

## Designing Innovative it Mobile Service for Interaction with Catering Organizations

Galina Kurcheeva, Maxim Bakaev and Dmitry Saprykin  
Department of Economic Informatics, Novosibirsk State Technical University,  
630073 Novosibirsk, Russian Federation

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**Abstract:** The study describes the stages of new service development for organizations of public catering. The study includes a benchmarking analysis of foreign and Russian analogues of development, own analysis of these organizations for detection, classification and problem solution in raising the level of customer satisfaction. The proposed approach provides direct contact with the consumer by means of continuous repeated in real-time communication. As a result, the consumer is involved in not only the development, improvement, modification of new product, but he is fixed for the product, creating a loyal group of consumers for your organization. Attracting more consumers to the service finishing, the development of new applications, we erase the distinction between the innovative imitation and open innovation.

**Key words:** Innovations, mobile software, customer development, pre-ordering IT service, consumer

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### INTRODUCTION

To increase the effectiveness of innovations development and promotion, it's important to define, whether the innovation is going to be a breakthrough, an innovative imitation or an open innovation. If the innovation is to be developed in Internet, then it's generally an open innovation or innovative imitation. Notably, it doesn't matter in what field the organization operates services, production, or agriculture if it needs to constantly attest its advantages in market competitive environment.

According to the definition given by H. Chesbrough, the model of open innovations defines the possibility of using external ideas and knowledge together with internal ones for an innovator or organization (Chesbrough, 2003). So, the technology of open innovations development removes internal and external barriers for the flow of ideas and establishes bonuses for all stakeholders, including consumers. The authors believe that the development of open innovations and innovative imitations have a lot in common, since innovative imitations are also developed based on appropriation of ideas, methods and technologies. The differences lie in the constrained number of participants in the innovative process. Also, imitations are essentially innovations with moderate risk level, since they implement already familiar features and do not require massive capital investments. The researchers think that subsequent development of open innovations and innovative imitations may lead to breakthrough innovations on the market.

This relates to both major business structures, such as Sberbank Rossii Joint Stock Company or Center for Financial Technologies and to small business the emerging young innovators. Often a beginner entrepreneur who has a promising innovative idea in his or her attempts to implement it encounters such problems as under-estimation of customer needs, difficulties in defining the boundaries of target consumer group and relevant segment on the market (Kurcheeva and Saprykin, 2015).

Particularly, the difficulties in obtaining the feedback from customers and the market lead to failures in promotion of innovations and decrease in competitiveness. Summarizing our own experience from interacting with beginner entrepreneurs, students who want to start their own business, as well as opinions of specialists in the field, we can conclude that despite the declared goal of innovations development and promotion, which is satisfying the needs of the customers and correspondingly its prior study, almost all surveyed innovators start working according to the stages of the "Technological Push" model for innovative cycle, starting with fundamental or applied research (Tukkel *et al.*, 2013).

As the result, the goals of the promotion on the stages of innovative idea development are not considered. The promotion models are non-existent, the promotion tools, such as advertisement, website, etc. are not applied in a systematic way but in individual efforts to find a field for applying the novelty. At this, the linear sequence of the innovative process stages fulfillment comes into contradiction with the demands of the market,

violating the principles of the knowledge increase, as the role of the consumer is not considered and the effectiveness of promotion decreases (Kurcheeva and Khvorostov, 2014).

**MATERIALS AND METHODS**

**Extension-rule based theorem proving method:** The emerging contradiction can be resolved with the so-called Customer Development methodology which lies at the base of innovative activities of many successful Western companies. This methodology states that the feedback from the end customer is important on all stages of the innovative idea or innovation development, starting from the improvement of the idea and ending with the release of the new product version on the market (Blank and Dorf, 2012; Bekhmann, 2010). Exactly this approach can be implemented by the modern internet technologies, ensuring immediate contact with the customer, performing non-stop, repetitive and often real-time connection. As the result, the customer not only participates in development, upgrade and modification of a new product, but is also attracted to the company which so can create the group of loyal consumers (Webster, 2014; Drobyshevskaya and Larionova, 2013).

As an alternative for innovations of this kind, there exist the innovation process models of the 3rd generation, particularly the Rothwell’s coupling model of innovation (Fig. 1). Companies transition to the coupling model allowed successful development of innovative imitations, starting from constant monitoring of technology market and the consumers and also promptly assessing the changes in demand, ensuring feedback with the consumers.

The model of the Japanese approach to the innovation process (Fig. 2) also relates to open innovations development and promotion models, as it implies permanent contact with the innovation end consumer and largely implements the Customer Development methodology that aids in creating the product based on the customer needs. Each stage of the model incorporates feedback from the market place and the consumers, which allows not going back to the start of the innovation process, but permits modifications at any step, resulting from changes in the market environment (Kurcheeva and Khvorostov, 2014).

As the result of the open innovation development, there arises the possibility not only to take into account all the variations in demand but also to influence on the consumers demand most successfully this is done in services. The technology for leading the innovation idea to the implementation on the market corresponds to the Japanese approach to the innovation process (Fig. 2) (Webster, 2014).

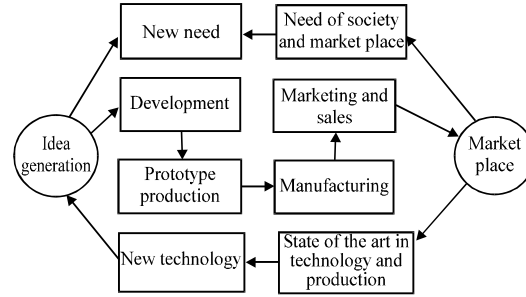


Fig. 1: Rothwell’s coupling model of innovation

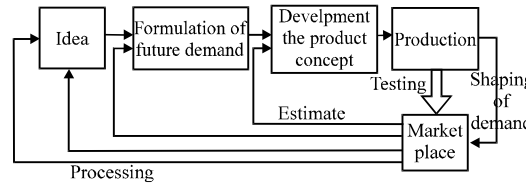


Fig. 2: The Japanese approach to the innovation process

As an example, we provide description of the mobile application and service website that we developed based on the innovative process model its name is Reserv Food.com and its goal is to provide pre-order capabilities for restaurants of Novosibirsk.

**RESULTS AND DISCUSSION**

**The application example**

**The problem background:** Before the development of pre-order services and online payments, customers used the traditional method of ordering in restaurants and cafes, which implies that they are inside the place (Fig. 3).

On average, a customer would spend 20 min to 1 h to get to the place, than about 5 min waiting for the waiter and getting the menu. Then 5-10 min for ordering and more than 20-30 min to get it ready. So, every customer would spend 1-2 h before actually eating. If we take into account that there may be no vacancies in the restaurant or cafe, the client may just lose his or her time, without even ordering. However, thanks to the mobile technologies these risks can be mitigated and search for eateries in the city can be improved (Fig. 4).

On the use case diagram reflecting the set of processes of the pre-order catering service development (Fig. 5) one can see that both service development and upgrade depend on the constant connection with the potential customers.

**The need for mobile applications benchmarking:** Extraction and systematization of problems in increasing consumer satisfaction in the services domain allows

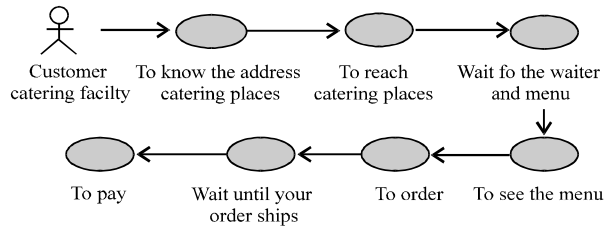


Fig. 3: The traditional ordering scheme in a restaurant

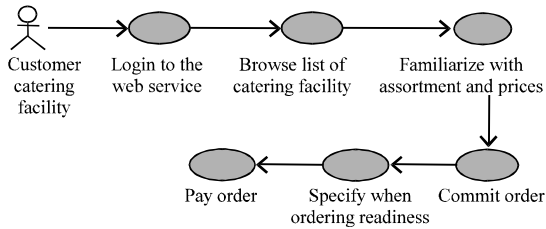


Fig. 4: Innovative ordering scheme in a restaurant

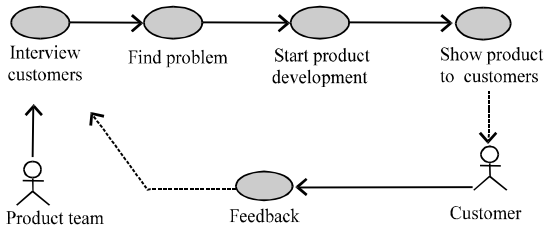


Fig. 5: Use case diagram for developing the pre-order catering service

comparing them with solution of similar problems in world-wide practice. To do this, we are applying benchmarking, as an estimation and analysis method. Benchmarking is understood as finding or extracting information on something that some company does better than the others; it includes subsequent study, improvement and application of their methods of operation. The authors believe that benchmarking is an analysis method, where processes or characteristics of goods and services can be compared inside companies' departments, competitors, most successful companies in their fields, regions, market places, other countries. So, bench-marking is the process of searching, defining and studying the best known methods in management and business operation (Kurcheeva and Khvorostov, 2014).

Search and analysis of the developed services analogues was performed on the Internet where we consistently considered ordering systems, representing services per countries and cities, including North and South America, Europe, Asia. In Table 1 we show analogues for the pre-ordering service which implement

some of its functionality. As the result of the consideration, we were able to analyze advantages and disadvantages of the operating pre-ordering services in the selected countries. The following problems and disadvantages are discovered:

- The payment system that forces the customer to attach a banking card to the service account, thus demanding full access to the monetary resources, which causes concern and dissatisfaction with the clients
- Some customers may lack a banking card, which causes problems in paying for the order via the service
- The clients express the need to learn more about the place and the meals, to have a detailed description
- The customers would like to know the number of vacant seats currently available in restaurant

**The development of the pre-ordering service as an imitation innovation:**

In addition to the benchmarking analysis of the analogues for the developed service, we ran surveys with consumers of different age groups and with catering organizations customers (Fig. 6). It confirmed the disadvantages identified above and resolving them became the basis for the new service, which can be related to innovative imitation the ReservFood.com pre-ordering service. The results of the survey are the following:

- Out of 29 people, 22 chose the place based on recommendations from friends or relatives
- Out of 29, 13 use an Internet resource (reviews, website, online advertisement, etc.)
- Out of 29, 6 are based on the advertisement of the company, which they saw prior to their choice

Thus, customers most often visit restaurants based on recommendations from their friends, or based on reviews on websites and social networks: the social opinion's component in the choice of an individual customer is high (Aletdinova, 2011). The analysis of the survey also demonstrated that the clients almost universally chose the same ordering method when visiting a restaurant (Fig. 7):

- All 29 subjects place order directly in the restaurant
- Of them, 2 subjects have been ordering via the phone
- Only 1 subject did order food to be delivered to his/her home, via the phone

So, all the customers have difficulties replying to the question about the possible ordering methods the single reply seemed obvious to them, from which we can

Table 1: Benchmarking analysis of online ordering services for catering

The service	Settleorder.com (Ukraine, USA San-Francisco)	Opentable.com (North and South America, Europe, Saudi Arabia, Singapore, China)
Advantages	Operating website and mobile application. Dedicated tablets with the pre-installed software.Payment by cards and SMS. Notification about order and offers by the restaurants and cafes.The functionality of splitting the bill between several users. Choice of the order time.The order bill and e-menu. Only charge commission from the order amount	Operating website and mobile application. Choice of time for oreservation and the number of people. The restaurant rating and comments.E-menu. Search options (distance, name, rating)
Disadvantages	No descriptions for meals. No auto-definition of the user location Mandatory attachment of banking card to the account	Mainly focused on restaurants only
Number of users	GooglePlay 1000-5000 downloads. Settleorder.com website 496 views per day, about 181 thousand per year	Google play >1 million downloads.Website opentable.com has 36 thousand visitors per day, 145 thousand views. About 13.3 million visitors and 53.2 views per year
Works since	2014	1998

Table 2: Identified problems and proposed solutions for the problems in the service field

Problem	Solution	Number of customers
Long waiting time for the order	Increasing processing speed and introducing e-menu	16
Long waiting time for the bill	Improving service quality	11
No vacant seats in the restaurant	Reservation of tables and improving service quality	3
Lack of information regarding the number of guests and the total bill amount	Introducing seats (meal complexes)	10
Banking cards are not accepted in the restaurant	Improving service quality	4
Partial absence of meals selected from the menu and deficiency of the order	Improving service quality	7
The meal style doesn't correspond to the menu	Photos of the meals	3
Selecting meals and preliminary contacts (phone) with the restaurant	Seats reservation, availability of e-menu for online order	3

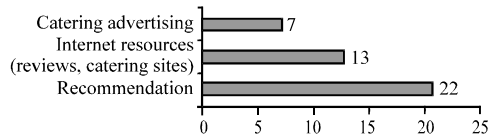


Fig. 6: Distribution of customers when looking for a catering place

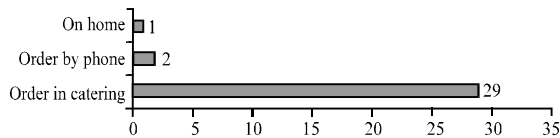


Fig. 7: The ordering methods

conclude that the standard interaction method between customer and restaurant is the most accepted only because the client generally doesn't know about any others. Besides studying the customers' relation to the ordering methods, we systematized the answers regarding the payment form, the way of finding the place, and so on. As the result, the consumers' problems in the service field are identified as shown in Table 2.

To resolve all the above problems in the innovative imitation (Fig. 8), it's necessary to change the structure of the similar services and add the following functionality:

- Add descriptions for the restaurants
- Add descriptions to the meals

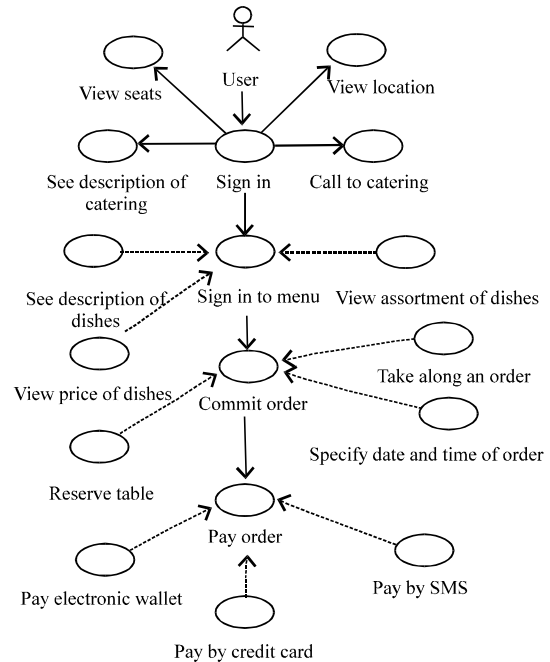


Fig. 8: Use case diagram for the proposed innovative

- Introduce online accounting of vacant seats in the restaurant
- Develop a new module for payments which would permit various payment methods, including SMS, e-money (QIWI, Yandex.Money, WebMoney) and banking cards

The developed service allows performing various functions by the customer, supports emergence of new services, as well as participation in their development and promotion.

### CONCLUSION

With the advent of information age, the processes of innovation-imitation development have evolved, especially in human services. Traditional approaches to innovation development according to the models of innovative development on fundamental and applied research do not correspond completely to the basic objective of the management of innovation-oriented organizations, namely, the satisfaction of consumer needs in innovation.

The search for inconsistencies between the developed pre-ordering services and the manifold demands of the customers, taking into account the particular features of the local market, immediately lead to individual research and consideration of the customers' needs, according to which the product is upgraded. By bringing as many customers as possible to the service development, we erase the border between the concepts of innovative imitation and open innovation.

So, the product is enhanced by the prospective customers, and at the same time their demand is formed implicitly. The development of the service in accordance with the selected model of the innovative process considerably decreases the costs, as it allows delegating decisions on selecting the necessary functions to the customer herself. As the result, the Customer Development methodology and the Japanese approach to the innovative process, the timeframe for the IT service development decreases, the quality of the product improves, and the prospective customers eagerly await the release of the product's new version.

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