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www.mcm.unisg.ch

ELECTRONIC MARKETS IN TOURISM

B. Schmid

Institute for Information Management,
University of St. Gallen

Abstract

Following a short introduction outlining the concept of electronic markets and the structure of the tourism industry respectively, we will briefly portray the status quo of electronic markets in this sector. In conjunction to this, the foreseen technological developments, as well as possible architectures for the future tourism market and moreover their effect on the tourist industry will be discussed.

Electronic Markets

Prior to formulating a working definition of an electronic market (EM), let us consider the functions of markets in our economic system. According to traditional market theory, markets are defined as economic places of exchange where - *ceteris paribus* - aggregate demand meets aggregate supply. Markets serve to allocate resources, skills and products by way of coordinating economic activities through competition:- the key factor in optimizing such allocation, in the quest to yield maximum economic welfare. Pertinent information is contained in the prices quoted for the products or services generated. Traditional market theory however, tends to oversimplify matters: Its assumptions include perfect market transparency, complete information and perfect competition - conditions that are unanimously regarded as being unrealistic. We can identify two further applicable coordination mechanisms: corporations (hierarchies) and co-operation.

The relevance of hierarchies and co-operations is contained in their corresponding transaction costs - that is to say - the costs accruing from information gathering, negotiation and actual settlement of market transactions [3].

Figure 1: Three-Phase-Model

Each transaction is thus comprised of three phases:

- *Phase 1: Information gathering.* On the input side, information pertaining to available products and/or services, their specifications, suppliers and delivery terms is required. On the output side, potential end-consumers must necessarily be identified. In addition, general information reflecting current market conditions, branch and/or technological trends - will prove most expedient. This phase thus determines potential market partners and their respective offers and/or demand.
- *Phase 2: Negotiation.* As soon as all pertinent information has been evaluated, we may proceed to contact potential transaction partners. Terms and conditions (ie. of payment and delivery, warranties, additional services etc.) must now be agreed upon. The legal basis for further transactions is thereby established. A contract results.
- *Phase 3: Settlement.* In this latter phase, the concrete transactions are dispatched. It may consist of various sub-transactions depending on the goods or services in question. Physical goods - for example - require transactions relevant to packaging, storage, shipping, insurance, customs clearance and so forth. Derived transactions, such as purchasing, forwarding services

or insurance, are also initiated. The physical exchange of goods is accompanied by financial transaction - as well as - information flows. All three phases are integral to the coordination process.

The following definition is based on the above mentioned concepts of coordination and - the phase model [10]: *EMs in the narrow sense may be defined as market places put into action by means of telematics. They support all phases of market inter-transaction, including the formulation of prices for goods and services.* They consequently contribute to the realization of the ideal market as an abstract place of exchange with complete information - whereby transaction costs do not apply. In reality, electronic markets have the faculty to reduce transaction costs ostensibly.

Since present day EMs are not as yet actual markets offering all-encompassing functionality, we ought to apply a more liberal definition: *EMs in a broader sense may be understood as information systems supporting one or more phase and/or function of coordination within market systems.* This definition includes coordination systems beyond company boundries, in so far as they are used by a multitude of partners with equal participation rights on both the demand and supply sides.

EMs are characterized by the following features:

- *Ubiquity*: EMs are open 24 hrs - every day - for any user, anywhere, having access to the telecommunication network.
- *Easy access to information*:- although information assymetries cannot be avoided completely.
- *Low transaction*:- throughout.

2. Tourism Industry

Tourism may be understood as the consumption, production and distribution of services for travellers who dwell in some place other then their domiciles or workplace for at least 24 hours. Shorter sojourns are regarded as mere excursions [5]. This lucid definition stems from the United Nations Conference on International Travel and Tourism.

Figure 2: Tourism Industry - Functional View

The tourism industry is comprised as follows:

- Production of the elementary services by the industrys *primary players*: air, rail and sea travel; hotel and related bed arrangements; car rental; entertainment, leisure time and basic services such as travel insurance.
- The *end-consumer* of these services: single, family and group travellers.
- *Intermediaries*: producers of packages comprising the elementary services which are then either sold directly or indirectly (ie. tour operators); Sales offices - selling elementary services and packages alike (ie. travel agencies); regional and sundry organisations that either sell, or mediate specialized products and services (ie. tourism associations, cooperative societies and so on).

The assembly of packages - or - the consolidation of several elementary services to form a package offer, is inherently a production process, resulting in products such as:- City destination flights with hotel, including sight-seeing excursions; escorted travel; fixed package tours with full board and lodging and specialized (eg. sport related) programs. This activity is to be distinguished from the provision of tourist *information, consultation* activities - and the *sale* of tourism related services. These latter activities are primarily catered for by travel agencies in so far as they are trans-regional. Regional needs (excluding sale) on the other hand, are wholly or partially covered by regional tourism associations or boards. Trans-regional package products are chiefly generated by tour operators, the local spectrum once again being attended to by the

various tourism associations, yet also by primary players such as hotels, or transportation concerns. Figure 3 broadly outlines the industrys institutional structure [9].

Figure 3: Tourism Industry - Institutional Structure

3. EM in Tourism

The tourist industry deals in non-stockable goods. An unsold seat on a given flight at check-in time cannot be recuperated and must duly be written off. Time is thus a critical factor. The industry is furthermore highly information-intensive and is characterized by zealous competition and shrinking margins. These conditions were and are, prime movers for launching and developing computer supported coordination systems. It is no surprise that numerous such systems have already taken root and are consistantly being extended in terms of functionality.

Reservation Systems

Reservation systems are amongst the first electronic system applications to be implemented in the tourism industry and may be seen as a given component of the electronic tourism market. They were initially employed for the sole use of a few primary players - namely - airline carriers as well as large hotel chains and car rental companies. Only gradually did such proprietors make their terminals - initially intended for internal use only - available to partners and travel agencies alike. These terminal services naturally tended to favour the originators products which resulted in information biases and distortions. Small airliners in particular were at a grave disadvantage in early flight-reservation systems, resulting in their enforced opening in the USA. Similar developments took place in europe where terminals were made available to travelburos, yet in terms of the Multi-Access Concept [4]. Each airline was connected independantly - even though

over a single interface - an arrangement that ensured against competitive disadvantages for any one of the participating members. The users however had to do without jointly administered booking directories accommodating all airline carriers. Moreover, the particulars of each given system had to be known and applied. The predecessors to British Airways - BEA and BOAC - together with other european airliners and a software concern, subsequently founded TRAVICOM, in order to develop a more comprehensive booking system. From a technical point of view, the establishment of a common system language is of central importance here. The system however only caters for business-orientated air travel. The leisure industry was rendered to videotext.

This concept was adapted and implemented by other national markets - in Germany - with START [4]. Travel agencies came to be the primary users, whereby their expanding needs, due to the increase in international travel, led to demands for greater system functionality including direct access to other national booking directories and support during the actual settlements phase for activities pertaining to billing, travel costs control, and so on. This gave rise to the CRS or GDS - that is - Computer Reservation and Global Distribution Systems respectively. Following a spate of fusions and takeovers, there remain three worldwide CRS consortiums:

- GALILEO International, resulting from the fusion between COVIA, brainchild of United Airlines and its various european partners - and - its european counterpart, GALILEO.
- SABRE, a system developed by AMR - parent company of American Airlines.
- WORLDSPAN, owned by Delta Airlines and TWA.

Since 1987, Lufthansa has - together with three other leading european airliners - developed and implemented AMADEUS which is by and large geared towards its european clientele. These systems commonly not only allow for the booking of flights, but moreover, permit direct access to systems administered by car rental companies, sea carrier consortiums, hotel chains and others. The payment of services rendered by way of credit card - for example, is also possible, as is the generation and printing of tickets [1].

In this way a large bag of services is made available to the travel agencies - or indirectly - the client. One can therefore secure personal "turn-key" travel arrangements (incl. concert hall bookings) in a single visit to a travel buro, and emerge with ticket in hand. The sheer scope of these services has resulted in increased marketing efforts on the leisure-time front, as opposed to business travel.

System-users are moreover limiting themselves to the use of one system only, due to the escalating complexity involved. This trend has forced system builders to intergrate their respective systems by permitting direct access from one GDS to another by way of ones own user-interface and communication network [4]. The user of one GDS therefore, has potential

access to all others. Competition subsequently takes place in terms of user-interfaces (user-friendliness, functionality etc.), and in accordance with the number of system-clients that may be boasted.

There remains no reason for corporate clients, as well as private people, to be denied access to these systems. Corresponding products are presently being developed and introduced.

National Sales and Distribution Systems

The tourism branch of the various national markets have largely been determined historically and generally reflect differing needs, as is demonstrated by the multitude of national computer support systems: Germany and SWIFT, France and ESTEREL, Britains TRAVICOM, Austrias TRAVIAUSTRIA, TRAVISWISS and so forth - examples to be found in the european market. These branch solutions mostly include an office-automation module. They furthermore allow for the direct access to diverse reservation systems and those systems of the major tour operators. This latter module is of great relevance to the electronic tourism markets. Many systems are presently being made available - in suitable form - to smaller, as well as private customers (eg. SWISSLINE and START/Btx). Besides PC and videotext access, the successful implementation of ATMs (Automated Teller Machines) is also being investigated (joint venture projects:- START; DB; TUI and Lufthansa).

Another direct-sale possibility lies in selling via telephone (STARTs Audiotext), or fax (a SABRE variant). With the continuing integration of the PC, fax and telephone technologies, further offerings are to be expected.

National systems gain validity due to their ability to pool local offers into a coherent whole. The inclusion of regional systems (see below) is not only conceivable, but also of logical merit. The systems supply the participating travel agencies with a platform for inter-buro communication. Large travel concerns are able to communicate with their various branch offices; non-IATA-licence holders may communicate with their licensed counterparts in order to confer print orders for flight tickets [11].

Tour operators, as previously mentioned, either sell their products via their own sales offices or indirectly through independent travel agencies. They are increasingly operating via computer supported distribution systems - often by way of videotext. A worthy example of this is a system owned by the british travel agency, Thomson Holidays -christened TOPS - which has been successfully implemented since 1986 [2]. Printed travel catalogues however, continue to hold the upper hand. The EUROTOP project, with its aim to produce an electronic catalogue, represents

an interesting alternative [8]. The paper medium is to be replaced by an electronic, distributed information carrier. Since pictorial representations are of major significance in this industry, EUROTOP has been designed to allow for the input, digitalization, storage and output of pictures. The foremost advantage of such a system lies in the swift brochure modifications possible, in reaction to changes. This corresponds to a substantial need that cannot be covered by the traditional print media. Further advantages are the supply of up-to-date information and databases with potent search functionality. The incorporation of visual aids began at various stages and by way of differing media: CD-Roms and distributed networks. The EC RACE-Project - ESSAI - plans to exploit optic-fibre technology to the fullest. Multimedia is bound to take the spot light.

Regional-Association Systems

Regional tourism associations increasingly realise, that offers which are not made available electronically, are bound to fall short of the global tourism market and will merely retain local impetus. In order to compete with the larger hotel chains, it is necessary to make the selection of accommodation possibilities, that family businesses and other non-hotel chain concerns supply - as well as additional regional tourism services, directly available over globally accessible reservation systems. Many such regional systems have been, or are in the course of being founded and may either apply to very small regions (such as Multimedia Graubünden, or in Germany - SI-Tour for the region Siegen-Wittenstein), or larger regions as in the case of TIS (Tirol-Informationssystem) [12] and the planned austrian system - MEHR. Many of these systems also allow for the *sale* of regional services, whereas others amount to sheer - often multimedia orientated - information systems. The offers are supposedly made available to international reservation systems. Several are pure multimedia information systems. Some are closed systems, others are open to all.

It should be noted that the majority of these systems - national and regional - have only been introduced quite recently. The development of tourism EMs may be in its infancy, but growing at an accelerated pace.

4. Technological Developments

Each exchange of information pre-requires compatible information instances. The most important information carriers are people themselves, who, until very recently comprised the sole *active* instances as such: a person is able to respond to questions and solve problems by applying known information. The remaining information carriers such as paper, remain passive - able to hold information, but not apply it independantly.

Information technology has - for the first time - allowed for the technical construction of an active information carrier: a computerized information object can accept commands, relay information on its state at a given point in time, complete related tasks and solve defined problems. The functionality of this technology may be appropriately demonstrated in terms of word processing. A given text appearing on the monitor "understands" a large number of operations previously only comprehended by a secretary perhaps: besides the supplementation, correction and obliteration of the text displayed, it can moreover reformat itself, appear in different type formats, realize a page break, print itself and so forth. Just in terms of this example, we have in recent years experienced the transfer of knowledge from specialized workers to word processing systems, and thereby to information objects of the type:- text. This process is still in its beginning stages and remains far from completion. We are to experience continued innovation pertaining to active information objects over the next few years, whereby "Know-How" will be increasingly integrated.

Figure 4: The development of multimedial telematics

We are presently at the threshold of a new and sweeping wave of technology. This is characterized by the mergence of information technology - responsible for the founding of active information carriers - on the one hand and telecommunication processes, as well as audio-video technology on the other. The digitalization of sound and video is one aspect. This development is in full throttle and is responsible for realizing digitalized sound-carriers, leading to the cornering of an ample niche in the consumer electronics market. Computer graphics is in its primary stages and is bound to bring us digitalized television within the next decade. The media is presently swamped with articles and documentaries alike, informing on the related possibilities and consequences. Even more noteworthy is the integration of these technologies with information technology itself. This is reflected in the realms of computer graphics and animation, that allow for photo-realistic depictions of mathematically calculated objects - right up to virtual reality. The multimedia PC could dominate the field by the mid-1990's, paving the way for important new applications.

The fusion between telecommunication and audio-video technology is embodied by the radio and television - technologies with which we are well acquainted. At present, digitalization merely serves to augment quality. If we however take the concept of *interactivity* into consideration, a new dimension springs to the fore. The union of information technology and telecommunication has been underway for several years. Electronics Markets are one of its fruits.

Telematics enables us to free the active information objects from particular platforms and to convey them to the global telecommunications media. They thus become *ubiquitous*, *active* information objects, exhibiting the characteristics of virtual machines. An electrical postbox, is an example of such an object: one may, if one has access to the telecommunication medium, at any given time or place make use of its functionality to send and receive electronic mail. An analogy is to be found in electronic travel catalogues with ordering facilities, as well as reservation systems. The previously mentioned text objects as encountered in word-processors, are also to be rendered placeless within the next few years and may likewise be understood as virtual machines. All this will finally be fully realized when there has been a global standardization of text-based documentation in terms of the ODA/ODIFF protocols. Every text, not only on ones own PC, but also those at hand on an accessible network server may then be opened and modified as seen fit. An analogue process - ie.- the standardization of tourism information remains unattained.

The newly found technology allows for a totally novel approach to organising work processes. At least three views may be distinguished:

- **View 1:** In terms of the individual *workers and consumers* a entirely new enviroment is created, whereby a spate of information objects that are in part produced and maintained in geographically displaced areas - are made available:- objects that were previously not accessible. The electronic mailboxes and flight reservation systems already referred to, serve as solid illustrations.
- **View 2:** In terms of the *objects* (or applications) themselves, the possibility of geographically distributed instances such as people or computer programmes accessing and processing these objects simultaneously, holds true.
- **View 3:** Up until now, it had only been possible for *groups* to work in a given place, whether under normal office conditions or at meetings to which they had to commute. Telecommunications have made the synchronized communication between displaced workgroup members possible. Following teleconferencing, videoconferencing amounts to one of the primary realizations of this work mode. Such *virtual rooms*, in which one may

work together, will be implemented more and more - if not take centre stage - in the not to distant future.

In the tourism industry, two such virtual work-and-communication areas awake particular interest: EMs and the virtual office.

The virtual, ubiquitous office, that is realised with the technology outlined above, will permit radical new forms office interaction. This development began in the wake of increased office automization whereby more and more documents were being made available on servers within a communications network, which could then be accessed and processed from the individual workstations. This technology permits one to work from home or from ones holiday resort, in so far as a communication link can be established to the required office server. The distinction between work and leisure time are being newly defined - with consequences for tourism.

The consequences of EMs on a macro as well as micro level are bound to be far reaching. With the exception of regional markets, tourism information that has not been made available to the EMs will not come to light. Suppliers of tourism services are required to establish the pre-requisites for their beneficial presence in these electronic markets. EMs allow for - and enforce - the purchase of goods and services, there, where they are optimally priced - globally.

5. Prospective Tourism Market Architectures

As expounded upon above, the tourism market will comprise a global, integrated market as is already the case in many areas already today. There have already been substantial steps made in its direction. From a technical point of view however, several crucial elements are still lacking [10]. In order to attain a fully open EM, several aspects are to be realized.

1. Tourism services, especially the elementary services such as flights and hotel accommodation, must necessarily be offered in *standardized* form. Alpha-numerical information, could and ought to be presented in terms of UN/EDIFACT; viable protocols for multimedial coverage are currently in the making. Services are to be made available on accessible *servers* which constitute a vital component of open systems.
2. The standardized, elementary services are to be put up on offer in *electronic markets* that should allow for stock-exchange-similar price determination. This ensures that last minute offers are competitively priced and that the prices may be seen as valuable information carriers - a reflection of complete information.

3. *Package production* (ie. by tour operators) will in future also be carried out in EMs. These packages will in turn be offered to the different tourism segments in standardized form. Besides fixed package arrangements, individual ad hoc compilations should be made possible (reverse marketing).
4. The EMs catering to particular tourism segments should not only be able to make their offers available, but also be in the position to accept customer queries, so that potential suppliers are able to make their services known to these clients and even adapt them where necessary.
5. Clients are to have *direct access* to the EMs.

Figure 6 broadly illustrates this ideal EM environment. The package assembly process may potentially take place in a multi-level manner.

Figure 5: EM Architecture

The electronic markets will naturally be hybrid systems: besides the fully computerized markets, there will always be those where personal consultation, decision support and so on will continue to play a crucial role.

The described developments are evidently propelled by economic necessity, especially where the technology allows for such architectures.

An open, global electronic tourism market has consequences to bear [6]. The economical pressure to move in its direction stems from its faculty to squeeze transaction costs to a minimum

- in this information intensive industry. Should these transaction costs once again be augmented by multimedial product presentations, then only in so far as increased financial yields may be realized. In summary, a selection of the seemingly most probable and important aspects - in the writer's opinion - below:

- The tourism service suppliers must make their standardized, interactive offers available in an appropriate server environment. The quality of *access possibilities* and *product presentation* are as important as the actual product quality itself. Regional systems, like flight reservation systems, will have to be made accessible worldwide.
- The producers of integrated packages will have to strive for the necessary flexibility to enable *individually tailored arrangements* - based on the principle of reverse marketing. The Know-How of these package producers may remain specialized. The generated products must on the one hand be competitively priced - and on the other - presented electronically.
- Information evaluation for clients and customer-related consultation, as well as the *design* of tailored solutions (ie. individual packages), should be organisationally distinguished from actual *production* due to the divergent Know-How required. This does not mean ofcourse, that the same organisation may not carry out both types of activities. The gathering of relevant information, as well as the ordering of products, shall take place electronically. (This facet of the value chain is already highly computerized.)
- The *direct sale* of services to *end-consumers* must increasingly be realized via the electronic media [7]. The PC, or its off-spring products serve as important terminal access points. Public terminal points may prove just as central to ensuring a satisfying solution.
- The necessary *systems* for tour operators and sales offices alike, should be *developed jointly* or left to specialists. The tourism industry must not practice competition by centering on its systems, but rather through its generated products.

These requirements are directed at a tourism industry bearing the profile currently evidenced. As soon as fibre-optic technology (IBC, or Information Highway concepts) has been concretely established - and high quality multimedial productions have come to be expected - (incl. virtual reality), new product design and innovative production - as well as - distribution systems will be called for. For the time being, it is essential to master the basics.

References

1. Bodendorf, F., Schulz, A.: Computergestützte Reisevertriebssysteme und ihre überbetrieblichen Auswirkungen. In: Newsletter des Kompetenzzentrums Elektronische Märkte Nr. 3, Hochschule St. Gallen, 1992.
2. Bruce, M.: Technological change and competitive marketing strategies. In: Witt, Stephen F.; Moutinho, L.: Tourism Marketing and Management Handbook, New York usw. Prentice Hall, pp. 455-458, 1989.
3. Coase, R.H.: The nature of the firm, in: *Economica*, 4, pp. 386-405, 1937.
4. Ellis, M. A.: Elektronische Reservationssysteme. In: Newsletter des Kompetenzzentrums Elektronische Märkte, Nr. 3, Hochschule St. Gallen, 1992.
5. Kirstges, T.: Expansionsstrategien im Tourismus. Wiesbaden, Gabler Verlag, 1992.
6. Kropp, W.: Elektronische Reisevertriebssysteme: Von der Strichliste zum Global Ring. In: Roth, P., Schrand, A. (Hsg.): *Touristic-Marketing. Das Marketing der Tourismus-Organisation, Verkehrsträger, Reiseveranstalter und Reisebüros*, München, Verlag Franz Vahlen, 1992.
7. Lenner, K.C.: Ohne Direktverkauf können wir nicht überleben. In: *Unabhängige Zeitschrift für Touristik und Geschäftsverkehr*, Hannover, Nr. 5, pp. 133-135, 1993.
8. Lüttich, K.H.: EUROTOP - ein europäisches Projekt zur Entwicklung und Erprobung des elektronischen Reisekatalogs. Newsletter des CC EM, Nr. 3, Hochschule St. Gallen, pp. 4-5, 1992.
9. Ritz, D.: Elektronische Märkte verändern die Tourismusbranche. In: *io Management Zeitschrift* 61, Nr. 1, Verlag Industrielle Organisation BWI ETH Zürich, 1992.
10. Schmid, B.: Elektronische Märkte - Electronic Markets. In: *Wirtschaftsinformatik*, Vol. 35, No. 5, pp. 465-480, 1993.
11. Stohler, H.: TRAVISWISS - Neue Wege in Verkauf und Distribution. In: Newsletter des Kompetenzzentrums Elektronische Märkte, Nr. 3, Hochschule St. Gallen. 1992.
12. Werthner, H.: TIS-Tiroler Informations System. In: *Wirtschaftsinformatik*, Nr. 35, pp. 43-50, 1993.