

Seminar Component

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Title of Paper

Digital Survey Approach for Tourism Statistics

Abstract

Recently, BPS-Statistics Indonesia has been implementing Mobile Positioning Data (MPD) for international visitors arrival in cross-border areas as a complement for official data. Unfortunately, information about expenditure cannot be obtained from Immigration data or MPD. BPS therefore started using a digital survey for Passenger Exit Survey (PES) in 2018. In collaboration with one of the biggest Mobile Network Operator (MNO) in Indonesia, BPS conducted the digital survey using the MNO's wi-fi service in International Arrival and Departure lounges. This resulted in gaining information about the percentage of international visitors' expenditure and the main purpose of visit, indicating that such digital surveys could be conducted with gains in cost efficiency, timeliness, and more coverage.

Keywords: Digital Survey, PES, International Visitor

Scroll down to page 2 and 3 for more paper format information.

I. Contents

I. Contents	2
II. Introduction	2
III. Collecting Tourism Data Using Digital Survey	4
A. Digital Survey Procedures	4
1. Data Collection	4
2. Questionnaire	5
a) International Arrival	5
b) International Departure	6
3. Data Tracking	8
B. Results	8
1. Percentage of international visitors' expenditure in Indonesia	8
2. Percentage of main purpose of visit in Indonesia	9
C. The Evaluation of Digital Survey	9
1. Critical reflection	9
2. Integrated Tourism Statistics	12
3. Plans and user perspectives	13
4. Partnerships with the private sector	14
IV. Conclusion	14
V. References	15

II. Introduction

Recently, BPS-Statistics Indonesia has been implementing Mobile Positioning Data (MPD) for international visitors arrival in cross-border areas as a complement for official data. Unfortunately, information about expenditure cannot be obtained from official Immigration data and MPD. As a result, this incompleteness of information has been an issue. In order to meet data needs, BPS has started using a digital survey for Passenger Exit Survey (PES) to complete the information gathered from official Immigration data.

Providing tourism data is very essential because tourism has a multiplier effect on other sectors, particularly it can be seen in Sustainable Development Goals (SDGs). The

contribution of tourism can be directly or indirectly to all goals, specifically it has been included in Goals 8, 12, and 14 on inclusive and sustainable economic growth, sustainable consumption and production (SCP) and the sustainable use of oceans and marine resources (UNWTO, 2015). In order to achieve this targets, better quality of data is needed to monitor and evaluate the sustainable tourism in the 2030 Agenda.

Nevertheless, National Statistical Offices have some problems to provide statistical data that are in accordance with the principles of official statistics. Although MPD can provide faster data collection, MPD cannot provide more detail data. In addition, if National Statistical Offices pursue a paper-based survey to complete MPD, other issues that might arise are related to the principles of cost efficiency and better timeliness. Conducting digital survey as a method of online data collection which can be easily accessed using mobile devices might be a solution for this issue. It is because it can increase cost efficiency, better timeliness, and accuracy as the result of using mobile devices which digitize and transmit data collection of a survey and data can be aggregated automatically (Schuster and Brito, 2011).

In 2010, the United Nations Foundation, Vodafone Foundation, and the World Bank funded EpiSurveyor as a mobile based survey. The results of EpiSurveyor were compared with paper-based survey and it concluded that EpiSurveyor can perform highly superior in terms of cost and could improve the quality control and the implementation speed of the survey (Schuster and Brito, 2011). Furthermore, based on a study conducted by Sullivan and Bornstein (2016), while digital survey data can be collected automatically in a system, it can reduce the time needed to entry data manually. As a consequence, data analysis could become easier to do, data dissemination can be faster, and the combination of digital survey and paper-based survey can be more cost efficient.

This paper aims to depict information about a digital survey that has been conducted by BPS-Statistics Indonesia to provide integrated economic statistics. In this case, integrated economic statistics are information from the digital survey and official Immigration data. In this paper, Section 3 reviews how to provide tourism data using digital survey, including digital survey procedures and results. Finally, section 4 concludes.

III. Collecting Tourism Data Using Digital Survey

A. Digital Survey Procedures

1. Data Collection

In 2018, Passenger Exit Survey was conducted using digital survey method. In collaboration with one of the biggest Mobile Network Operator (MNO) in Indonesia which is PT. Telkom Indonesia, BPS-Statistics Indonesia conducted a digital survey. This method used Wi-Fi facility provided by PT. Telkom.

This survey was located in 16 International Airports and Seaports. Wi-Fi for PES was located in international arrival and departure gate, so that visitors can fill in the questionnaire easily by connecting to this Wi-Fi.

Table 1. The Location of Digital Survey for Tourism Statistics in Indonesia

No.	Location
(1)	(2)
1.	Soekarno-Hatta International Airport
2.	Kualanamu International Airport
3.	Hang Nadim International Airport and Sekupang Seaport
4.	Hasanuddin International Airport
5.	Minangkabau International Airport
6.	Sultan Syarif Kasim International Airport
7.	Supadio International Airport
8.	Mahmud Badarudin International Airport
9.	Ngurah Rai International Airport
10.	Juanda International Airport
11.	Husein Sastranegara International Airport
12.	Sam Ratulangi International Airport
13.	Adi Sucipto International Airport
14.	Lombok International Airport
15.	El Tari International Airport

No.	Location
(1)	(2)
16.	Ahmad Yani International Airport

When visitors arrived in Indonesia, they can connect to Wi-Fi with SSID “FreeForTourist”. After that, visitors have to log-in by filling out the International Arrival questionnaire that automatically open on their browser. After submitting their answer, visitors can connect to a free Wi-Fi. Then, they will get a free Wi-Fi voucher for seven days in wifi.id. Their username and password will be sent to their email. It can be used for connecting to wifi.id in Indonesia.

Visitors in international departure gate have the same flow as those in international arrival gate. Visitors also can connect to Wi-Fi “FreeForTourist” and log-in by filling in the International Departure questionnaire.

2. Questionnaire

a) International Arrival

In international arrival gate, visitor will be asked about:

1. Main purpose of visit
2. Country of residence
3. Nationality
4. Email

SIGN IN TO WI-FI NETWORK
<https://welcome2.wifi.id>

these simple questions. Have a nice trip!

INBOUND SURVEY FOR TOURISM

STATISTICS INDONESIA

Main Purpose of Visit
Please Select ▼

Country of Residence
country

Nationality
nationality

Your Email Address
Email

Reference (optional) *
Reference

Under Statistics Act, 1997 No. 16, the content of individual information are CONFIDENTIAL

I Approved Term And Condition

Submit

Figure 1. Questionnaire in International Arrival Gate

b) International Departure

In international departure gate, visitors will be asked about:

1. Country of residence
2. Nationality
3. Arrival date
4. Email
5. Main purpose of visit
6. Tour package

This question collects the information whether international visitors use a tour package or not. The other information being asked is

whether they bought the package tour in Indonesia or other countries.

7. Expenditure trip per person (Currency)
 - a. Accommodation
 - b. Foods and beverages
 - c. Shopping and souvenir
 - d. Transportation
 - e. Tour Package
 - f. Other
 - g. Total

The image shows a mobile application interface for an exit survey. At the top, it says 'SIGN IN TO WI-FI NETWORK' with the URL 'https://welcome2.wifi.id'. Below this, there is a banner that says 'answering these following questions. Enjoy!'. The main title of the survey is 'EXIT SURVEY FOR TOURISM'. The logo for 'STATISTICS INDONESIA' is displayed. The survey fields are: 'Country of Residence' (text input: country), 'Nationality' (text input: nationality), 'Arrival Date' (text input: yyyy-mm-dd), 'Your Email Address' (text input: email address), 'Main Purpose of Visit' (dropdown menu: please select), 'Tour Packages' (dropdown menu: please select), and 'Reference (optional) *' (text input: reference). The background features a decorative pattern and a circular image of a person in traditional Indonesian attire.

Figure 2. Questionnaire in International Departure Gate

3. Data Tracking

Digital Survey provide the data tracking from international visitors who have filled out the arrival questionnaire. The mobility of visitors is also tracked down using a platform tracking with wifi.id. However, there is a problem with this platform tracking since it is not available in all areas. In the future, mobile positioning data will be used for tracking down the mobility of visitors.

B. Results

This section will show the example of data that collected from the 2018 Digital Survey.

1. Percentage of international visitors' expenditure in Indonesia

The highest percentage was money spent by tourists from the Middle East which accounted for more than 20 percent. Meanwhile, the percentage of international visitors' expenditure from those who were from Europe, America, Oceania, and Africa each accounted for around 15 percent. In addition, people from Asia spent less money than people from other regions and it can be seen from Figure 3 that visitors from ASEAN had the smallest percentage, at only around 9 percent.

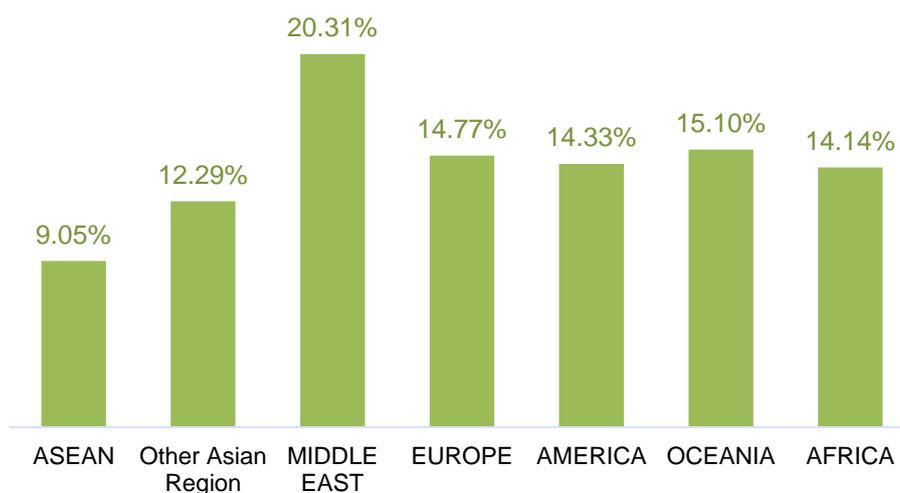


Figure 3. Percentage of International Visitors' Expenditure During Their Visit in Indonesia, 2018

2. Percentage of main purpose of visit in Indonesia

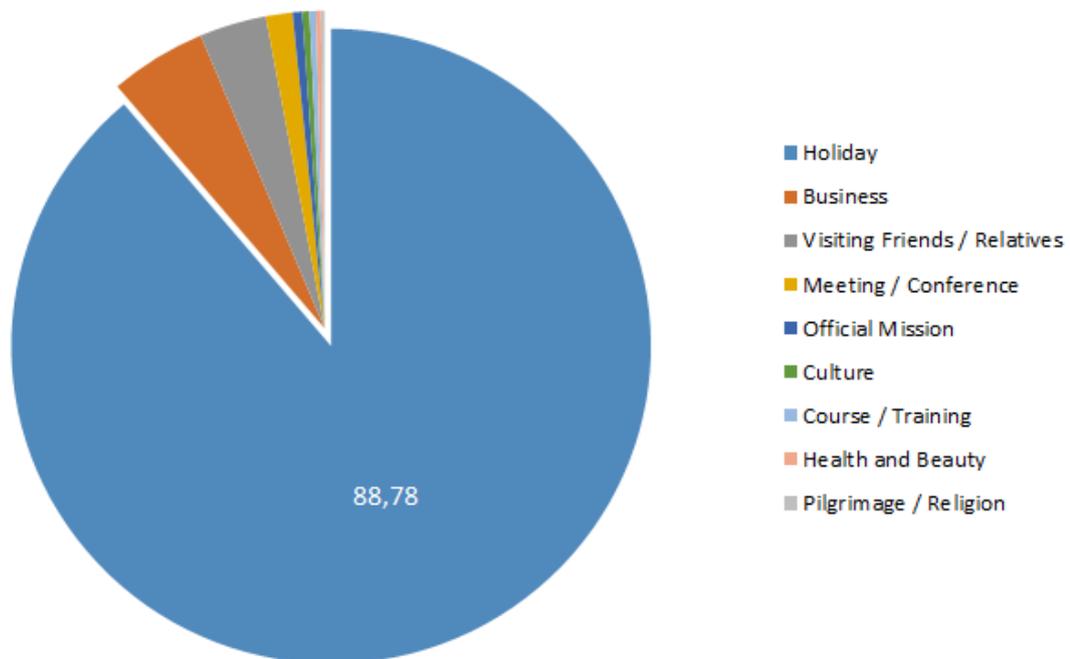


Figure 4. Percentage of Main Purpose of Visit in Indonesia, 2018

The largest percentage of main purpose of international visitors that came to Indonesia was holiday, at almost 89 percent. Business and visiting friends/relatives were the second and third largest main purpose of visit which each accounted for 4.9 and 3.4 percent. International visitors that came for a meeting/conference had smaller percentage than those who came for business and visiting friends/relatives, accounting for around 1.3 percent. Moreover, the smallest percentage of main purpose of visit was pilgrimage/religion, at only 0.2 percent.

C. The Evaluation of Digital Survey

1. Critical reflection

Harding et.al. (2017) mentioned that the quality of a data collection that has been conducted can be seen from design, enumeration, processing and quality assurance, and using the quality of outputs from the previous survey or other sources as benchmarks. In this paper, the quality of digital survey results

can be evaluated from the preferences of using enumerators or self-enumeration, quality assurance, and the comparison between the result of digital survey and the previous survey conducted by Ministry of Tourism which was a paper-based survey.

It is true that digital survey offers some advantages that the most important thing is by using digital survey, the quality of data collected can be improved. For instance, a digital survey is more efficient compared to a paper-based survey because respondents can fill the form easier and faster. Moreover, there is a small possibility of some errors during the data capture process due to misreading of the paper forms since using this digital survey. In addition, digital survey can reduce the workload of Statistics Indonesia staff in many regions, reduce the surveyor for a paper-based survey, and may lead to a better timelines because it lessen the time needed to entry data.

While digital surveys have some positives, there are also some negatives, such as the validation of the respondents' email and misunderstanding for each question because limited explanation of the questions. PT. Telkom is used email validation service to eliminate incorrect email, for example ZeroBounce, Moreover, limited explanation in digital survey forms may lead to non-sampling errors. There are various sources of non-sampling errors that might happen in every stages of a survey (Singh, 1990). Meanwhile, in the case of a paper-based survey, interviewers can explain to respondents if respondents do not understand the meaning of some questions. However, interviewers also can be a source of non-sampling errors, either response errors or non-response errors. In this digital survey, respondents can be assisted by people from PT. Telkom in filling the online form as well as asking about the definition for each question.

Furthermore, there are three key measures of statistical quality used internationally that Australian Panel employed to assess the quality of the 2016 Census data in Australia (Harding et.al., 2017):

- a. Undercount and overcount (this item cannot be seen in this survey, it is for a census with a Post Enumeration Survey).
- b. Response rates, including item nonresponse rates that were reviewed to see if there were any unusual observations in response patterns.

Total sample of the 2018 digital survey was 29,031 respondents, while total sample of the previous survey conducted by Ministry of Tourism was 24,100 respondents. The 2018 digital survey had more coverage than the previous survey because it was located in 16 International Airports and Seaports in Indonesia. Meanwhile, the previous survey was located in 11 International Airports and Seaports.

In addition, Figure 5 shows the percentage of item nonresponse in digital survey. The percentage of all item are more than 90 percent. This item nonresponse might be reduced by using digital survey because all questions must be answered by respondents if they want to submit the online form and get access to free Wi-Fi. However, respondents might put “0” (zero) for expenditure details on the online form.

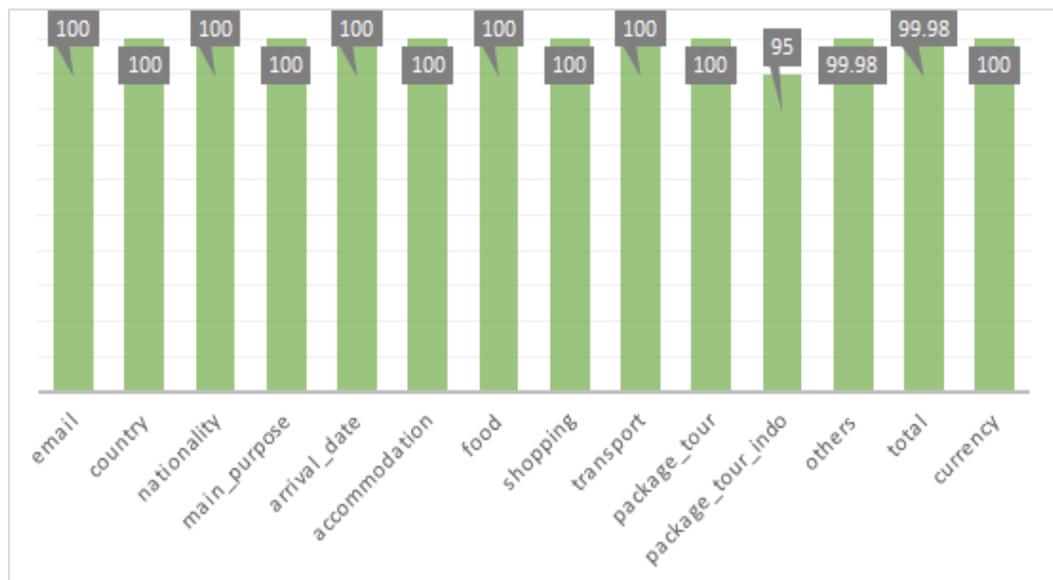


Figure 5. Percentage of Item Nonresponse in the 2018 Digital Survey

c. Consistency with other data sources

A data quality assurance has been the comparison of the 2018 Digital Survey data against the 2016 Survey conducted by Ministry of Tourism of the Republic of Indonesia. Figure 6 gives information about the average expenditure of international visitors according to their region of origin. It can be seen that the average of expenditure from digital survey has the same pattern with the results

from the previous survey conducted by Ministry of Tourism. The highest percentage of expenditure was the tourists from the Middle East, while the lowest was the percentage of tourists' expenditure from ASEAN.

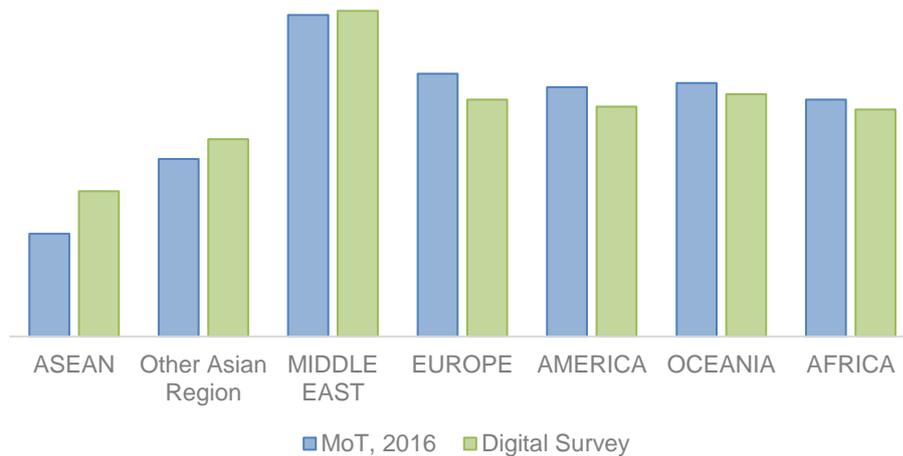


Figure 6. The Comparison of Percentage of International Visitors' Expenditure Based on Data from the 2016 Ministry of Tourism's Survey and the 2018 Digital Survey

2. Integrated Tourism Statistics

This digital survey has been integrated with official Immigration data. The 2018 digital survey provides information about tourists' expenditure, main purpose of visit, etc. which cannot be provided from official Immigration data. Furthermore, Mobile Positioning Data (MPD) is integrated with Passenger Exit Survey in cross-border area. This Passenger Exit Survey uses paper form because there are no wifi.id in Cross-border area. It provides information about tourists' expenditure which cannot be obtained from MPD. It was only conducted in three cross-border posts.

MPD and Passenger Exit Survey in cross-border posts complement digital survey and official Immigration data. Thus, tourism statistics provided becomes more comprehensive because data collection covers the whole ports of Indonesia.

3. Plans and user perspectives

a. Users of the Digital Survey Data

Prior to the survey, there is meeting with stakeholders such as Bank Indonesia (Central Bank of Indonesia) and Ministry of Tourism. During the survey, they also go to the airport and seaport to see and inspect how the survey is being conducted. There is concern from them that the survey will only get young age and low income, because only these people that use free Wi-Fi.

The digital survey result will be used by external and internal users of BPS-Statistics Indonesia. Among the external users are Ministry of Tourism as a policy maker in tourism, they use it for tourism receipt and for policy in tourism area, and Bank Indonesia uses the survey result for Balance of Payment. Meanwhile, internal user is BPS National Accounts for National Tourism Satellite Accounts and GDP in Tourism Sector.

b. The next steps and challenges which need to be addressed

This required the development of a new and improved online form and the creation and use of digital enumeration management information to manage field staff in real time as what suggested for the improvement of the 2016 online census in Australia (Harding, 2017). This digital survey has similar issues with the 2016 Australian census in the case of the need for online form improvements and digital enumeration. Definition of variables and instructions should be provided clearly because respondents have to fill the questionnaire by themselves (self-enumeration). For future digital surveys, besides providing explanations, help features is also crucial to be given so that item responses and overall quality can be improved.

Another challenge is about privacy issues. Privacy issues need to be taken into account by using strong privacy protection techniques, such as a practical strong privacy online survey scheme SPS based on a novel data collection technique called dual matrix masking (DM2) and a more robust scheme RSPS as proposed by Yo Zhou et. al. (2017).

This digital survey data can be integrated into official statistics as what mentioned in the previous discussion. This integration can increase the value and usefulness of tourism statistics provided by BPS-Statistics Indonesia.

4. Partnerships with the private sector

The digital survey is conducted in a cooperation with one of the biggest Mobile Network Operator (MNO) through a contractual relationship. The cost is from BPS annual budget. However, prior to the contract, BPS has a Memorandum of Understanding with the parent company (PT. Telkom) which is one of State Own Enterprise (SOE). In the 2018 digital survey, BPS was responsible for developing the method, questionnaire and processing, while PT. Telkom was responsible for implementing the survey. The sample size was decided by BPS and it was based on the number of tourists that come from each country and the entry gate (airport/port).

One of the challenges is coordination and communication with the MNO during the survey, for example the validation of online form. The confidentiality is guaranteed by Statistics Act. No. 16/1996. BPS-Statistics Indonesia and PT. Telkom have to comply that statistics laws.

IV. Conclusion

The digital survey can be used for other approaches to complete tourism statistics. Data about expenditure of international visitors have not been obtained yet using official immigration data and MPD, so that the integration of official immigration data, MPD, and a digital survey for tourism statistics has significant advantages. This integration can increase data accuracy, better timeliness, and also it can promote cost efficiency.

Online completion featured more accurate responses, more coverage, and lower levels of item non-response compared with the previous survey conducted by Ministry of Tourism that used paper form. This digital survey has some positives and should be continued for the next survey, while ensuring that the online system is adequately protected.

Although there are some positives of digital survey, some challenges and drawbacks should be considered for the next digital survey such as the validation of the respondents' email, misunderstanding in defining some questions, privacy issues, and how to manage sustainable relationships with partners.

V. References

- [1] Harding, S., Jackson Pulver, L., McDonald, P., Morrison, P., Trewin, D., Voss, A. (2017). *Report on the quality of 2016 Census data*. Retrieved from <http://www.abs.gov.au/websitedbs/d3310114.nsf/Home/Independent+Assurance+Panel>.
- [2] Sullivan, Melissa and Stephen Bornstein. (2016). *The Effectiveness of Digital Surveys for Collecting Patient Feedback in Newfoundland and Labrador*. Canada: The Newfoundland and Labrador Centre for Applied Health Research.
- [3] UNWTO. (2015). *Tourism and the Sustainable Development Goals*. Madrid: World Tourism Organization.
- [4] Schuster, Christian and Carlos Perez Brito. (2011). *Cutting costs, boosting quality and collecting data real-time – Lessons from a Cell Phone-Based Beneficiary Survey to Strengthen Guatemala’s Conditional Cash Transfer Program*. The Latin America and the Caribbean Region: The World Bank.
- [5] Singh, R. (1990). A study on the role of interviewer in surveys. *Communications in Statistics - Theory and Methods*, 19(5), 1751–1761. doi:10.1080/03610929008830287.
- [6] Zhou, Yo, et. al. (2017). Achieving Strong Privacy in Online Survey, *2017 IEEE 37th International Conference on Distributed Computing Systems (ICDCS)*. Atlanta, GA, pp. 710-719. doi: 10.1109/ICDCS.2017.247.