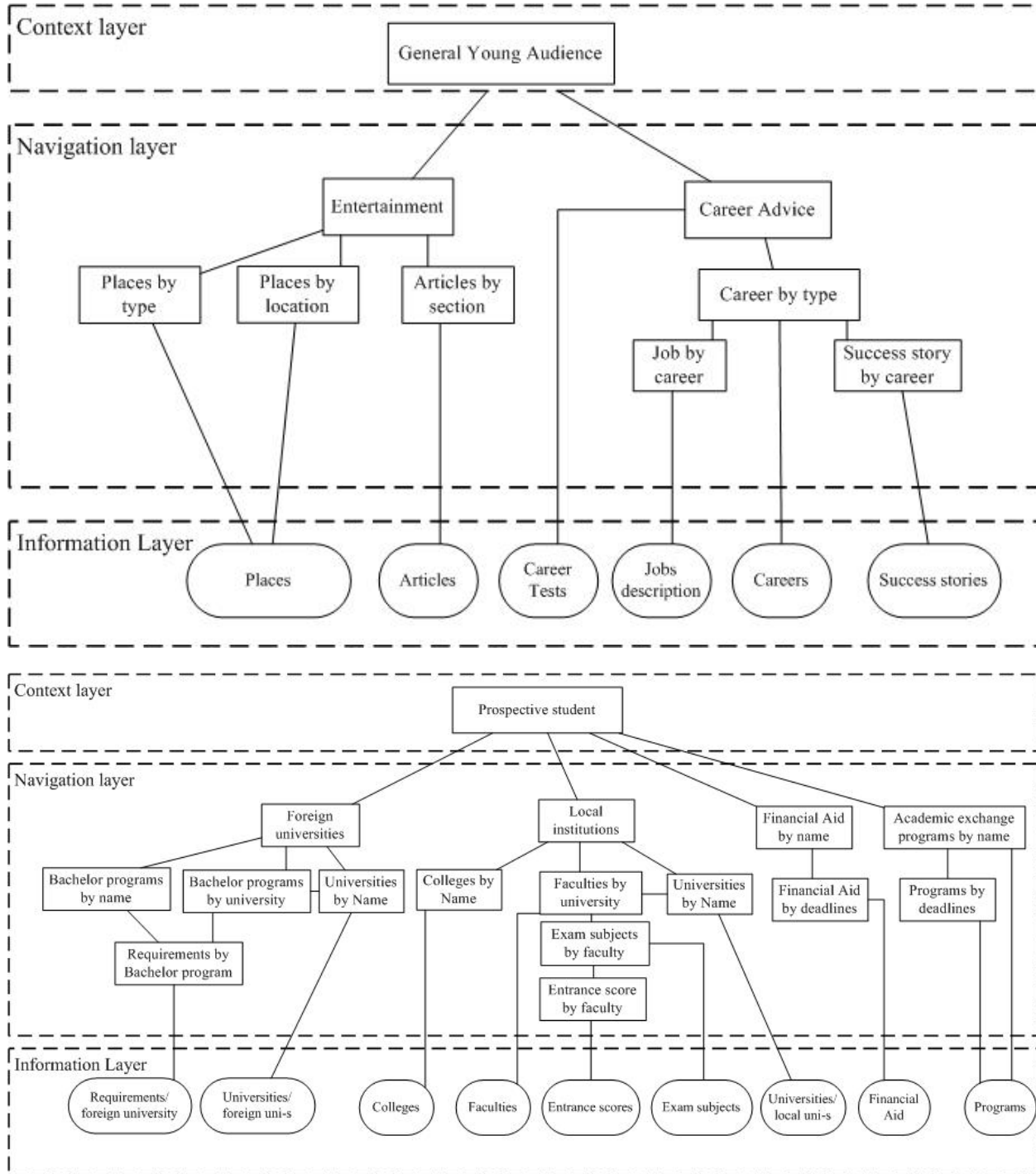


Figure 8. Graphical representation of the navigation concepts

6.2 Using services of SMS gateway or SMS center (SMSC)

It is possible to send SMS using protocol/interface supported by this SMSC/SMS gateway. The SMS

gateway serves as an intermediary and a developer can send messages using of described above methods depending on their suitability for the case.

Possible SMS gateways can be: Clickatell, TM4B,

For example, Clickatell offers several protocols and interfaces that can be used for SMS sending [18]:

HTTP/S
SMTP
COM OBJECT
XML:
FTP
SMPP

7. Conclusion

To summarize, the project identifies the niche in a local market – there is no local website that would deploy SMS notification. There is, however a mobile content provided by the mobile carriers, which is limited to weather updates, currency converting, entertainment content. The to-be-developed resource will not provide such popular mobile content as ring tones, wallpapers, games and etc. On the contrary it will concentrate on local market niche – providing value added services - SMS alerts on user specified events, updates, or specific content (for example: preferred advertisement to be sent on mobile) to which the user will subscribe. SMS would be an excellent mean to provide value-added content to the subscribers due to the mentioned above factors.

The proposed idea aimed to achieve two-fold benefit. Firstly, the web portal intended to become invaluable information resource for young people, secondly it can become profitable e-commerce business idea with elements of m-commerce.

It is very important to realize what a tremendous opportunity lies in such project. As it can be seen such idea is novice even for developed countries, and for Uzbekistan in particular it is important to take advantage of this opportunity. Since credit system is not well developed in Uzbekistan and online payments for services are not yet possible mobile payments using reverse billing is the excellent opportunity to develop e-commerce in Uzbekistan. That would mean that instead of going through the online payments stage it can directly switch to mobile payments as it is actually the way which is expected to become a popular method of payment in the future.

So if the advantage is taken on time, web portal providing actual content, with user centered design in terms of navigation and content, and in addition having a well thought through SMS marketing strategy will accomplish a considerable success in the future.

References

- [1] Schone S., *M-commerce: the new "anywhere, anytime" sales channel* Computer Technology Review, Oct, 2004 available from <http://findarticles.com/p/articles/mi_m0BRZ/is_10_24/ai_n8685873>
- [2] Unctad R.I., Siegel D. S., *The Impact of Investment in IT on Economic Performance: Implications for Developing Countries*, NY, USA 2005.01.004 available from <http://r0.unctad.org/ecommerce/docs/It_Ec_Perf.pdf>
- [3] Duryee T. *Calling all shoppers! Buzz getting louder around mobile commerce*, Seattle Times Newspaper, July 16, 2007 available from <http://seattletimes.nwsources.com/html/business/technology/2003790981_mcommerce16.html>
- [4] Naismith L., Lonsdale P., Vavoula G., Sharples M. *Report 11: Literature review in mobile technologies and learning*, University of Birmingham, available from <http://www.futurelab.org.uk/resources/documents/lit_reviews/Mobile_Review.pdf>
- [5] All Business, *FEED Tribes Taps Air2Web to Support New Mobile Commerce and Payment Application Using Short Message Service* Technology Business Wire, March, 2007 available from <<http://www.allbusiness.com/services/business-services/4308452-1.html>>
- [6] Kooser A. *Get the message? SMS technology could bring mobile commerce within your reach*, Entrepreneur, Oct, 2004 available from <http://entrepreneur.com/magazine/entrepreneur/2004/october/72706.html>
- [7] Diamond D., *Going mobile* Progressive Grocer, 00330787, 7/1/2007, Vol. 86, Issue 9
- [8] Finman Consulting, *Presidential Decree # 191 on "On establishing of public educational information network in Uzbekistan"*, available from <http://www.fmc.uz/legisl.php?id=pp_191>
- [9] Sotovik, Information and Analytical Agency, *A number of mobile service subscribers increases in Uzbekistan* [in Russian] available from <www.sotovik.ru/news/news_22182.html>
- [10] Sotovik, Information and Analytical Agency, *Uzbekistan has more than a million of Internet users and mobile service subscribers* [in Russian], 2006/04/10 available from <http://www.sotovik.ru/news/news_21749.htm>

- [11] Sotovik, Information and Analytical Agency, *Mobile market in Uzbekistan before the storm* [in Russian], 2006/04/10. [online] available from <http://www.sotovik.ru/news/news_24227.html>
- [12] Richard Siber (2002) quoted in Luna L. *M-commerce explosion: is there still hope?* Oct 14, 2002 [online] available from <http://telephonyonline.com/mag/telecom_mcommerce_mpllosion_hope/>
- [13] DevelopersHome, (2007) *What Makes SMS Messaging So Successful Worldwide?* available from <http://www.developershome.com/sms/sms_tutorial.asp?page=smsIntro2>
- [14] Turban, King, Lee, Viehlag, (2004) *Electronic Commerce, A Managerial Perspective*, Prentice Hall, New Jersey
- [15] Google, (2007) *AdSens tour* available from <http://www.google.com/services/adsense_tour/index.html>
- [16] De Troyer and C.J. Leune, *WSDM: a user centered design method for Web sites* available from <<http://www7.scu.edu.au/1853/com1853.htm>>
- [17] DevelopersHome, (2007) *The 1st Way: Using a Computer to Receive SMS Messages through a Mobile Phone or GSM/GPRS Modem outline* [online] available from <[http://www.developershome.com/sms/howToReceiveSMSUsingPC.asp#11.1.The 1st Way: Using a Computer to Receive SMS Messages through a Mobile Phone or GSM/GPRS Modem|outline](http://www.developershome.com/sms/howToReceiveSMSUsingPC.asp#11.1.The%201st%20Way:UsingaComputertoReceiveSMSMessagesthroughaMobilePhoneorGSM/GPRSModemoutline)>
- [18] Clickatel, SMS gateway, *Connection types*, [online] Available from: <https://www.clickatell.com/central/manage_products.php>

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