

UNWTO Special Workshop on Tourism Statistics

Introduction to Tourism Satellite Accounts

Session 3:

"Institutional and Technical Requirements for Successful Tourism Satellite Account (TSA) Implementation"

09:00~15:30 November 21, 2014 (Friday)

Todayji Temple Cultural Center

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Tourism as an Industry

- Without data, policymakers may have difficulty in justifying certain budgets to the industry.
- Taxpayers wish to know data, too.
 - How big is this industry?
 - What is % contribution to GDP?
 - Is it larger than other industrial sectors?
 - How many jobs are created?
 - How much tax is generated?
 - How much wages are paid to workers?
- Therefore, we need a method to measure tourism as an industry → TSA

Tourism Satellite Accounts (TSA)

- Satellite Accounts ?

- = An attempt to measure the size of economic activities or sectors which are **NOT** included in the established national accounts.



- **World Tourism Organization (UNWTO) says,**

- “Set of definitions, classifications integrated into tables, organized in a logical, consistent way, which allows us to view the whole economic magnitude of tourism in both its aspects of demand and supply”

- *“Tourism is an activity that many in the world participate in but which few appreciate beyond its abilities to delight the traveler and facilitate business.”*

Introduction to TSA

- Why TSA was developed in the U.S.?
 - **Travelers/Tourism are important consumers of U.S. production**
 - Industries that cater to travelers
 - use a substantial share of output from other industries
 - Add substantial economic value to other industries' outputs
 - Employ large numbers of people (taxpayers)
- **Problem of Tourism as an Industry?**
 - **Tourism are not identified in the standard presentation of I-O accounts**

Introduction to TSA



↓ Where is the "Tourism Industry"?

A Typical national Accounts Structure (Standard Industrial Classification)

	Ag	Mining	Const	TPU	Manu	W Tra	Retail	FIRE	Serv
Agriculture									
Mining									
Construction									
Transportation/Public Utilities									
Manufacturing									
Wholesale Trade									
Retail Trade									
FIRE*									
Services									

*FIRE : Finance Insurance, Real Estate

Introduction to TSA

- TTSA extend the I-O accounts in that they attempt **to measure an economic activity** (travel and tourism) undertaken by only **a subset of purchasers (visitors)** and involving only **a subset of purchases (tourism demand)**.
- Calculation of Tourism Industry's Output, Value added is more difficult than those of "Iron and Steel" or "Agriculture".

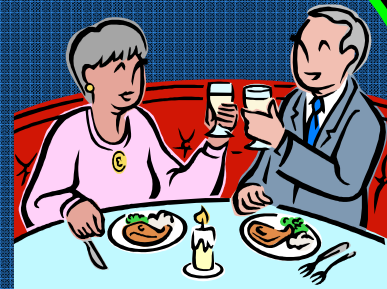
Introduction to TSA

WHO are the Purchasers?



Visitors

All People
(PURCHASERS)



Tourism Complex: Relevant Industrial Sectors and Their Tourism Dependence



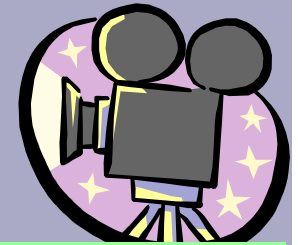
Auto Rental & Leasing (58%)



Travel Agency (21%)



Amusement (20%)



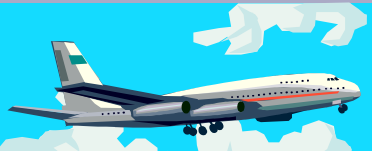
Cinema (18%)



Ships (17%)



Gas Station (7%)



Airplanes (76%)



Hotel (80%)



Shopping (3%)



Taxis (46%)



Buses (23%)



Restaurants (17%)



Sports (32%)

Source: Data based on Bureau of Economic Analysis, Commerce Dept, USA

Introduction to TSA (1)

- Identify ONLY the output of industries that are typically associated with tourism activities (ex: hotels, air/water/rail transport)
 - Lead to **UNDERSTATEMENT** of tourism as an industry
- Pick up ALL the expenditures on “Eating and Drinking Places” “SHOPPING” for tourism economic activities
 - Lead to **OVERSTATEMENT** of tourism as an industry

Introduction to TSA (2)

- The purpose of TSA
 - To provide a framework for analyzing tourism expenditures in a systematic and consistent way
 - To depict a link between **tourism demand expenditures** AND the **industries** that produce tourism goods and services.
- With TSA data, you can compare “**tourism as an industry**” with other industries

Basic Set of Tables in TSA

Table 1: Inbound tourism expenditure by products and classes of visitors

Table 2: Domestic tourism expenditure by products, classes of visitors and types of trips

Table 3: Outbound tourism expenditure by products and classes of visitors

Table 4: Internal tourism consumption by products

Table 5: Production accounts of tourism industries and other industries (at basic prices)

Table 6: Total domestic supply and internal tourism consumption (at purchasers' prices)

Table 7: Employment in the tourism industries

Table 8: Tourism gross fixed capital formation of tourism industries and other industries

Table 9: Tourism collective consumption by products and levels of government

Table 10: Non monetary indicators

These are official sequences of TSA tables! (What I cover is US version, which may not match in their sequences...)

Introduction to TSA (3)

- TSA definitions
 - Based on WTO and OECD definitions (**Table 2**)
 - Visitors (distance, for example)
 - Usual Environment
- **“Tourism Demand”** consists of
 - Business Travel & Travel by government employees
 - Resident Household Travel
 - Non-residents’ travel (=international visitors)

Introduction to TSA (4)

- **“Tourism Commodities” (Table 3)**
 - Commodities that are typically purchased by visitors directly from producers.
 - Tourism Commodities
 - **Hotels, Restaurants, Leisure Activities, transportation etc.**
 - Non-Tourism Commodities
 - **Gasoline and Oil**

Introduction to TSA (5)

- Tourism Industries
 - Can be identified by analyzing the relationships shown in the I-O accounts between **tourism commodities** and **the producing industries (Table 4)**
 - sell a significant* portion of their output to visitors, (**=the industries' revenues and profits would be substantially affected if tourism ceased to exist*).
 - Which ones? → **Airline, Hotels, local public transportation**

Introduction to TSA: (6) Components Overview

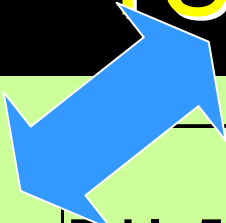
- Production (Table 5) ←from U.S. I-O
- Supply and Consumption (Table 6) ←from U.S. I-O
- Tourism Demand by Type of Visitor (Table 7)
- Tourism GDP (Table 8)
- Tourism Employment and Compensation (Table 9)

Introduction to TSA: (7)

Production Table (Table 5)

- Similar to I-O, but with 3 modifications
 1. Rows and Columns are modified
 2. Detail is shown only for TTSA commodities and industries, others are aggregated.
 3. The intermediate inputs and the value-added components are shown as rows at the bottom of the table.
- Each cells on the main diagonal shows the value for the commodity produced by the industry designated as its **primary producer**.

TSA: How to Read Production Table



INDUSTRY

Table 5

	Hotels and lodging places	Eating and drinking places	Railroad	Local and suburban transit	Taxicab	Air Transportation	Water Transp	Auto rental	Arrangement of pass	Recreation	***** *	All Other Industries	Domestic Production	
Hotels and lodging places	55,913										This part is omitted for presentation purposes	68		
Eating and drinking places	16,613	220,685										9,710		
Passenger rail			1,226											
Passenger Bus				13,158										
Taxicab					6,614									
Domestic Airfare													17	
International Airfare														
Passenger water							4,000							
Auto and Truck Rental								14,318					59	
Other Vehicle rental								420						
*****	This part is omitted for presentation purposes													
All Other Commodities	758									27,595				
Industry Output	84,243	236,124	33,842	15,878	6,614	87,828	26,681	21,410	13,108	35,800		8,231,223	10,822,647	
Intermediate inputs	32,449	124,678	12,934	10,222	2,853	50,188	17,108	10,669	4,781	13,788		3,245,037		
compensation of employees	32,615	81,265	14,727	13,635	2,258	29,740	4,650	3,733	5,037	10,973		2,936,215		
indirect business taxes	6,372	14,115	815	111	24	5,629	492	1,621	520	2,249		365,049		
Other Value added	12,807	16,066	5,366	-8,090	1,479	2,271	4,431	5,387	2,770	8,790		1,684,922		

Goods & Services

Money

COMMODITY

Source: quoted by T. Hara from Table 5 U.S. Travel and Tourism Satellite Accounts for 1992. S. Okubo & M. Planting, Survey of Current Business

第5表 観光産業及びその他産業の生産勘定 Table 5: Production accounts of tourism industries and other industries - Japan 2012 (Unit: Billion Yen)

	別荘 (帰属計算)										観光産業計 TOTAL tourism industries	非観光産業 Other industries	産出額計 (生産者価格) TOTAL output of domestic producers (at producers' prices)	輸入 Imports	輸入品に課 される 税・関税 Tariffs and taxes on imports	マージン Margins	国内総供給 Total gross domestic supply
	宿泊業 Hotels and similar	Second home ownership (imputed)	飲食店 Restaurants and similar	鉄道旅客輸 送 Railway passenger transport	陸路旅客輸 送 Road passenger transport	水運 Water transport	空路輸送 Air transport	運輸付帯 サービス Transport supporting services	スポーツ・娯 楽 Sporting and recreational services	その他 other							
観光商品計 Total of Tourism Products	6,334	46,540	20,651	6,742	3,375	176	2,026	4,890	2,236	92,969	292,535	385,503	32,329	2,954	72,090	492,876	
Specific products 観光特有商品	6,328	46,540	20,646	4,843	3,361	154	2,026	3,498	1,902	89,298	97,232	186,530	3,472	51	200	190,254	
Characteristic products 宿泊施設サービス Accommodation services ホテル及びその他の宿泊施設サービス Hotels and other lodging services	6,124	46,540	9	1	0	0	0	0	12	52,686	25	52,711	111	0	0	52,822	
自己利益のための無償のセカンドホームサービス (※) Second homes services on own account of for free 飲食供給サービス Food and beverage serving services 飲食供給サービス	6,124	0	9	1	0	0	0	0	12	6,146	25	6,172	111	0	0	6,283	
Passenger transport services 都市間鉄道サービス Interurban railway 道路 Road 水運 Water 航空 Air 付帯サービス Supporting services 運輸機器 レンタル Transport equipment rental 運輸機器の維持・修理サービス Maintenance and repair services	0	46,540	0	0	0	0	0	0	0	46,540	0	46,540	0	0	0	46,540	
193	0	20,635	0	0	0	0	0	0	40	20,869	405	21,274	26	0	0	21,300	
1	0	1	4,839	3,348	134	2,026	2,193	3	12,544	7,249	19,793	1,170	0	0	0	20,963	
0	0	0	4,822	0	0	0	0	0	4,822	0	4,822	13	0	0	0	4,836	
0	0	0	0	3,318	0	0	70	0	3,388	0	3,388	12	0	0	0	3,400	
0	0	0	0	0	101	0	2	0	103	0	103	5	0	0	0	108	
0	0	0	0	0	0	2,026	0	0	2,026	0	2,026	1,080	0	0	0	3,106	
0	0	0	3	11	17	0	1,097	1	1,129	758	1,887	59	0	0	0	1,946	
0	0	0	3	10	16	0	1,023	1	1,053	707	1,760	0	0	0	0	1,760	
0	0	0	11	9	0	0	1	1	23	5,785	5,808	0	0	0	0	5,808	
旅行会社、ツアーオペレーター、旅行ガイドサービス Travel agency, tour operator and tourist guide services	0	0	0	2	6	10	0	645	0	664	445	1,110	81	0	0	1,190	
旅行会社 Travel agency	0	0	0	2	6	10	0	619	0	637	427	1,064	81	0	0	1,145	
旅行情報、旅行ガイドサービス Tourist information and tourist guide	0	0	0	0	0	0	0	27	0	27	18	46	0	0	0	46	
文化サービス Cultural services	2	0	0	0	0	0	0	0	434	436	79,210	79,646	20	0	0	79,666	
舞台芸術 Performing arts	2	0	0	0	0	0	0	0	434	436	461	898	20	0	0	918	
美術館、その他の文化サービス Museum and other cultural services	0	0	0	0	0	0	0	0	0	0	78,748	78,748	0	0	0	78,748	
レクリエーション、その他の娯楽サービス Recreation and other entertainment services	3	0	0	0	0	0	0	0	702	705	746	1,451	0	0	0	1,451	
スポーツ、レクリエーション スポーツサービス Sports and recreational sport services	2	0	0	0	0	0	0	0	436	438	463	900	0	0	0	900	
その他の当該サービス Other amusement and recreational services	1	0	0	0	0	0	0	0	266	267	283	550	0	0	0	550	
その他各種 ツーリズムサービス Miscellaneous tourism services	5	0	1	2	6	10	0	660	711	1,394	9,152	10,546	2,064	51	200	12,861	
金融・保険サービス Financial and insurance services	0	0	0	0	0	0	0	0	0	0	2,905	2,905	146	0	0	3,051	
その他の財貨のレンタルサービス Other good rental services	0	0	0	2	6	10	0	660	0	679	456	1,135	26	0	0	1,161	
その他の当該サービス Other tourism services	5	0	1	0	0	0	0	0	710	715	5,791	6,506	1,892	51	200	8,650	
観光関連商品 Connected products	6	0	5	1,899	14	22	0	1,392	334	3,671	195,302	198,973	28,857	2,903	71,890	302,623	
Goods 財貨	4	0	4	189	0	0	0	1	4	204	141,143	141,347	28,854	2,903	71,889	244,993	
サービス services	2	0	0	1,709	14	22	0	1,390	330	3,467	54,159	57,626	3	0	1	57,630	
Non Specific Products 非観光商品	70	0	28	774	106	5,021	309	3,874	6,113	16,296	503,154	519,449	46,685	2,748	-72,090	496,793	
Goods 財貨	7	0	9	545	72	1	0	12	24	669	224,990	225,660	43,164	2,748	34,332	305,904	
サービス services	63	0	19	230	34	5,020	309	3,862	6,089	15,626	278,163	293,790	3,521	0	-106,422	190,889	
合計 Total	6,404	46,540	20,679	7,516	3,481	5,197	2,335	8,764	8,349	109,264	795,688	904,953	79,014	5,703	0	989,669	
農林水産業 Agriculture, forestry and fishery products	249	0	1,252	1	0	0	0	3	41	1,546	11,241	12,787					
鉱業 Ores and minerals	0	0	0	12	0	0	0	0	13	27,392	17,533	27,405					
電力・ガス・水道 Electricity, gas and water	452	0	832	517	31	21	15	268	286	2,423	15,110	17,533					
製造業 Manufacturing	1,227	50	7,964	988	399	951	784	651	771	13,785	211,565	225,351					
建設 Construction work and construction	31	2,172	52	216	9	23	1	181	100	2,784	5,947	8,730					
商業、飲食店、宿泊業 Trade services, restaurants and hotel services	0	28	0	0	0	0	0	0	0	28	604	632					
運輸通信業 Transport, storage and communication services	239	9	417	281	269	1,924	527	336	420	4,421	32,873	37,294					
その他のサービス業 Others services	501	2,832	1,393	970	404	648	276	1,619	1,261	9,904	91,137	101,041					
政府サービス生産者、対家計民間非営利サービス生産者 Government services, private non-profit services to households	24	0	86	16	3	108	150	16	17	421	2,404	2,825					
中間投入計 (購入者価格) Total intermediate consumption (at purchasers price)	2724	5091	11995	3001	1115	3675	1753	3074	2896	35325	398274	433598					
固定資本減耗 Consumption of fixed capital	824	17,012	1,490	2,368	256	635	404	1,463	1,161	25,613	74,976	100,589					
雇員報酬 Compensation of employees	1,202	0	3,069	2,054	2,134	1,022	385	3,083	2,378	15,328	230,431	245,759					
生産・輸入品に課される税 (控除) 補助金 Other taxes less subsidies on production and imports	317	2,267	725	328	185	52	110	433	1,084	5,502	28,853	34,355					
営業余剰・混合所得 Gross Operating surplus and Gross Mixed income	1,338	22,170	3,400	-236	-208	-187	-318	710	829	27,497	63,154	90,651					
国内総生産 (生産者価格) Total Gross Value Added of Activities (at producers' prices)	3680	41449	8684	4515	2366	1522	582	5690	5452	73940	397414	471354					

Source: Japan Tourism Agency P324 "Research study on economic impacts of tourism in Japan" March 2014

TSA: How to Read Supply & Consumption Table (Table 6)

- Supply and Consumption of Tourism-related “Commodities” displayed in one table.
 - **Left Side of table = Supply (production)**
 - Domestic Production + Imports + Others
 - **Right Side of table = Consumption**
 - Intermediate needs (AX) + Final Demand (household etc) + others

TSA: Supply and Consumption Table (Table 6)

Table 6 Supply and Consumption	SUPPLY							CONSUMPTION					Total Consumption
	Domestic Production	Imports	Govt sales	change in business inventories	W. margins	R. margins	Total Supply	Intermediate	Personal Consumption Expenditures	Gross Private domestic fixed investment	Exports of goods and services	Govt expenditures excluding sales	
Hotels and lodging places	56,220		357				56,577	27,260	23,680			5,637	56,577
Eating and drinking places	268,148						268,148	32,335	231,193		309	4,311	268,148
Passenger rail	1,226						1,226	310	829			87	1,226
Passenger Bus	13,158						13,158	2,612	10,455			91	13,158
Taxicab	6,614						6,614	3,641	2,586			387	6,614
Domestic Airfare	48,466						48,466	21,971	21,308			5,187	48,466
International Airfare	22,605	9,808					32,413	3,073	12,377		16,395	568	32,413
Passenger water	4,000	301					4,301	0	4,125		176		4,301
Auto and Truck Rental	15,094						15,094	10,668	3,234			1,192	15,094
Other Vehicle rental	454						454	245	209				454
*****	This part is omitted for presentation purposes												
All Other Commodities	7,995,362		121,167	-4,520	412,016	200,614	9,172,221	3,925,205	2,635,574	788,427	508,665	1,314,350	9,172,221
Total	10,822,647	631,637	127,076	5,430	671,972	525,843	11,575,930	4,588,742	4,208,718	790,991	602,609	1,384,870	11,575,930

Source: quarterly

Supply of the Tourism Commodities

Consumption of the Tourism Commodities

TSA: Tourism Demand by Type

(Table 7)

Table 7 Tourism Demand by Type of Visitors	Total Demand	Tourism Demand					Non-Tourism Demand	Tourism Commodity Ratio*
		Total Tourism Demand	Business (M1)	Govt Expenditure (M1)	Resident Households (M1)	Non-Residents (M1)		
Hotels and lodging places	56,577	56,577	27,260	5,637	11,342	12,338	1.00	
Eating and drinking places	268,148	45,431	17,917	3,696	13,812	10,006	0.17	
Passenger rail	1,226	1,226	310	87	653	176	1.00	
Passenger Bus	13,158	3,367	583	55	2,170	559	0.26	
Taxicab	6,614	1,478	748	71	531	128	0.22	
Domestic Airfare	48,466	48,466	21,971	5,187	16,773	4,535	1.00	
International Airfare	32,413	32,159	3,073	314	12,377	16,395	0.99	
Passenger water	4,301	4,150			3,138	1,012	0.96	
Auto and Truck Rental	15,094	12,132	8,400	1,055	2,207	470	0.80	
Other Vehicle rental	454	125			101	24	0.28	
*****	Omitted for presentation purposes							
All Other Commodities	9,172,221					9,172,221		
Total	11,575,930	324,184	95,239	16,449	140,969	71,527	11,251,746	

$$\text{Tourism}_\text{Commodity}_\text{Ratio} = \frac{\text{Total}_\text{Tourism}_\text{Demand}}{\text{Total}_\text{Demand}}$$

$$\frac{45,431}{268,148} = 0.17 \rightarrow \text{TCR}_\text{for}_\text{Restaurants}$$

TSA: Tourism GDP of Tourism Industries (Table 8)

Table 8 Tourism GDP of Tourism Industry	Industry Output	Intermediate Consumption	Value Added	Tourism Industry Ratio (M1)	Tourism Output (M1)	Tourism Industry Intermediate Consumption (M1)	Tourism Industry Value Added
Hotels and lodging places	84,243	32,449	51,794	0.80	67,603	26,039	41,564
Eating and drinking places	236,124	124,678	111,446	0.16	37,403	19,749	17,654
Railroad and related services	33,842	12,934	20,908	0.04	1,226	469	757
Local and suburban transit	15,878	10,222	5,656	0.21	3,367	2,168	1,199
Taxicab	6,614	2,853	3,761	0.22	1,478	638	840
Air Transportation	87,828	50,188	37,640	0.81	70,877	40,426	30,451
Water Transportation	26,681	17,108	9,573	0.14	3,860	2,475	1,385
Auto Leasing w/o drivers	21,410	10,669	10,741	0.54	11,626	5,793	5,833
Arrangement of pass transp.	13,108	4,781	8,327	0.22	2,919	1,065	1,854
Mis amusement and recreation	35,800	13,788	22,012	0.18	6,465	2,490	3,975

Total Tourism Industries	1,270,477	529,045	741,432		230,844	110,384	120,460
Total All other industries	9,552,170	4,059,697	5,492,473				
TOTAL	10,822,647	4,588,742	6,233,905				

Out of Total Industry Output, you distill the tourism output

TSA: Tourism Employment & Compensation (Table 9)

Table 9 Tourism Employment and Compensation	Total Employment ('000)	Tourism Industry Ratio (M1)	Tourism Employment (M1)	Compensation (\$M)	Tourism Compensation (\$M)	Average Compensation per tourism employee
Hotels and lodging places	1,661	0.80	1,329	32,615	26,092	19,636
Eating and drinking places	6,819	0.16	1,091	81,265	13,002	11,917
Railroad and related services	243	0.04	10	14,727	589	60,605
Local and suburban transit	416	0.21	87	13,635	2,863	32,776
Taxicab	32	0.22	7	1,088	239	34,000
Air Transportation	625	0.81	506	29,740	24,089	47,584
Water Transportation	100	0.14	14	4,650	651	46,500
Auto Leasing w/o drivers	178	0.54	96	3,733	2,016	20,972
Arrangement of pass transp.	191	0.22	43	5,037	1,122	26,372
Mis amusement and recreation	633	0.18	114	10,973	1,975	17,335

Total Tourism Industries			3,749		81,260	21,393
Total All other industries			117,998		3,645,042	30,891
Tourism Share			3.2%		2.2%	

Source: quoted by T. Hara from
S. Okubo & M. Planting, Survey

TSA: How Data are Collected

- From U.S. I-O table (Table 5 & 6)
 - The tourism expenditures in the TTSA's were derived from the I-O estimates of consumption
 - “Pure Tourism” commodities (ex: hotels)
 - How to separate resident & non-resident household?
 - **“Estimates of the expenditures by non-residents were subtracted from the total”**
 - “Mixed-use” commodities (ex: restaurants)
 - **Bureau of Labor Statistics Consumer Expenditure Survey (CEX) is the only source to allocate shares for visitors & non-visitors**
 - **While we have Personal Consumption Expenditure data (PCE) based on Census Bureau Data, the CEX estimates are about 30% lower than the PCE estimates → Data problem!**

TSA: How Data are Collected

- **Various Data Sources**
 - **“Mixed Use Commodity for Business & Gov demand”**
 - **The American Express Survey of Business Travel Management**
 - **“International Demand”**
 - **BEA Balance of Payments data & In-Flight Survey**
 - **“Tourism Employment”**
 - **Bureau of Labor Statistics & BEA estimates**

TSA: Detailed Data on Tourism Industry in the United States

● OUTPUT

- 2.1~2.4% of total U.S. Output in 1992
- 1.9~2.2% of U.S. GDP (\$120~135 Billion)

● “Hotels & Lodging Industry”

- The highest Value-Added among tourism industries (31-35% of Tourism GDP \$42 B)
- The largest tourism employer (1.3~1.4 Million)

● DEMAND

- Tourism Purchase → 4.6~5.3% of U.S. GDP

TSA: Detailed Data on Tourism Industry in the United States

- **Tourism Employment**

- 3.2~3.7% of Total Employment in the U.S. (3.8~4.4 million people)
- Much higher than its share of Value Added to GDP (1.9~2.2%) → tourism industries are more labor intensive than the economy as a whole

- **Compensation of Tourism Employees**

- 2.2~2.5% of total compensation of employees



Preliminary Analyses of a Cutting-Edge Knowledge Distribution Method of MOOC (Massive, Open, Online Course) to Teach Tourism as an Industry (in 2013)

Tadayuki (Tad) Hara, PhD, UCF
Patsy D. Moskal, EdD, UCF

TSA Knowledge Dissemination -1

- Educational Environment
 - 180 Universities with Hospitality/Tourism programs in the USA.
 - Few offer dedicated courses on Tourism Statistics/TSA
 - Few students out of 10,000+ graduates learn about TS/TSA
 - Not many hospitality instructors were trained in tourism statistics, Input-Output, System of National Accounts, Social Accounting Matrix → Disconnect with National/International Statistics Offices

TSA Knowledge Dissemination - 2

- Most students in hospitality/tourism do not learn macroeconomics, linear algebra (matrix)
 - Not many students like quantitative materials (that may be why they are not in Economics program)
- Hospitality Management curricula have been geared towards “applied management”
 - Subjects: Marketing, Accounting, Finance, Human Resources, Services, etc.
 - Sector specifics: meeting, theme park, restaurants, cruise,

TSA Knowledge Dissemination - 3

- MOOC (Massive Open Online Course)?
 - Started in 2008 but gained momentum in 2012
 - Year of the MOOC by NY Times in 2012
 - Coursera, Udacity, edX
 - Massive → can be thousands, tens of thousands
 - Open → basically, free of charge
 - Online → access anywhere, anytime
 - Course → it is usually given by faculty at accredited research universities – academic dissemination of knowledge

Research Objectives

- To verify **diversity of participants** (in terms of **age, gender, motivation, geographic location, prior experiences with online education, MOOC, level of highest educational attainment, and studies in English**)
 - To assess how the technical contents can be disseminated and taught effectively to audiences with **diverse characteristics**
- To evaluate **teaching effectiveness** of highly quantitative and complex contents of economic impact studies and TSA.
 - To check if the patterns of participation rate, completion rate would be comparable with prior MOOC courses
 - To compare regular students with MOOC students by conducting the same survey

MOOC Research (1)

- Most papers are recent (2011~).
 - MOOCs have a high enrollment of participants at the start, but they also have a high attrition, with **lurkers**, who follow the course from the sidelines (deWaard et al 2011)
 - In the first week, about 15% on average attempted the two homework assignments. By the fifth week, the number of students doing homework decreased to 2% (Aiken, Lin, Schatz, & Caballero, 2013)

MOOC Research (2)

- MIT Teaching and Learning Laboratory and Harvard Graduate School of Education
 - “In MOOCs, low barriers to registration lead to large numbers of registrants with diverse interests and backgrounds.”
 - Out of 154,763 total students, 4,454 earned a certificate, about 2.9% of the total registrants. (DeBoer, Ho, Stump, & Breslow, 2013)

MOOC Research (3)

- “Ten Years of Tracking Online Education in the United States” Allen & Seaman, 2013
 - Only 2.6% of higher education institutions currently have a MOOC, another 9.4% report MOOCs are in the planning stages.
 - The majority of institutions (55.4%) report they are still undecided about MOOCs, while under one-third (32.7%) say they have no plans for a MOOC.



MOOC Course: Streaming Video Course

Format: Streaming Video Based
Students visit and view recorded lectures with corresponding PowerPoint slides which are synchronized with lectures, all in one web browser

Regular Course Contents (16 weeks)

- Introduction
- Economic Impacts of Tourism
- Minimum Basic of Matrix Algebra
- Input-Output Model
- Social Accounting Matrix (household decomposition)
- Economic Impact Calculation (I-O and SAM assignments)
- Poverty Issues (responsible capitalism & UNMDG)
- Tourism Satellite Accounts
- Tourism Planning and Sustainable Tourism Modeling
- International Issues
- **Assessment:**
 - weekly quizzes, weekly discussion postings, final exam

MOOC Course Contents (6 weeks)

- Introduction WK1
- Economic Impacts of Tourism WK3
- Minimum Basic of Matrix Algebra WK2
- Input-Output Model WK2
- Social Accounting Matrix (household decomposition) WK4
- Economic Impact Calculation (I-O and SAM assignments)
- Poverty Issues (responsible capitalism & UNMDG) WK5
- Tourism Satellite Accounts WK6
- Tourism Planning and Sustainable Tourism Modeling WK5
- International Issues WK1~WK6
- Assessment:
 - weekly quizzes, weekly discussion postings, final exam

Some Lecture Samples (6 pages)



SAMPLE

Input Output Model

- **Inter-industry needs + Final Demands = Total Output**
- Tire Factory (ex: Firestone)
 - Sales to consumer (you & I)
 - Sales to car company (ex: Ford)
- Computer Hard-Disk Factory
 - Sales to consumer (you & I)
 - Sales to Hewlett Packard
- Airlines
 - Sales to guests (you and I)
 - Sales to Wholesalers

SAMPLE

Input-Output model

- Total Output (X) consists of
 - Inter-industry needs (AX), ($0 < A < 1$)
 - Final Demand (Y)
 - Also, I ← Identity Matrix (just like 1)

$$(1) \quad AX + Y = X$$

Inter-industry needs + final demand = Total Output

$$(2) \quad Y = X - AX \quad (3) \quad Y = (I - A) X$$

$$(4) \quad \frac{Y}{(I - A)} = \frac{(I - A) X}{(I - A)} \quad \frac{Y}{(I - A)} = X$$

$$(5) \quad (I - A)^{-1} Y = X$$

$$(I - A)^{-1} \Delta Y = \Delta X$$



SAMPLE Input Output Model (3)

- Industry consists of many sectors
 - Simplify into 3 sectors (3 x 3) in our case
- Value Added (lower left-side)
 - Labor, Capital etc
- Final Demand (upper right-side)
 - Consumption by household, Govt. etc

	AG	MNF	Serv	FD	Total Output
Agriculture					
Manufacturing					
Services					
Value Added					
Total Input					

Sectors on the Row (left side of the matrix) produces goods & services.
Sectors on the Column (upper side of the Matrix) receives goods and services.
Let's put the numbers and see how it works.

CN-1468-TOURISM

Home > CN-1468-TOURISM > Quizzes > Lecture 2 Quiz

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Lecture 2 Quiz

Started: Nov 3 at 12:34am

Quiz Instructions

Please view all the lecture videos (MAIN and LAB) for Lecture 2, do the MS-Excel practices before taking this quiz.

Questions

- [? Question 1](#)
- [? Question 2](#)
- [? Question 3](#)
- [? Question 4](#)

Time Running: [Hide](#)

Attempt due: Nov 3 at 3:34am

3 Hours, 59 Minutes, 48 Seconds

Question 1 3 pts

In order to read the Input-Output table, you truly have to know this. Which statement is correct about the flow of goods/services and cash in exchange?

- Goods & Services are produced by industrial sectors on the left and provided to the industrial sectors on top of table. In exchange, money moves from top to left.
- Goods & Services are produced by industrial sectors on the top and provided to the industrial sectors on left of table. In exchange, money moves from left to top.

Question 2 3 pts

Inter-Industry Needs + Final Demands = Total Output

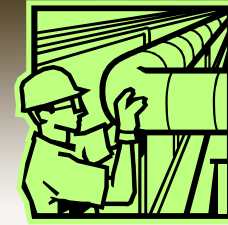
Is this correct?

- true
- false

Question 3 2 pts

SAM Concept

SAMPLE



\$\$ Wage & rents



**Value Added
= Labor & capital**



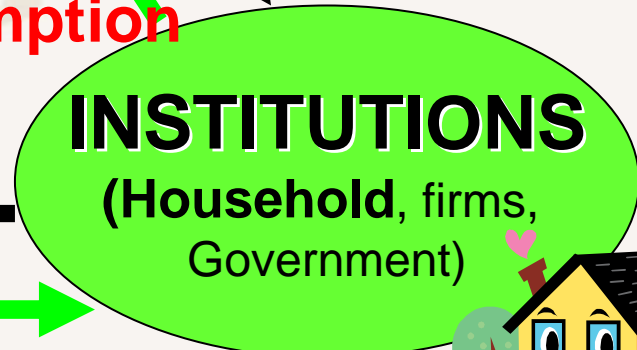
**Final demands:
Goods and
Services**



**\$\$ for
Consumption**



*Placement of Endowments
(labor and capital)*



\$\$ Labor Income, profits



SAMPLE

SAM Structure

- You see Production Activities, Factors (of Production), and Institutions.
- Others are trade accounts for imports and exports.

	Production Activ (inter-ind)			Factors (2)	Institu (HH) (3)	Others (trade) (4)	TOTAL
	Agr (1a)	Mnfc (1b)	Serv (1c)				
Agr (1a)	A				C	(1, 4)	
Mnfc (1b)							
Serv (1c)							
Factors (2)	F					(2, 4)	
Institu (3)				W	T	(3, 4)	
Others (4)	(4, 1)			(4, 2)	(4, 3)		
TOTAL							

Participant Profiles



These are our regular undergraduate students.
How about MOOC participants – are they
“students”?

[Description of student profiles 1]

Table 2: Survey Results - Reason for Taking the Tourism Industry Analysis Course

14026: What is your reason for taking this course? (select all that apply)	Be part of a community of learners	Complete the course	Gain skills for a career opportunity	Check out Canvas Network	Learn about the subject	Other	Total
Responses	13	19	46	7	73	6	164
percentage (n = 93)	13.98%	20.43%	49.46%	7.53%	78.49%	6.45%	

Source: Made by authors based on data from CN1468 Canvas Network

Table 3: Students' Expectations of Labor Input per Week

14027: How many hours a week are you planning to spend on this course?	Less than 1 hour	Between 1 and 2 hours	Between 3 and 4 hours	Between 5 and 6 hours	Between 7 and 10 hours	More than 10 hours a week
numbers	2	25	32	16	14	3
Percentages (n=92)	2.17%	27.17%	34.78%	17.39%	15.22%	3.26%

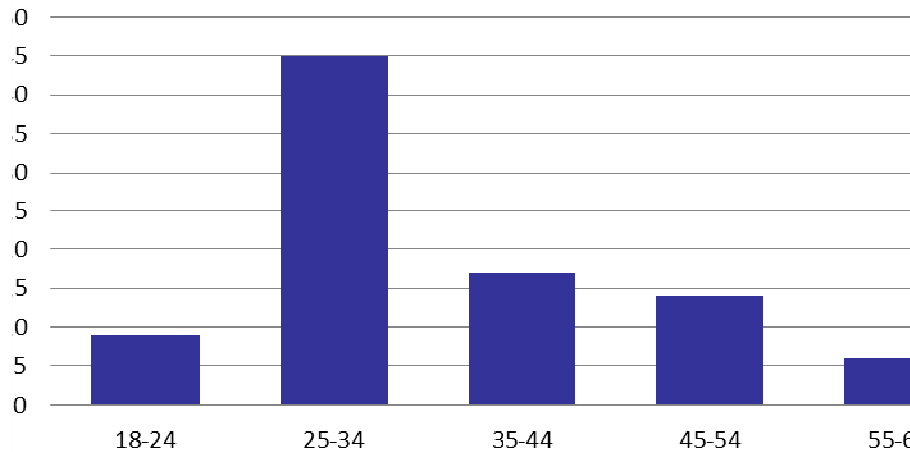
Source: Made by authors based on data from CN1468 Canvas Network

Table 4: Gender of Students

Gender of Students	female	male
numbers	51	40
Percentages (n=91)	56.04%	43.96%

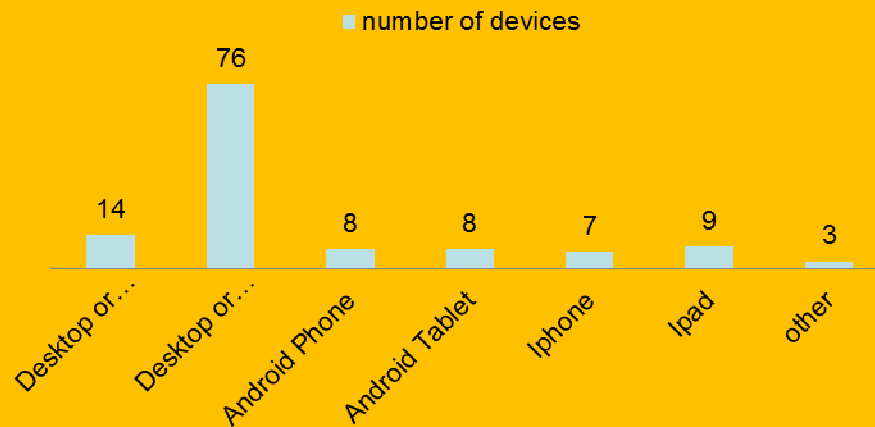
[Description of student profiles 2]

Table 5: Age of Students in MOOC course numbers



■ Table 5: Age of Students in MOOC course numbers

Table 6: Devices Usage



■ number of devices

Table 7: Previous Participation in MOOC

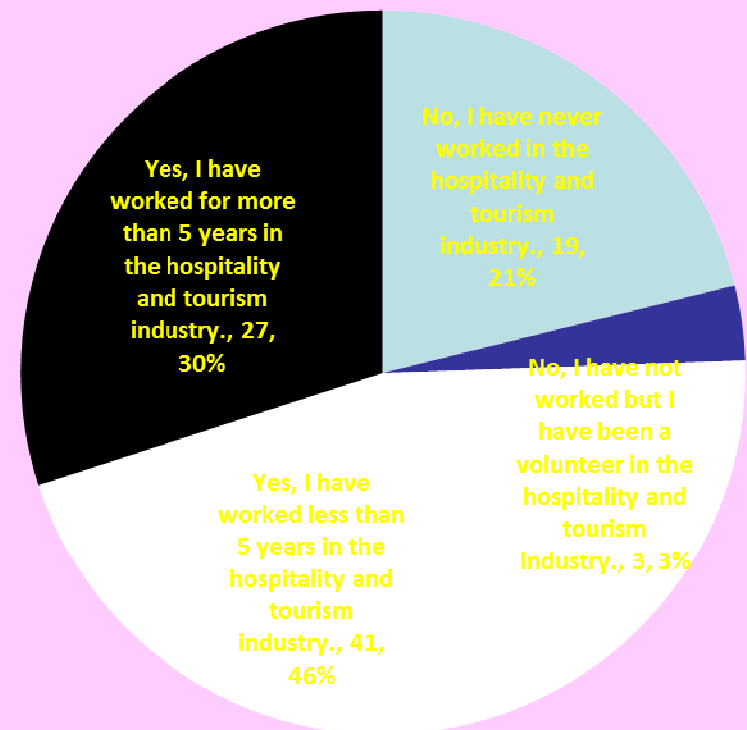
14035: Have you participated in a MOOC before?	Yes	No
number of responses	17	73
Percentages (n=90, 1 missing value)	18.89%	81.11%

Source: Made by authors based on data from CN1468 Canvas Network

Table 8: Previous Participation in Online Courses

14034: Have you taken an online course before?	Yes	No
number of responses	43	47
Percentages (n=90, 1 missing value)	47.78%	52.22%

Table 9: Prior Work Experience in the Industry



[Description of student profiles 3]

Table 10: Current Academic Status of Participants in a MOOC

current academic status?	under-graduate student.	graduate student.	I have taken continuing education courses in the last 5 years.	I am not currently a student, but have graduated in the last 5 years.	I have taken continuing education courses in the last 5 years.	I am not currently a student and have not taken continuing education courses in the last 5 years.	I am currently a professor, a teacher, or a professional educational facilitator.
Number of responses	8	23	15	14	15	19	12
Percentages	10.13%	28.75%	18.75%	17.50%	18.75%	23.75%	15.00%

Table 11: Academic Achievement of Participants in the MOOC

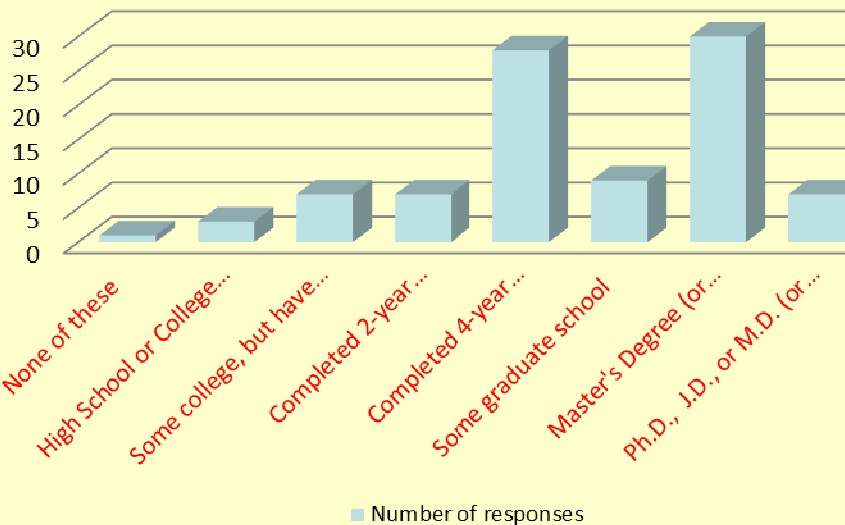
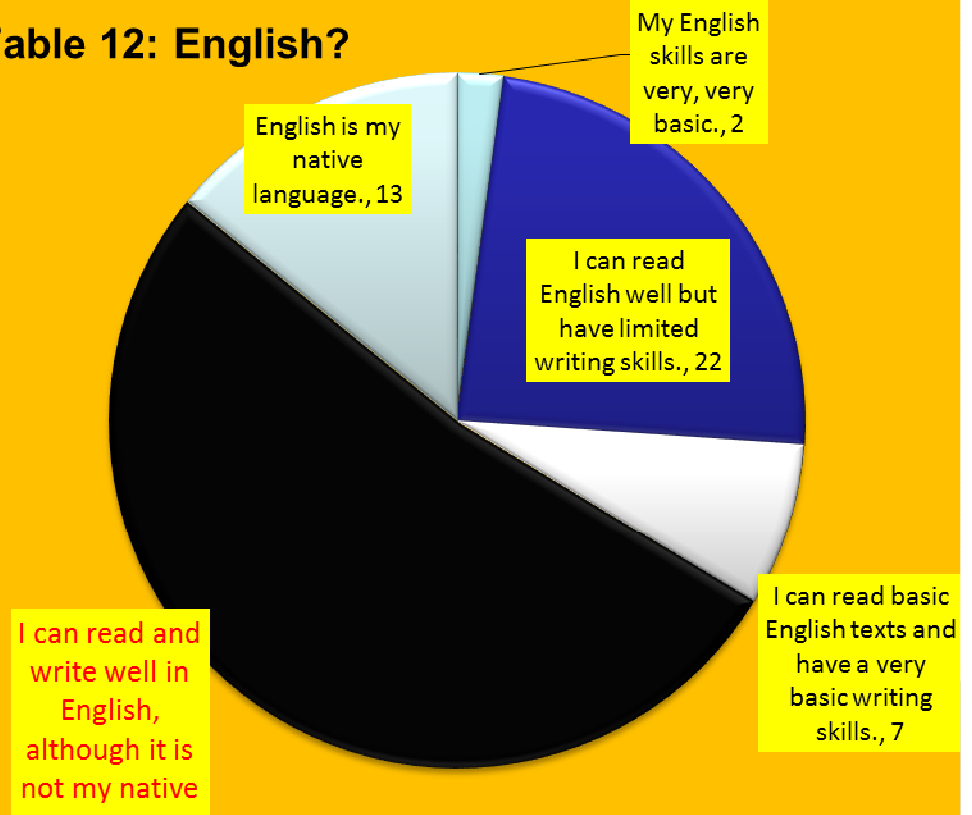


Table 12: English?



[Description of student profiles 4]

Table 13: Geographical Locations of Students

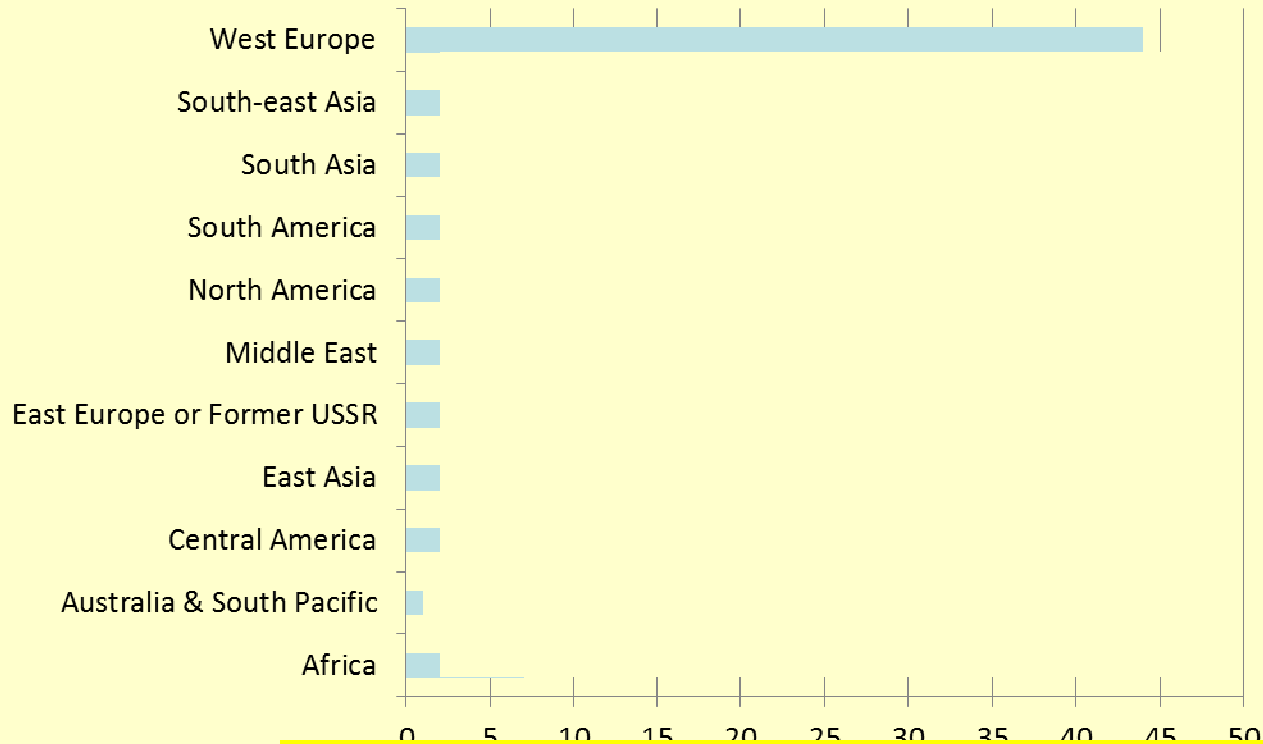


Table 14: Information Source to Learn about the MOOC on Tourism Industry Analysis

14025: How did you hear about this Canvas Network Course? (select all that apply)	From a Canvas or Canvas Network communication	From a friend or Colleague	From the instructor	From a news story (print, radio, or TV) that mentioned Canvas Network	From a web search	Through a social media site (like Facebook or Twitter)
Number of responses	16	36	10	3	15	22
Percentages (n = 91)	17.58%	39.56%	10.99%	3.30%	16.48%	24.18%

Source: Made by authors based on data from CN1468 Canvas Network

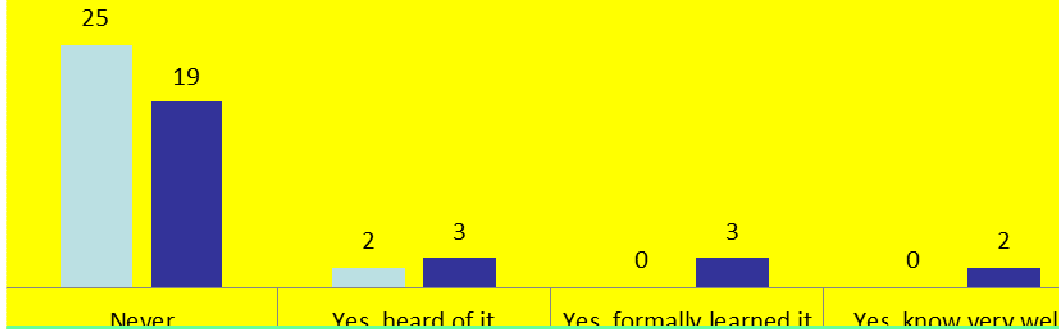
Analyses: Regular course VS MOOC

- Regular course (16 weeks) and MOOC course (6 weeks) covering the same topics
- What if we give the same survey to those two groups and compare responses?
 - Sample sizes are small, thus I show only preliminary data

Regular Course VS MOOC

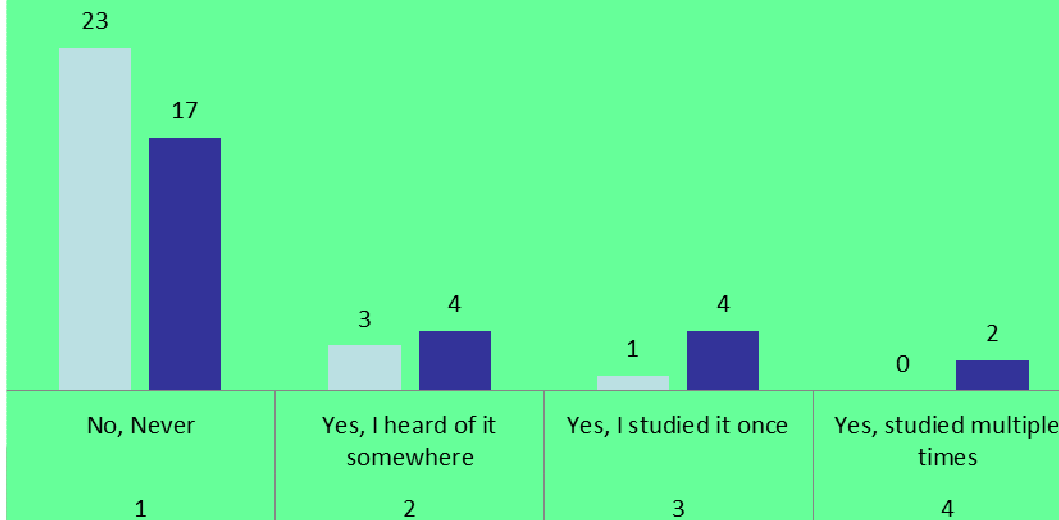
Learned TSA before?

- Did you learn Tourism Satellite Accounts in previous courses? RC
- Did you learn Tourism Satellite Accounts in previous courses? MOOC

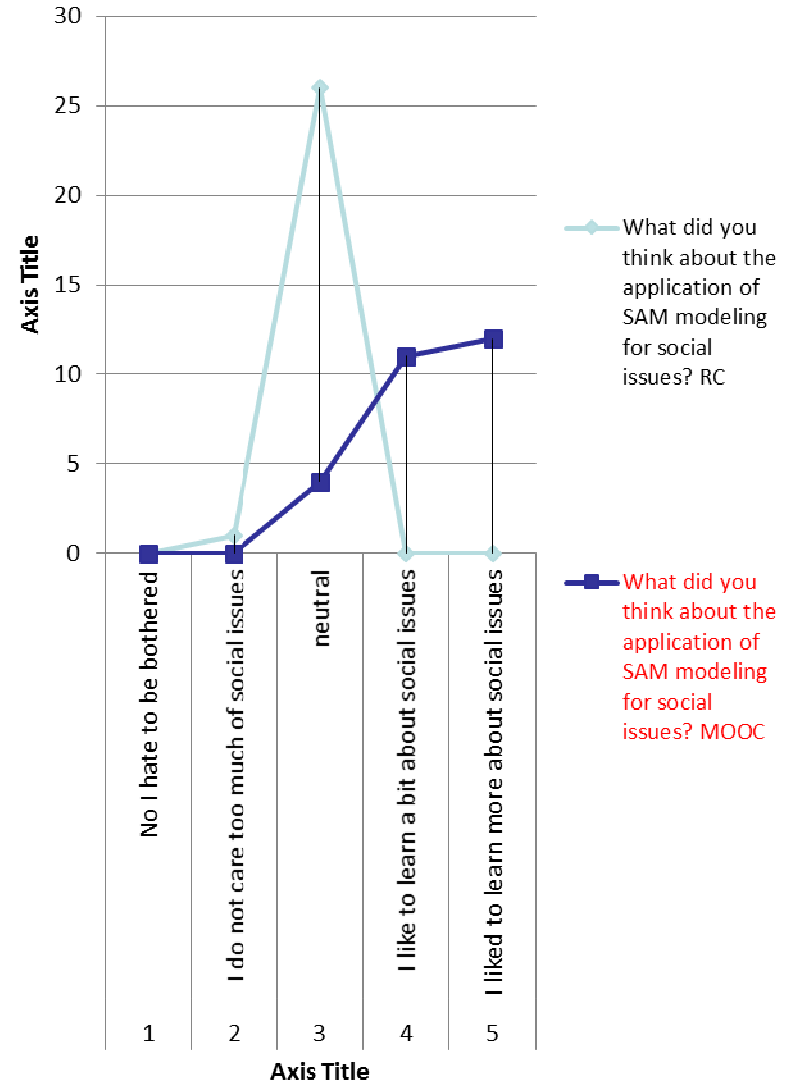


Heard of UNMDG?

- Have you heard or studied about UNMDG in other courses? RC
- Have you heard or studied about UNMDG in other courses? MOOC



Social Issues?



Preliminary Findings

- **Diversity** → YES, in educational level, gender, age, current status, global locations, English skills (“students”??)
- **Educational Effectiveness** → Similar trends with past MOOC studies such as large dropout and lurkers exist, yet, the completion rate appears to be higher than other MOOCs.
 - More focused on specific topics
 - Shorter course (6 weeks) based on past MOOC research
 - Certificate of Completion may entice some to stay on?
 - Relatively high numbers of lurkers? (who stay with course but will not take exams) – they may change their minds at the last moment.
- **Quizzes and Final exams can verify whether students learned contents enough.**
 - *See sample next page*

SAMPLE: Lecture 6 (TSA) Quiz

1 pts

In table 5 of the "US Travel and Tourism Satellite Accounts for 1992", you see \$16,613 in the first column on the left. Which statement is correct? Choose one.

Correct Answer

- This is the restaurant products (ex. nice meal) provided by the hotel industry
- This is the hotel products (ex. nice meal) provided by the restaurant industry
- This is the hotel products (ex. comfortable stay) provided by the hotel industry
- This is the hotel products (ex. comfortable stay) provided by the restaurant industry

TSA-Okubo-2

1 pts

In Table 5 in the Okubo paper, pick up the amount of hotel commodity (ex. comfortable room) provided by non-hotel, tourism-related industrial sector (in US\$ million). Choose one. Again I am asking the amount of hotel commodities that non-hotel but tourism-related industrial sector produced in 1992.

Correct Answer

- 239
- 10,428
- 84,243

TSA-Okubo-3

2 pts

Based on Table 6 of Okubo paper, tell me which tourism commodities are sold **RELATIVELY** more to other industries as intermediate goods and services than to meet Final Demands. Choose one correct statement about the comparison of hotel commodities and restaurant commodities.

Correct Answer

- Restaurant commodities (tasty meals) are sold more to other industries as intermediate goods than to meet the final demand from people.
- Hotel commodities (hotel room stay) are sold more to other industries as intermediate goods than to meet the final demand from people.

Implications/Future Research

- **A MOOC can outreach huge numbers of audiences globally**
 - with minimum operating expenses to Institutions
 - no costs (or little costs) to students
 - Issues of money, visa, English would not prevent them from learning knowledge they want.
- **It may re-shape traditional workshops and trainings**
 - To make participants' knowledge level uplifted
 - Can cross over language barriers easier (**by learn-at-your-own-pace** model)
 - Systematic verification of learning outcome is possible
 - Traditional workshops and training can be geared towards bilateral discussion & consultations as unilateral dissemination can be effectively conducted by MOOC.



MOOC course on **Economic Impact & TSA**

Now open – Starts on Dec.1, 2014.

FREE to anybody in the world! (link below)

<https://www.canvas.net/courses/tourism-industry-analysis-1>

Thank you very much. Tad Hara

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<http://hospitality.ucf.edu/person/dr-tadayuki-hara/>

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