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ADVANCES IN GLOBAL SERVICES AND RETAIL MANAGEMENT

Editors

Dr. Cihan Cobanoglu

Dr. Valentina Della Corte

Co-Editors

Dr. Cihan Cobanoglu, University of South Florida, USA
Dr. Valentina Della Corte**,** University of Naples Federico II, Italy

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All Aboard! Is Space Tourism Still a Fantasy or a Reality: An Investigation on Turkish Market

Emrah Taşarer, Vahit Oğuz Kiper, Orhan Batman, and Oğuz Türkay

Faculty of Tourism
Sakarya University of Applied Sciences, Turkey

Abstract

This paper aims to investigate the spending limit of space enthusiasts in Turkey. To determine this, space tourism activities are divided into 3 sections as earth-based space tourism activities, suborbital and orbital space tourism activities. Data were collected through one of the biggest open-air events held yearly by space enthusiasts. In addition to that, researchers reached social media groups which are solely focused about space tourism. 1041 questionnaires were collected which are available for analyses. According to additional variables about interest on space tourism, the sample of this research is highly interested in space tourism although they have limited budget for space tourism activities due to currency difference in Turkey and international market.

Keywords: space tourism, Turkish market, spending limits

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Introduction

Space travels have long been a dream for human kind just as exploring the whole earth and even exploring under the oceans. Humanity succeeded 2 of 3 and are trying to reach limits of sky for a while. Nothing is enough for human's everlasting curiosity, and the race to be the first to be the conqueror drives mankind into the dark mysterious space.

Space tourism today is not an extraordinary phenomenon since this achievement is already reached and many practical and theoretical researches are ongoing about this topic. However, there are still many blank spots in this field that needs to be filled for better and more accurate developments. Many of researches about space tourism focus on engineering section of this complex process and biological aspects since human kind is used to live in common environment of earth and has limited information about the environment of dark and silent outer space. Also, there are some issues to be resolved about space laws due to there is no certain borderlines in space yet.

Space tourism researches mainly focus about theoretical framework of this topic and try to find answers about: How? By who? At what cost? What prices? etc. Many might still feel space tourism is a little forced fantasy that comes out of sci-fi comic books but same prejudice occurred about exploring the earth or flying daily by planes above earth.

For an accurate planning and implication, all circumstances must be well explored and defined as much as possible. There should be no blind spot for stable variable such as space physics and

ongoing researches must be done to enlighten tourist behavior which acts as dynamic variable. This paper aims to understand spending limits of Turkish space enthusiasts to fulfill the gap in literature. Turkey is not defined as a space country yet but it can be argued that there are more than enough space enthusiasts getting together in open air events and discussing in social media platforms that made it possible for this research to gather the data by a large portion of sample.

One misunderstood subject about space tourism is that perceiving space tourism as only an effort of travelling far away from the atmosphere of the earth and even reaching beyond orbit like an interstellar journey. However, space tourism activities do include orbital and suborbital flight and even activities on earth surface. This is why this paper investigates spending amount on 3 sections (orbital, suborbital and surface space tourism activities) of space tourism. For example, Cater (2010) brings this discussion one step forward as using the term astro-tourism while describing it as a form of special interest sky-related tourism activity. By that emphasis, it could fit to order space tourism activities from basic to much more realistic and experience-based as: computer simulations, immersive simulations like zero gravity experiences, suborbital flights, orbital flights and interstellar journeys. Supporting that, Laing and Crouch (2004) define space tourism activities into categories as virtual, terrestrial, near-space, sub-orbital, low-orbital and high-orbital. Collison and Poe (2013) also state that space related tourism activities are all about physical space combined of earth and universal sky.

This paper has a narrow focus by solely focusing on space tourism market in Turkey with additional information about interest level of target participants. In theoretical parts, main aspects of space tourism and its brief story from being only governmental researches into privatization for both industrial and common use are represented.

Space Tourism and Aviation Through Space

An important milestone was reached in 1903 with Wright Brothers who successfully managed to fly with a heavy flying machine in Kitty Hawk, North Carolina. Later then mankind never stopped trying to fly above earth to join into world of birds and much higher into the space (Webber, 2013). However military needs played a more important role for flying and different variations of planes developed during 1st World War. Likewise, 2nd World War led to development of rockets and rocket science which was developed for tremendous damage to enemies in war zone in the first place but later these inventions were used for peaceful reasons such as aviation and finally for space discoveries.

Indeed, rockets are not really futuristic devices, in fact they were developed by Germans in 1940s and in 1942 first rocket reached limits of sky by leading of Walter Dornberger (Collins & Autino, 2000). Not much later than that, Russian Sputnik 1 in 1957 reached another milestone as first voyage of mankind into the space (Webber, 2013). Spector and Higham define this breakthrough as the dominance of humankind reached beyond earth into space with Sputnik 1 reached out of biosphere (Spector & Higham, 2019).

First suborbital manned flight flew in 1960s with X-15 shuttle carried by a B-52 plane by North American Aviation (Ziliotto, 2010). However, in the name of space tourism, biggest achievement was Dennis Tito traveled to orbital space with Soyuz in 2001 (Collins, 2006) even though some say it was dated back to 1990 when Japanese journalist Toyohiro Akiyama's travel occurred

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(Webber, 2010). Space tourism activities usually mean travelling to orbital space journeys which is believed to begin with Tito's 20 million $ worth of travel and later followed by Shuttleworth in 2002, Olson in 2005, Ansari in 2006, Simonyi in 2007 & 2009, Garriott 2008 and Laliberte in 2009 (Dunk, 2001).

Space tourism can be defined as a revolution to access for humanity into dangerous and mysterious deep space (Dunk, 2001). Looking to earth from above is an amazing dream for astronauts and cosmonauts during their one-day travel through the orbit of the earth while glances of stars and the moon salutes them (Bukley, 2000). However, this experience is not only dreamt by astronauts, many people wish to have a look to earth out of atmosphere to see it as a blue globe (Wilson, 2019) and lots of astronauts indeed state that viewing the earth from above was the most outstanding experience that they ever had (Spencer, 2004).

Today, children and teenager find space and space travel topics quite interesting and fascinating. Space based science fiction movies and tv-series take greater attention than before (Collins & Autino, 2000). Movies like Interstellar, The Martian, Gravity and Jupiter Ascending fired up the interest towards space travel. Bensoussan says space travels are pretty much nothing like regular flights in earth. Physical and physiological effects on passengers, environment out of vehicle and danger perception of travelers are main differences than regular flights (Bensoussan, 2010).

In a detailed research by Chang and Chern, they discussed prominent ups and downs of milestones of space adventures. They point that even one down is highly and negatively effective on perception and attitude towards space travels just like failure of Challenger while launching and crashing of Space Shuttle 2 during test flight (Chang & Chern, 2016). For sustainable and realizable suborbital space flights, there needs to be some improvements which focus on safety of space journeys. This simply has to be 100 times safer than regular commercial flights (Loizou, 2006). Even some developments have been achieved so far about this, some catastrophic and minor accidents such as Scaled Composites disaster and Challenger and Columbia failures still are a barrier to space travels (Bensoussan, 2010).

Another idea for the future of space travels is PTP or P2P (point to point) type of travels would be more realistic and a sustainable market (Peeters, 2010). According to Peeters, suborbital flights would reach maximum profitability after 5-7 years of operation and the author agrees that P2P flight would be suitable and sustainable for long term (Peeters, 2010). There are 3 main steps to accomplish for the success of space tourism: generating a common awareness and interest towards space tourism, developing sustainable and durable vehicles for suborbital flights and finally doing the same for orbital space flights (Goelich, 2005). As researchers stressed out, economical failures might be disastrous for space tourism as physical failures do.

Privatization of Space to Commercial Space Flights

Checking weather status (if any) of the Moon for the weekend, packing your bags, preparing sunscreen spray (need an extra effective one) and heading to the Moon as a weekend family trip since it is privatized to travel through space. Wish it was that simple, but not. Nevertheless, privatization of space travels brought many opportunities for space tourism development.

Earlier space explorations and journeys were funded by governments with seemingly unlimited budgets (Strickland, 2017). Governments such as NASA of USA, ESA of European Union and ROSCOSMOS of Russia held control of space discoveries for a long time but today they let private sector involve more and more for mostly economic reasons. First of all, space digging is not profitable in short term like searching for gold or oil since space is immeasurably large. Second, the technology investment for space exploring is tremendously high. This is why governments decided to let private entrepreneurships to take their own risk about investing into deep space while they aid scientific discoveries with their efforts.

In last decade, both USA government and private companies gave effort for privatization of space while they might have different opinions about that but still they agree this effort would bring new opportunities (Beery, 2012). After 2000, space economy and industry began to grow rapidly with the aid of private investments and efforts (Benjamin, 2018). Withdrawal of government control from space also led some space enthusiast billionaire like Elon Musk (Space X), Richard Branson (Virgin Galactic), Jeff Bezos (Blue Origin) to dive into market (Spector & Higham, 2019). In time, suborbital space flight became dependent on private companies and their investment (Ziliotto, 2010).

Collins state that leaving control of space explorations only to governments caused these efforts to remain slow since government institutions had no trouble about money flow no matter how long it takes to complete a project or a research (Collins, 2001). In 2004, a private company named Scaled Composites won Ansari-X prize without any government fund which is an important breakthrough that shows private businesses might do as well on their own about space efforts. Travelling into space 2 times in 2 weeks, Space Shuttle One gained and iconic role with that achievement (Beery, 2012). In Space privatization era, new space travel agencies begin to occur with their re-usable space shuttles like Lynx Rocket Plane of XCOR Aerospace, Space Ship Two of Virgin Galactic, Dragon Space Craft of Space X, Skylon Spaceplane of Reaction Engines and Phoneix of EADS (Forganni, 2017). Private aviation companies dived into aviation industry and served the product of "flying" to rich people with planes. Firms like Ryanair developed this process one step further with much greater number of flights with cheaper costs and made "flying" more reachable. Space tourism stands in the first step of this same process (Crouch, Devinney, Louviere, & Islam, 2009).

Despite all developments about privatization of space industry which mainly contain building and developing space crafts, marketing it and insurance, there are still a strict government control on some aspects which is believed to be necessary such as jurisdiction and space laws (Dunk, 2001). Also, privatization does not necessarily mean a complete withdrawal of governments from space efforts. As an example, Forganni points that European Commission's Space Strategy of 2011 does not emphasis space tourism as a priority but stress out that government should make administrative regulations for the order of private investments (Forganni, 2017). There are also current debates by professionals about protecting space environment against over using which might require some arrangements and regulations (Williamson, 2003).

Materials and Method

This paper is built as an exploratory research to discover target information by target sample. The universe of this research is all space enthusiasts in Turkey. Researchers reached 1041 participants

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from June, 2019 to September, 2020 in one national mega event (4th Sky and Science Festival of Olimpos) held yearly while attracting hundreds of space enthusiasts from all over the country for space observations and discussions about space. In addition to that, researchers reached to some social media groups and profiles which are solely interested in space tourism and events precisely and asked them to share the survey form with their followers. Previously, Kozak (2001) adopted a similar methodological approach to measure tourists' spending and its determinants in his study. There are also several more researches adopting similar approach to aim to determine spending behaviors of tourists (Tang and Turco, 2001; Saayman, Saayman and Rhodes, 2001). The questionnaire included 4 questions about demographics to define target sample, 1 question about their total spending for a holiday, 3 questions for their interest and knowledge levels about space tourism to test accuracy of the sample choosing and 4 questions to directly measure their spending limits about space tourism events both in and out of earth. Nominal, ordinal and scale-shaped questions are used together for a better understanding and measuring of participants' answers.

Researchers preferred Turkish Lira as currency since participants are Turkish and not to cause ambiguity for them while attending surveys. This is why there is no round figures when changing values into American Dollars. Also, since foreign currency is quite changing in Turkey, values pointed by participants would lose its validity if Dollar was preferred directly in survey.

Results and Discussion

Table 1 demonstrates demographic status of participants. Looking at the table, number of male participants seems 1,5 time higher than female ones. According to age section of the table, half of the attendants place in 19-30 age group which can be discussed as majority of the participants and space enthusiasts are relatively young people.

Table 1. Demographics of Participants

Characteristic		Frequency	Percent	Valid Percent	Cumulative Percent
Gender					
Valid	Female	414	39,8	39,8	39,8
	Male	627	60,2	60,2	100,0
	Total	1041	100,0	100,0	
Age					
Valid	0-18	170	16,3	16,3	16,3
	19-30	537	51,6	51,6	68,0
	31-49	301	28,9	28,9	96,9
	49-60	29	2,8	2,8	99,7
	65 and above	3	,3	,3	100,0
	Total	1040	99,9	100,0	
Missing	System	1	,1		
Total		1041	100,0		
Monthly Income					
Valid (Turkish Liras)*	0-2000 (0-348$)	433	41,6	41,9	41,9
	2001-4000 TL (349-696 $)	218	20,9	21,1	63,0
	4001-8000 (397-1393$)	256	24,6	24,8	87,8
	8001 and above (1393$ and above)	126	12,1	12,2	100,0
	Total	1033	99,2	100,0	
Missing	System	8	,8		
Total		1041	100,0		

**1 American Dollar is equal to 5.74 Turkish Liras at the moment when data collection process ended.*

There are only 3 participants (%0.3) which represents “65 and above” group. To come to a conclusion as elderly has no interest in space tourism might be inaccurate since the data of this research are gathered by an open-air event, and through special interest social media channels and it is not surprising not to encounter great number of elder people in such an event or in social media platforms.

Minimum wage is 2,334 TL/month according to laws in Turkey and still, %41,9 of participants state they have 0-2000TL monthly income which might tell that they are students, part-time employees or unemployed. This is arguably one weakness of the sample because one cannot be expected to spend for space tourism unless having enough for mandatory needs.

Table 2 shows about participant’s interest and acknowledge levels about space tourism activities. This statistic which is prepared by frequency analysis is important for the accuracy of the sampling. Mean values of these 4 variables are taken into consideration for a better view. About the interest through space activities and astronomy, mean value of responds is 7,68 which can be approved as acceptable level of interest towards space activities. Earth surface space tourism activities variable has a mean value of 5,48 and suborbital tourism activities variable has a mean value of 5,13 and orbital tourism activities has a mean value of 5,84. These three scores are relatively lower than the one about interest level score about space tourism and astronomy. This result must ring the bell for practitioners and planners because it’s clearly a sign that interest level of space tourism enthusiasts is higher than their acknowledgement and they lack of information about what is going on in the name of space tourism.

In Table 3, definitely the most important part of findings, show the spending limits of participants in Turkey. One important fact that manipulates values in dollar currency is that there is an important difference between values of Turkish Lira and American Dollars (1$ was equal to 5.74 TL at data collection time). However, considering the situation of international space tourism market, Turkish potential space tourists are obligated to spend as much as their budget in dollars value. There is an interesting point in spending limits of earth-based space activities that %20.8 of attendants state they would not spend anything for this purpose. It is a finding that requires further investigation but majority of these respondents might ignore or simply are not interested in earth-based space tourism activities. One another fact about this category of space tourism that Turkish potential space tourists are not willing to spend much as it can be seen in table and majority of respondents cluster in low value intervals.

Looking at the responds to variable about spending limits for suborbital space tourism activities, %25.8 of participants responds stating “none” which actually conflicts with responds earlier about interest towards space tourism. Possible reasons for that will be discussed next part of this paper. Just like previous section, respondents cluster in lower intervals of spending values for suborbital space tourism activities stating only %7.5 of them are willing to spend 15,001 TL (2,614$) and above.

According to responds about orbital space tourism spending section, %40,1 of participants chose “none” and this might be understood by the income level of participants and high cost of orbital tourism activities. Nevertheless, %5.8 of participants state they are ready to spend 5,000,001 TL (871,081 $) and above which might take them into the orbital space according to how high they can spare for it. %29.1 of participants in total are willing to spend more than 50,000 TL (8,710 $)

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for orbital space tourism activities which is considered as a luxury and expensive tourism spending. However, the high value of dollars might let them down to take action to participate in an actual shuttle through the orbit of the earth.

Table 2. Acknowledge and Interest Levels of Participants About Space Tourism Events and Activities

How do you describe your interest on space activities and astronomy? 1= Have no interest at all, 10=Completely interested, fan					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	3	,3	,3	,3
	2,00	14	1,3	1,3	1,6
	3,00	19	1,8	1,8	3,5
	4,00	35	3,4	3,4	6,8
	5,00	73	7,0	7,0	13,9
	6,00	96	9,2	9,2	23,1
	7,00	199	19,1	19,2	42,3
	8,00	233	22,4	22,4	64,7
	9,00	113	10,9	10,9	75,6
	10,00	254	24,4	24,4	100,0
	Total	1039	99,8	100,0	
Missing	System	2	,2		
Total		1041	100,0		
How do you describe your acknowledgement level about space tourism activities on earth surface (Space observations, space simulations, space trainings, space camp, space museums etc.) 1= Have no idea and, 10=Completely aware and have knowledge					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	78	7,5	7,5	7,5
	2,00	70	6,7	6,7	14,2
	3,00	114	11,0	11,0	25,2
	4,00	113	10,9	10,9	36,0
	5,00	153	14,7	14,7	50,7
	6,00	114	11,0	11,0	61,7
	7,00	141	13,5	13,5	75,2
	8,00	131	12,6	12,6	87,8
	9,00	58	5,6	5,6	93,4
	10,00	69	6,6	6,6	100,0
	Total	1041	100,0	100,0	
How do you describe your acknowledgement level about space tourism activities on suborbital space (flights and travel without leaving earth's orbit in and out of atmosphere) 1= Have no idea and, 10=Completely aware and have knowledge					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	117	11,2	11,2	11,2
	2,00	95	9,1	9,1	20,4
	3,00	108	10,4	10,4	30,7
	4,00	116	11,1	11,1	41,9
	5,00	149	14,3	14,3	56,2
	6,00	91	8,7	8,7	64,9
	7,00	132	12,7	12,7	77,6
	8,00	119	11,4	11,4	89,0
	9,00	54	5,2	5,2	94,2
	10,00	60	5,8	5,8	100,0
	Total	1041	100,0	100,0	
How do you describe your acknowledgement level about space tourism activities on orbital space ? (Travels to out of earth's orbit, interstellar or interplanetary journeys) 1= Have no idea and, 10=Completely aware and have knowledge					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	81	7,8	7,8	7,8
	2,00	84	8,1	8,1	15,9
	3,00	88	8,5	8,5	24,3
	4,00	87	8,4	8,4	32,7
	5,00	116	11,1	11,1	43,8
	6,00	97	9,3	9,3	53,1
	7,00	151	14,5	14,5	67,6
	8,00	136	13,1	13,1	80,7
	9,00	96	9,2	9,2	89,9
	10,00	105	10,1	10,1	100,0
	Total	1041	100,0	100,0	

Table 3. Spending Limits of Participants for Space Tourism Activities

How much budget would you spare for earth based space tourism activities?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid* (Turkish Liras)	None	217	20,8	20,8	20,8
	0-100 (0-17$)	67	6,4	6,4	27,3
	101-500 (18-87$)	297	28,5	28,5	55,8
	501-1,000 (88-174$)	144	13,8	13,8	69,6
	1001-2,000 (175-348$)	124	11,9	11,9	81,6
	2,001-4,000 (349-696$)	85	8,2	8,2	89,7
	4,001-8,000 (697-1,393$)	12	1,2	1,2	90,9
	8,001 ve üstü (1,394$ and above)	95	9,1	9,1	100,0
	Total	1041	100,0	100,0	
How much budget would you spare for suborbital space tourism activities?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid * (Turkish Liras)	None	268	25,7	25,8	25,8
	0-500 (0-88$)	118	11,3	11,4	37,2
	501-1,000 (89-174$)	146	14,0	14,1	51,2
	1,001-2,000 (175-348$)	122	11,7	11,7	62,9
	2,001-4,000 (349-696$)	129	12,4	12,4	75,4
	4,001-8,000 (697-1,393$)	105	10,1	10,1	85,5
	8,001-15,000 (1,394-2,613$)	73	7,0	7,0	92,5
	15,001 ve üstü (2,614 $ and above)	78	7,5	7,5	100,0
	Total	1039	99,8	100,0	
Missing	System	2	,2		
	Total	1041	100,0		
How much budget would you spare for orbital space tourism activities?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid* (Turkish Liras)	None	417	40,1	40,1	40,1
	0-50,000 (0-8,710$)	320	30,7	30,8	70,9
	50,001-100,000 (8,711-17,421$)	133	12,8	12,8	83,7
	100,001-500,000 (17,421-87,108$)	56	5,4	5,4	89,1
	500,001-1,000,000 (87,109-174,216$)	36	3,5	3,5	92,6
	1,000,001-5,000,000 (174,217-871,080$)	17	1,6	1,6	94,2
	5,000,001 ve üstü (871,081$ and above)	60	5,8	5,8	100,0
	Total	1039	99,8	100,0	
Missing	System	2	,2		
	Total	1041	100,0		

**Dollar type of values are round to "+1" to avoid to coincide of values which comes consecutively*

Table 4 gives and edge to enlighten why some participants do not wish to spend for space tourism activities, although mostly they state they are interested in space tourism activities. Table 4 does not directly represent the responses of attendants who do not spend anything at all to 3 sections of space tourism (earth based, suborbital and orbital) but instead responds of attendants who state not to spend 2 of 3 of space tourism activities. In addition to ones who do not spend anything at all, this table helps to understand why participants do not spend "more". Leading reason to hold off

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space enthusiasts from spending is economic reasons which they do not make enough money or they can't afford the price of a ticket of a space shuttle in international market. This is a well expected finding since tickets of a seat in a spaceship are not sold in a regular travel agency in every corner.

Table 4. Respondent's Reasons for Not Spending

What is the reason for no spending for space tourism activities?					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Missing	704	67,6	67,6	67,6
Valid	Economic Reasons	249	23,9	23,9	91,5
	Different Priorities	46	4,4	4,4	96,0
	Health Conditions	6	,6	,6	96,5
	Safety Concerns	22	2,1	2,1	98,7
	Other	14	1,3	1,3	100,0
	Total	1041	100,0	100,0	

**Responds that include stating "none" to at least 2 of 3 to spending variables are taken into consideration.*

There are quite researches in literature concerning about safety of space travels. Nevertheless, according to results, potential tourists of space tourism are not highly worried about this fact, or they might just do not know enough about this subject which requires another deep and detailed research. Alike that fact, health conditions for not spending for space tourism represents only %0.6 of participants which shows either these space enthusiasts, who are mostly young, trust themselves on their health condition or they are not really aware of health issues and conditions of going through hundreds of kilometers away from earth ground. Marsh (2006) pointed medical difficulties and handicap of space travel in her research. One other possibility for low results of safety concerns and health conditions might be that earth-based space tourism activities do not pose a real threat about safety or neither require solid health conditions and participants might be well aware of that.

Conclusion

Space tourism already evolved into reality from a fantasy and humanity has begun to explore into deep space with ever-advancing equipment. It has been almost 2 decades since first space tourist travelled into space to see the earth like a globe while enjoying zero gravity conditions. However, this experience is still very rare and only lucky a few have the chance to travel beyond our atmosphere. Because of that, space tourism products and experiences diversified in recent years such as suborbital flights and earth-based activities. Many space enthusiasts attend festivals, training programs, space observations and special events to experience this dream-like reality as much as they can.

Turkey setup its Space Agency officially in 2020 with a 24.5 million $ budget and started its first program to explore space which was an exciting development for all the space enthusiasts in Turkey. However, Turkey has a long way ahead for building launch bases or space craft or even for a suborbital flight. This is why the demand for space tourism in the country is highly dependent to international supply of space tourism since heavy investment will take some time. This is why it is important to investigate spending limits of space enthusiasts in Turkey to shed a light to both foreign and domestic investors and decision makers.

Comparing to international market, results show that Turkish space enthusiasts have limited and relatively low budget for especially suborbital and orbital space tourism activities. One major reason for that is the low value of Turkish Lira against American Dollar. Nevertheless, results

show that earth-based space tourism supply is likely to find enough demand and spending limits in domestic market with national currency. It is important to build space awareness on society to create new potential space tourists and to increase demand. For that reason, earth-based activities might be a good way to start with reasonable costs.

An unexpected finding shows that the interest level of space enthusiasts in Turkey is higher than their level of knowledge which causes a "postponed demand" situation that needs to be taken into consideration. Potential demand related to inadequate purchasing power is one other issue that has no solution in short term but planners and policy makers in both international market and in domestic market should focus on reaching to space enthusiasts in Turkey.

This paper has some limitations such as ignoring well-being levels of participants for choosing sample while most of researches with similar aim prefer to focus on rich because space tourism activities are highly expensive. On the other hand, this paper does not focus the rich but target to determine spending limits of space enthusiasts in Turkey. Also, motivation factors are not the subject of this paper and further researches are needed to fill the gap in literature about Turkish market. Ashford (2007) questioned the commercial possibilities and opportunities about space while not necessarily focusing on space tourism, rather highlighting it as a commercial market opportunity. Webber states detailed market research is necessary to establish the market for P2P or suborbital flights just like Futron/Zogby research and Adventurer's Survey (Ziliotto, 2010). On motivation side, Reddy, Nica and Wilkes (2012) found out by their research that %66.6 of potential space tourists state seeing the earth from skies is a highly important factor for a space travel, %69.9 of them state contributing to scientific knowledge is less important and %43 of them state that having an extraordinary experience is highly important (Reddy, Nica, & Wilkes, 2012). Researches that focus market demand or motivation factors just like these two mentioned would complete the gaps in literature about Turkish market to fully understand the current situation.

While orbital space flights are considerably highlighted section of space travel as a shining star, there are only few options to choose. However, when it comes to sub-orbital flights and earth-based activities, there are numerous options with different locations and different experience offers and this prevents authors to gather a consistent set of data including prices of suborbital or earth-based space tourism activities. This also prevents authors to compare those prices with the data gathered by authors about the spending limits of possible space tourism participants.

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