Effects of Dynamic Packaging Systems on Travel Agencies: Case of Turkey

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Abstract

The purpose of this study is to evaluate the effects of dynamic packaging systems on A Class travel agencies. The survey is conducted with A class travel agencies from all regions of Turkey. The results of survey are analyzed through SPSS Statistics 18 program. 17 propositions are defined for expenses, revenues, contributions, system difficulties, general challenges and features of dynamic packaging systems. One sample T-test is used in order to accept or reject the propositions. It can be concluded that dynamic packaging systems have positive effects on the main products revenues like hotel and flight revenues, market position, the efficiency of operations, service/product range and supplier relationships, service quality and customer satisfaction.

Keywords: Tourism, Dynamic Packaging Systems, Online Travel Agencies

1. Introduction

Booking travel products over the Internet has been increasing in recent years. However, this is not an effective reservation process in terms of time, since products or services cannot be compared in a single Online Travel Agency (OTA) or website due to lack of sufficient information.

Dynamic Packaging (DP) can be defined as building of holidays from different travel products or services, bundled and priced in real time, in response to the demand of the traveller or travel agent (Cardoso, 2005). DP is preferred in the reservations of package holidays. Customers can create customized travel packages according to their preferences. The phrase is rarely used in the public literature on tourism web sites. Travel companies use more understandable phrases for customers like "Book Together and Save", "Create Your Own", or "Flight + Hotel", "Flight + Hotel + Car Rental", etc. (Lassnig and Markus, 2007) DP is often used incorrectly to define less complex process of interchanging various travel components within a package; however, this acitivity can be defined as "dynamic bundling" (Kohavi and Bar-David, 2006).

DP systems provide a wide range of product/service types and information such as photographs, videos, and travellers' comments. So travellers would build their trips from a single OTA or website.

In travel industry, DP is a business model applied mostly by OTAs. Travellers would combine different travel components and book in one reservation with the help of DP systems where they see only the total price of whole itinerary and make one payment. They would not see the individual rates of the travel components. DP systems assist travellers while building their trips according to travellers' preferences and past purchases (Cardoso and Lange, 2007).

Because of the reasons stated above, DP becomes an inevitable business model for the tourism industry. Consequently, major OTAs have launched their DP systems at the beginning of the twenty-first century. The DP transactions get the considerable ratio of the gross sales of those online companies.

Online travel products increase constantly (Jagersberger and Waldhor, 2008). All types of travel products and services are available on the Internet. On the other hand, bundling and packaging individual products and services are rarely presented. Rare packagings are limited to a combination of transportation and accommodation. In addition, there is lack of information about the quality of travel services and products (Jagersberger and Waldhor, 2008).

DP is a very crucial business model for the consumers in terms of time consumption and value-added products and services. This new business model will change the distribution of the revenues among the actors in tourism industry. So tourism companies like OTAs, tour operators, hotels should adapt their structure for DP systems in order to compete their rivals. These systems are not cheap and they require technology investments. The companies should know the impacts of DP on their profitability and productivity.

DP requires complex technology and organizational changes. It becomes a challenging ebusiness format in tourism industry. DP provides travel suppliers and customers with many advantages. It offers substantial advantages for both the supply and the demand side of the tourism value chain (Lassnig and Markus, 2007). Suppliers can present customized travel packages. They can solve over-capacity problem (Lassnig and Markus, 2007). By concealing individual prices, suppliers can avoid direct price competition. On the other hand, customers can reach cheaper and a personalized travel packages in realtime basis by the help of DP search engines. Customers can book many travel items in a one reservation process.

DP systems enable the automated accumulation of travel components based on the content of the package and conditional pricing rules based on different conditions such as travel features, suppliers contributing components, customer preferences, and sales terms (Kohavi and Bar-David, 2006). Another feature of dynamic packages that they are primarily sold online, but OTAs will also sell by phone owing to the strong margins and high sale prices of the product (Kohavi and Bar-David, 2006).

Customized travel packages put a pressure on traditional travel packages built by tour operators. DP systems have individual inventory management systems while ordinary packaging solutions have not (Lassnig and Markus, 2007). By the help of this inventory management system, DP systems combine multiple travel components in real-time on basis of distributed travel resources (Lassnig and Markus, 2007). An important difference between dynamic packages and traditional packages is about pricing. Dynamic packages are always based on current availability (Kohavi and Bar-David, 2006).

Consumers take advantage of DP systems by accessing DP systems 24 hours in a day. They can search and reserve travel packages whenever they are available. Service providers market and sell their products and services in a non-stop manner. DP systems provide service providers with rapid response to present changes in the market and coping with future demands (Murphy et al, 2006).

As Buhalis and O'Connor (2005) stated, customized packages facilitated by DP become popular while package tours are in decline. DP systems provide online travel vendors with differentiation capability and a strong competitive position. Gaining a new customer is an increasingly competitive and expensive process. The travel agents, airlines, tour operators, hotels and other service providers expand their inventory types via the dynamic packaging. The contemporary and connected consumer is not willing to wait or face with cancellations. Thus, the quick and accurate identification of consumer preferences become crucial to gain new customers and retain existing ones. Comprehensive, customized, and trendy products and services can satisfy the needs of customers (Buhalis and O'Connor, 2005).

Lassnig and Markus (2007) suggests that an analysis reveals that DP was predominantly preferred by large tour operators and OTAs that have wide operations with many service providers. These providers are able to combine and process large quantities of heterogeneous data and present real-time offerings (Lassnig and Markus, 2007).

Cardoso (2005) suggests that consumers can create customized holidays through DP systems that combine customer preferences with flights, car rentals, hotel, leisure activities and other travel products in a single price.

According to Romano (2005), one of the important benefits of DP is providing travel service providers with better branding opportunities and increased brand loyalty (customers' benefits are clear). Through DP systems, suppliers extend and improve their product and service range. They can present their products and services in detail and extend the content of their web-sites. Romano (2005) suggests that there is a possibility to apply mark-ups / discounts to individual products for travel suppliers.

Romano (2005) states that DP systems enable convenience and ease of use for customers. In package tours provided by tour operators, there is a fixed period and customer have limited choices. But in DP systems, customers set the start and end date of their travel. In addition, customers can search all products and services simultaneously and all travel items are completely live bookable. DP systems provide flexibility for customers. They evaluate and select the individual travel components that best suit their needs and travel wants (Romano, 2005).

In travel industry, the main obstacles for accomplishing added customer values are the insufficient implementation of new technologies and lack of technological standards. DP is an example for applications currently emerged which cannot be fully adopted due to lacking information infrastructure, intercomputable systems and the high cost of systems integration (Hakolahti and Kokkonen, 2006). Business system integration is required for the introduction of new types of business webs in travel industry. Business process analysis and development of common ontologies are necessary issues in tourism industry (Hakolahti and Kokkonen, 2006).

The implementation of DP systems require complex technology infrastructure for travel industry. In order to organize, plan, control and lead a large number of external suppliers, a DP system must be able to solve connectivity and interoperability problems of an enormous quantity of different data coming from various service suppliers (Lassnig and Markus, 2007).

Another challenge is that the organisational, financial and legal basis of the portal must be established in set-up phase of DP systems (Lassnig and Markus, 2007). As well as being an important opportunity that DP has considerable set-up challenges both in terms of technology interfaces to the proprietary systems and in terms of rebuilding business processes and business rules (Daniele et al., 2007). Selling tourism services online has been seen as a loss of management on their availability of rooms by many accommodation providers (Lassnig and Markus, 2007).

DP systems are not applied properly in Turkey. But in the near future, the application of DP model will become prevalent. No study could be found related to analysis of DP applications in Turkey. This study aims to guide the travel agencies in the decision of using DP model while observing the advantages and disadvantages of DP in terms of the profitability and the productivity in Turkey.

2. Methodology

The aim of this study is to analyze the effects of DP systems on travel agencies' by conducting a survey that consists of 20 questions. The survey is prepared in 7 parts: User demographics, Online Reservation Systems (ORSs) in use, travel agencies' expenses, travel agencies' revenues, contribution of DP sytems to the travel agencies' operations, general challenges of tourism information systems and DP systems, and difficulties experienced by the staff of travel agencies.

First part includes 10 questions that are related to descriptive information such as agency classes, technologies/systems in use, reservation principles, product/service range. Second part is related to ORSs in use. Third part consists of 16 statements that are related to the analysis of travel agencies' expenses. In the fourth part, there are 9 statements to analyze revenues of travel agencies. Fifth part consists of 8 statements to analyze contribution of DP sytems to the travel agencies' operations.

Sixth part is used to analyze the general challenges of tourism information systems and DP systems. Seventh part has 11 statements related to the analysis of the difficulties experienced by the staff of travel agencies. Parts 3 to 7 use five-point Likert scale ranging from 'strongly disagree' through 'neither agree or disagree' to 'strongly agree'.

2.1 Pilot Study

Corrections are made in the survey in accordance with the suggestions of travel agencies after a pilot study conducted with 6 travel agencies. "Online" word was changed as "Internet". Questions related to profit, turnover, and annual profit per customer reservations were removed from the survey, since travel agencies avoided responding such questions.

2.2 Population and Sampling

There are 5947 registered travel agencies including all class types in the TURSAB (Association of Turkish Travel Agencies) database. 5495 of them are A class travel agencies that are selected for sampling.

The contact information of all travel agencies could not be obtained from TURSAB and the Ministry of Culture and Tourism. In the database of TURSAB, e-mails of some travel agencies were missing. Therefore, the survey is sent to the e-mail addresses of 3599 travel agencies and only 1700 received the message. Survey is sent to those e-mail addresses two more times within six weeks. 81 responses are received from the travel agencies specifying approximately 5% as response rate.

2.3 Reliability Analysis

Firstly a reliability analysis is conducted for the Likert-scale questions where Cronbach's Alpha is found to be 0.87 (> 0.70) and it is concluded that reliability is sufficient.

2.4 Descriptive Statistics

All travel agencies use Internet and at least one computer system (desktop computers, laptop computers, PDAs, etc.) in their operations. There are various reservation channels like telephone, fax, e-mail, reservation form posted in a web-site, ORSs or Central Reservations Systems (CRS) / Global Distribution Systems (GDS). As a result of descriptive statistics, e-mail is the most preferred reservation channel.

Table 1. Frequencies of Reservation Channels Usage

Reservation Channel	Usage Frequency (out of 81)	%
E-mail	70	86.4
Telephone	65	80.2
Website reservation form	47	58.0
Fax	46	56.8
ORS	35	43.2
CRS/GDS	24	29.6

Many travel agencies use more than one reservation channel. Table 1 indicates that 86.4% of the travel agencies prefer receiving reservation by e-mail. And most of the travel agencies use telephone for booking. Approximately half of travel agencies prefer fax, web site reservation form and ORSs. Few travel agencies get involved in CRS/GDS for booking. The average of number of channels used by the travel agencies is about 4.

Table 2. Frequencies of Systems/Technology in Use

Technology in Use	Frequency (out of 81)	%
Website	77	95.1
Agency Management System	44	54.3
ORS	35	43.2
CRS/GDS	30	37.0

Another result is that website is the most preferred system. As shown in Table 2, 95% of the travel agencies have a website and 43% of them have an ORS. For the administration and reservation operations, 54% of the travel agencies use agency management systems. 65% of travel agencies use a website for more than 3 years.

Table 3. Frequencies of Travel Services

Travel Service	Traditional Service Frequency (out of 81)	Online Service Frequency (out of 81)
Hotel	75 (%92.6)	57 (%70.4)
Package Tour	67 (%82.7)	56 (%69.1)
Flight	66 (%81.5)	49 (%60.5)
Transfer	63 (%77.8)	35 (%43.2)
Activity	51 (%63.0)	36 (%44.4)
Car Rental	48 (%59.3)	30 (%37.0)
Cruise	44 (%54.3)	29 (%35.8)
Dining	35 (%43.2)	13 (%16.0)
Bus	34 (%42.0)	18 (%22.2)
Train	8 (%9.9)	5 (%6.2)
Other (Congress, etc.)	1 (%1.2)	0 (%0.0)

As indicated in Table 3, hotel, flight, package tour and transfer are preferred mostly for traditional services of travel agencies. Hotel is the most preferred one by approximately 93% . More than half of respondents sell activity, car rental and cruise to their customers.

As online travel services, hotel, flight and packaged tours are preferred mostly by travel agencies. Table 3 shows that hotel is also the most preferred one for online services by approximately 70%. Approximately half of respondents sell activity, car rental, transfer and cruise to their customers.

Table 4. Statistics of the Features of DP Systems

Travel Service	Mean (out of 5)	St. Dev.
Reserving more than one travel service	3.76	1.478
Proposing other travel services	3.82	1.290
Providing instant customized packages	3.47	1.581
Customers update packages online	2.62	1.688
Showing one price for travel packages	2.65	1.535
Discount in pricing of travel packages	3.48	1.372
Selection of start and end date of travel	3.94	1.301
Agencies update and expand of services	4.03	1.314

Eight features of DP systems are defined in the agency survey. According to Table 4, DP systems provide agencies with updating and expanding content of services.

Customers would select the start and end date of their travels. DP systems mostly propose other travel services and provide customers with reserving more than one travel service in one reservation process. On the other hand it cannot be said that customers would update travel packages online and the system indicates one price for the travel packages. 77.4% of travel agencies use one DP system in their businesses. Few travel agencies have two or more DP systems. DP systems are developed in-house in most of travel agencies. TravelSpike, Galileo-NeatAgent, Expedia, Orbitz DP, Amadeus are some of DP systems developed by outside vendors.

2.5 Propositions

17 propositions are stated related to the effects of dynamic packages on travel agencies. There are 4 propositions regarding expenses, 4 propositions regarding revenues, 6 propositions regarding contributions, and 3 propositions regarding general challenges. The propositions are listed in Table 5.

Table 5. One-Sample Test for the Propositions of the Travel Agency Survey

#	Proposition	t	Sig.	Result
P1	Increase in computer and technology expenses	2.947	0.006	Accepted (<0.05)
P2	Decrease in marketing, sales & labor expenses	0.604	0.550	Statistically Insignificant
P3	Decrease in secondary product & rental expenses	-0.651	0.520	Statistically Insignificant
P4	Decrease in unit costs, package tour expenses	1.264	0.217	Statistically Insignificant
P5	Increase in main product revenues	4.882	0.000	Accepted (<0.05)
P6	Increase in car rental revenues	0.972	0.341	Statistically Insignificant
P7	Increase in secondary product revenues	0.761	0.453	Statistically Insignificant
P8	Increase in package tour and cruise revenues	0.866	0.394	Statistically Insignificant
P9	Improvements in market position	6.933	0.000	Accepted (<0.05)
P10	Increase in efficiency of operations	3.308	0.002	Accepted (<0.05)
P11	Improvements in service/product range	6.539	0.000	Accepted (<0.05)
P12	Increase in service quality	7.155	0.000	Accepted (<0.05)
P13	Increase in customer satisfaction	4.971	0.000	Accepted (<0.05)
P14	Increase in cancelled reservations	-0.143	0.887	Statistically Insignificant
P15	Challenge in standardization of information	5.477	0.000	Accepted (<0.05)
P16	System and financial challenges	3.132	0.004	Accepted (<0.05)
P17	Organizational challenges	3.652	0.001	Accepted (<0.05)

3. Results

One sample T-tests are conducted for the testing of the propositions. The summary of the results are indicated in Table 5. 10 out of 17 propositions are accepted.

There is a significance difference in computer and technology expenses (0.006 < 0.05). Therefore, P1 "Computer and technology expenses of travel agencies increase after implementation of DP systems" is accepted.

Propositions P2 "Marketing and sales expenses of main products like hotel and flight and labor expenses of travel agencies decrease after implementation of DP systems", P3 "Secondary product expenses and rental expenses of travel agencies decrease after implementation of DP systems", and P4 "Unit costs, package tour expenses and communication expenses of travel agencies decrease after implementation of DP systems" are found to be statistically insignificant.

There is a significance difference in main product revenues (0.000 < 0.05). As a result, P5 "Main product revenues increase after implementation of DP systems" is accepted.

The results of P6 "Car rental revenues increase after implementation of DP systems", P7 "Secondary product revenues increase after implementation of DP systems", and P8 "Package tour and cruise revenues decrease after implementation of DP systems" turned out to be statistically insignificant.

There is a significant difference in the market position (0.000 < 0.05), the efficiency of operations (0.0002< 0.05), service/product range and supplier relationships (0.000 < 0.05), service quality (0.000 < 0.05), and customer satisfaction (0.000 < 0.05). Consequently, P9 "Market position of travel agencies improves after the implementation of DP systems", P10 "Efficiency of operations increases after the implementation of DP systems", P11 "Service/product range and supplier relationships improves after the implementation of DP systems", P12 "Service quality increases after the implementation of DP systems", and P13 "Customer satisfaction increases after the implementation of DP systems" are accepted.

P14 "The ratio of cancelled reservations increases after the implementation of DP systems" is found to be statistically insignificant.

There is a significant difference in the challenge in standardization of information ($0.000 < 0.05$), organizational challenges ($0.001 < 0.05$), and system-financial challenges ($0.004 < 0.05$). Hence, propositions P15 "Travel agencies encounters challenges in standardization of information", P16 "Travel agencies encounters organizational challenges", and P17 "Travel agencies encounters system and financial challenges" are accepted.

4. Discussion

Developing or purchasing DP systems requires high investment. So travel agencies should evaluate returns and costs of DP systems carefully. Technology expenses become one of the highest expenses of travel agencies. If travel agencies purchase DP systems, they should pay for the product of DP systems and support for the system. If travel agencies develop DP sytems in-house, they should invest in IT department. These statements are inline with the acceptance of proposition "Computer and technology expenses of travel agencies increase after implementation of DP systems".

Jagersberger and Waldhor (2008) state that online travel products increase constantly. As noted by Buhalis and O'Connnor (2005), customized packages facilitated by DP become popular, while package tours are in decline. Since customers would prefer dynamic travel packages, the hotels and flights sales of travel agencies that implements DP systems should increase. Acceptance of proposition "The revenues of main products like hotel and flight increase after implementation of DP systems" is inline wth the literature. It can be said that the profitability of travel agencies may increase by the use of DP systems.

DP systems can create a competitive advantage for travel agencies, since it is not so prevalent yet and travel agencies as first users of DP systems could become market leaders in terms of dynamic travel packages. Travel agencies could increase their competitiveness and market share. Murphy and friends (2006) state that DP systems provide service providers with rapid response to present changes in the market and coping with future demands. This literature is in support of the acceptance of proposition "Market position of travel agencies improves after the implementation of DP systems". It can be said that the performance of travel agencies may increase by the use of DP systems.

DP systems would facilitate the operations of travel agencies. Every transaction about products/services like availability and stock data could be recorded in DP systems. The statement "OTAs are able to combine and process large quantities of heterogeneous data and present real-time offerings" of Lassnig and Markus (2007) supports the acceptance of proposition "Efficiency of operations increases after the implementation of DP systems". It can be said that the performance of travel agencies may increase by the use of DP systems.

In DP systems, there are various products and vendors. Management of these services/products and vendors are very critical. DP systems enlarge supplier network and increase supplier satisfaction. In addition, DP systems create unique and customized travel packages for customers, there are numerous services/products. DP systems provide online travel vendors with differentiation capability by improving service/product range. Furthermore, Romano (2005) states that through DP systems, service providers extend and improve their product and service range. This is inline with the acceptance of proposition "Service/product range and supplier relationships improve after the implementation of DP systems".

DP systems provide predefined rules for travel agency business. Many operations such as preparing vouchers, searching products and making comments can be performed online by customers. This backs up the acceptance of proposition "Service quality increases after the implementation of DP systems".

DP systems record the customer data and customer preferences are analyzed continuously. In order to satisfy the customers, customized campaigns and discounts can be easily prepared by the system. Cardoso (2005) mentions that DP systems may increase customer satisfaction. He suggests that consumers can create customized holidays through DP systems that combine customer preferences with flights, car rentals, hotels, leisure activities and other travel products in a single price. This statement also supports the acceptance of proposition "Customer satisfaction increases after the implementation of DP systems".

Tourism industry has general challenges like non-standardized information, incompatible software systems and so on. Lassnig and Markus (2007) state that DP systems require complex technology and organizational changes. In addition, Cardoso (2005) proposes that one of the challenges to develop DP systems is to find a solution to cope and integrate the non-standard way of defining e-tourism products and services. According to Hakolahti and Kokkonen (2006), DP cannot be fully adopted due to lacking information infrastructure, intercomputable systems and the high cost of systems integration. Proposition "Travel agencies encounter challenges in the usage of DP systems" is supported the the above literature.

It can be summarized that, travel agencies should evaluate the possible contributions of DP systems to their organizations in order to validate the expensive investment of DP systems. They should search the alternatives of DP providers in order to assess the price of DP systems. According to the results of this study, travel agencies can implement DP systems to increase their hotel and flight revenues. This study also indicates that, there is an opportunity for travel agencies to improve their market positions. DP system may become a core competency if it is implemented before competitors and managed properly. Another implication is that the execution of daily operations becomes more regular and efficient by DP systems. Furthermore, travel agencies can enlarge their product/service range by the help of customized travel packages that are built by the system after customers' request and increase customer satisfaction. On the other hand, travel agencies should find ways for coping with the challenges in the implementation and execution of DP systems. Those challenges are non-standardized tourism information, incompatible software systems and insufficient connectivity of systems. Moreover, travel agencies might be forced to make changes in their organization with the implementation of DP systems.

In terms of the limitations of the study, the sample size of 81 travel agencies were relatively small. The reason may be the collection time of the survey being the high season for the travel agencies.

The effects of DP systems on the performance of customers, car rental companies, activity providers, cruise lines, airlines or restaurants and the effects of DP systems on profitability and productivity of car rental companies, activity providers, cruiselines, airlines or restaurants could be further research topics.

References

Buhalis, D., O'Connor, P. (2005). Information communication technology revolutionizing tourism. Tourism Recreation Research, 30(3), 7-16.

Cardoso, J. (2012). E-Tourism: Creating Dynamic Packages using Semantic Web Processes. [Online] Available: http://www.w3.org/2005/04/FSWS/Submissions/16/paper.html (October 16, 2012).

Cardoso, J., Lange, C. (2007). A framework for assessing strategies and technologies for dynamic packaging applications in e-tourism. Information Technology and Tourism, 9(1), 27-44.

Daniele, R., Frew, A.J., By, R.T. (2007). Tour operators in an ebusiness world: The challenge of change. Information and Communication Technologies in Tourism 2007, 207-218.

Hakolahti, T., Kokkonen, P. (2006) Business Webs in the Tourism Industry. Information and Communication Technologies in Tourism 2006, 453-462.

Jagersberger, A., Waldhor, K. (2008) Dynamic packaging using a cluster-based demographic filtering approach. Information and Communication Technologies in Tourism 2008, 186-197.

Kohavi, I., Bar-David, Y. (2006). Method and apparatus for the composition and sale of travel-oriented packages. [Online] Available: http://www.freepatentsonline.com/7136821.html (October 16, 2012).

Lassnig, M., Markus, M. (2007) e-Business W@tch in the Tourism Sector. Information and Communication Technologies in Tourism 2007, 447-456.

Murphy, J., Schegg, R., Qiu, M. (2006). An investigation of consistent rates across Swiss hotels' direct channels. Information Technology and Tourism, 8(2), 105-119.

Romano, A. (2005) Dynamic Packaging as a strategic solution for the future of European mass-market tour operators: The example of the Swiss and Dutch markets. [Online] Available: http://du.se/PageFiles/5052/Romano%20Anna%20.pdf (October 16, 2012).