Integration of Travel Agencies with other Supply Chain Members: Impact on Efficiency

Darja TOPOLŠEK[1], Dejan DRAGAN[1]

[1] University of Maribor/Faculty of Logistics, Celje, Slovenia

Abstract — The performance of tourism supply chains depends on the efficiency of all members involved, including the travel agencies. The paper addresses the analysis of relationships between the agencies' external integration with other supply chain members on one side, and the efficiency of the agencies on the other. The data envelopment analysis is applied for the estimation of efficiencies, while the structural equation modelling (SEM) is conducted for identification of possible integration impacts on the efficiency. Results show that integration with other supply chain members indeed has some positive impacts on the agencies' efficiency. Also, the developed SEM model implies that in-depth forms of collaboration would enable more effective exploitation of the identified relations between the integration and efficiency of the agencies. This finding could be an important guideline for the agencies' management in the sense of achieving more satisfied customers and bigger profits, as well as reduced operational costs.

Key words— Tourism industry, Tourism supply chains, External integration, Travel agencies' efficiency, Data envelopment analysis, Structural equation modelling.

I. INTRODUCTION

The tourism sector represents a significant part of the gross domestic product (GDP) in most countries worldwide. It is estimated that tourism contributed even 9.5 % share of global GDP in 2013, which will most likely continue to increase, probably even faster than shares of other industrial sectors such as transportation or manufacturing (Council, 2014).

In recent years, Europe is becoming one of the most important tourism destinations. As a consequence, the tourism industry has converted into a key sector of the European economy, creating more than 10% of the GDP of European Union, with employing 9.7 million citizens in 1.8 million companies (Group, 2012).

Conversely to other industries, the tourism industry is less attractive to scholars. However, in the last years, we can find some significant research studies in this field (Evans, 2003; Lafferty & Fossen, 2001; Nunkoo & Ramkissoon, 2012; Singh, 2008; Tapper, 2004; Yılmaz & Bititci, 2006). These studies address many aspects of management of tourism supply chains (SC), from collaboration topics and problems, all over to performance measurement issues.

All members of tourism supply chain depend on each other and cooperatively contribute to overall performance and efficiency of the entire chain (Evans, 2003). Such cooperation can be developed in vertical or horizontal direction, and is considered as a certain sort of external integration (EI) (Yılmaz & Bititci, 2006).

In the manufacturing sector, many research works have been dedicated to the studying of relationships between the external integration of the SC members on one side, and their performance, as well as efficiency, on the other side (Flynn, Huo, & Zhao, 2010; Frohlich & Westbrook, 2001). A growing body of these studies has discovered that the increased degree of integration can contribute to improved performance and efficiency of SC members (Vickery, Jayaram, Droge, & Calantone, 2003; Zhang, Song, & Huang, 2009).

In contrast to the manufacturing sector, there have not been much research studies reported for service sectors, such as tourism sector, that would investigate the impact of external integration on firm's performance and efficiency. Probably the main reason is that for the tourism industry, it is quite difficult to assess and evaluate the effectiveness of companies (McLaughlin & Coffey, 1990).

Even fewer such studies have been conducted for the travel agencies, which are prominent members of tourism supply chains. The agencies are selling holiday packages to its customers, as well as organizing transportation services (e.g. airplanes, trains, buses, cars), accommodations (e.g.

hotels, motels, lodges, houses), trips (e.g. excursions, tours), and other related services (e.g. insurances, foreign currency exchange) (Singh, 2008).

The primary focus of this paper is to investigate the influence of external integration with other SC members on the agencies' efficiency. As other SC members, the following types of companies are included: accommodation and insurance companies, tour operators, and other (partner) travel agencies. It is supposed that, similarly as in manufacturing sector, the increased level of integration might lead to increased efficiency as well. To the best of our knowledge, there has been quite a few similar research (e.g. (Kovačić, Topolšek, & Dragan, 2015; Topolšek, Kovačić, & Cvahte, 2014; Topolšek, Mrnjavac, & Kovačić, 2014)) reported in the scholarly literature. Thus, the conclusions of this research could serve as a primary contribution of this paper.

For the purpose of research, a survey among certain Croatian travel agencies located along the Adriatic Sea was conducted. The efficiency of the agencies was calculated by the means of data envelopment analysis (DEA) (Cooper, Seiford, & Tone 2006). In the further analysis, exploratory and confirmatory factor analysis (EFA, CFA), and structural equation modelling (SEM) were applied (Byrne, 2009; Hair, 2010; Hoyle, 2012; Kline, 2005).

The derived structural equation model (SEM model) enabled us to examine the relationships between the measured items (observed indicators) and the un-measurable latent factors (constructs) of addressed external integrations (EIs). Also, the causal relations between these factors and the single-item latent construct representing efficiency (EFF) were exposed. The calculations were executed in the program package IBM SPSS V21 and its extension AMOS.

II. LITERATURE REVIEW

A. Tourism supply chains

The tourism supply chains can be defined as a complex system of tourism organizations, which are involved in numerous activities related to the supply of tourism services/products, as well as a distribution of the latter to a certain tourism destination (Zhang et al., 2009). The main difference between this kind of supply chains and those of other sectors is that the tourists are travelling with a product of a particularly significant service component (Tapper, 2004). In tourism supply chains, a high proportion of personnel are involved, whose the main objective is to ensure the rapid production of the holiday experience.

The tourism supply chains rely on business relations between its members while the management can contribute considerably to performance improvements (Véronneau & Roy, 2009; Zhang et al., 2009). Accordingly, the persistent improvement of business operations by each member in the supply chain is desired, and sustainability based collaboration is preferred (Lemmetyinen, 2010; Tapper, 2004).

Constant performance and efficiency improvements are also fundamental for the travel agencies, which are involved in booking, planning, and documenting of travel arrangements for its customers. Besides, their activities also include advertising, advising, and promoting their services (Singh, 2008).

B. Integration in tourism supply chains

The tourism supply chains comprise collaboration, coordination, and integration of complex heterogeneous mechanisms and activities (e.g. transportation, accommodations, and so on) in uncertain dynamic environments (Véronneau & Roy, 2009). They are quite often challenged with the aggressive opposition and considerable variations in the demand, to whom must be well equipped (Zhang et al., 2009).

There have been numerous definitions of integration in the tourism supply chains introduced. For instance, if external integration is taken into consideration, it can be defined as a set of fluid business relationships between different supply chain members. Occasionally, the external integration is also addressed as some form of interaction, collaboration, and communication outside the borders of the main organization (Griffin & Hauser, 1996; Rinehart, Bixby Cooper, & Wagenheim, 1989; Stock, Greis, & Kasarda, 2000). Similarly, some other researchers treat SC integration as a level of strategic collaboration of a particular supply chain member with its partners in the framework of inter-organizational and intra-organizational processes management (Flynn et al., 2010).

According to (Lee, 2000), the supply chain external integration encompasses three principal dimensions: information sharing, coordination and resource sharing, and organizational linkage. These dimensions include sharing of information about production plans, inventory status, sales forecasts, and promotion plans, as well as the realignment of decision making in the supply chain.

Most scholars agree that the integration strives to achieve such effective flows of services/products, decisions, information, and cash so that the top quality of services at the lowest possible costs and highest possible speed is brought to the customers (Flynn et al., 2010; Frohlich & Westbrook, 2001). External integration also assists the companies to achieve competitive advantages over their opponents and facilitate their entry into the market (Lafferty & Fossen, 2001). Moreover, it provides the means to reduce transaction costs, enables the market entry at lower prices, and supports priority access to top destinations (Bull, 1995; Thea Sinclair & Stabler, 1997; Topolšek, Mrnjavac, et al., 2014).

C. Integration based performance in tourism supply chains

Several scholars have also reported that tourism supply chain integration leads to increased company performance of individual SC members, similarly as in manufacturing sector. However, these studies have mainly focused on two different fields. The first field is mostly limited to a particular sector, for instance, to the hotel sector (Atkinson & Brander Brown, 2001; Enz, Canina, & Walsh, 2001; Mia & Patiar, 2001; Phillips, 1999).

Conversely, the studies of the second field investigate the relationships that typically arise between service providers (e.g. hotels and airlines) on one side, and mediators (e.g. tour operators) on the other (Bastakis, Buhalis, & Butler, 2004; Theuvsen, 2004; Zhang et al., 2009). Bastakis and his colleagues (Bastakis et al., 2004) have identified bad personal and professional relations in mutual communication between hotels and tour operators. On the other side, Theuvsen (Theuvsen, 2004) has discovered that the principal European tour operators are extraordinarily vertically integrated with hotels, airlines, and other service providers, hence good collaboration can bring quite great benefits to all parties involved in the supply chain (Theuvsen, 2004; Zhang et al., 2009).

Above mentioned studies mostly agree that efficient integration and optimal coordination of business operations and activities lead to reduced operating costs, and improved firms' agility, flexibility, and competitiveness throughout the entire supply chain (Sigala, 2008; Zhang et al., 2009). Integration thus has numerous advantages, primarily reflected in increased firm performance and success.

Further literature from the field of tourism supply chain integration and performance can be considered in survey work (Dragan, 2015), where some important references regarding two-party relationships, integration, and cooperation, as well as performance measurement can be found.

D. Efficiency in tourism supply chains

Company's success and performance are often related to economic efficiency, which can be viewed from two aspects, technical and allocative efficiency (Heshmati, 2003). Efficiency in the tourism sector has been researched in different fields and for different supply chain members. For example, works (L. T. Liang, Yang, J. T. , 2012; Yi & Liang, 2014) have provided a complete overview of tourism industry efficiency, while several scholars have also studied efficiency related to hotels (A. Assaf, Barros, & Josiassen, 2010; A. G. Assaf & Magnini, 2012; Manasakis, Apostolakis, & Datseris, 2013; Shang, Wang, & Hung, 2010). On the other side, some studies have investigated city and regional tourism based efficiency (M. Liang, Yi, T. , 2012; Suzuki, Nijkamp, & Rietveld, 2011; Wang, 2013; Yan, 2013), while the other have also examined tour operators based efficiency (e.g. (A. G. Assaf, Barros, & Dieke, 2011)).

E. Detected gaps for the case of travel agencies

In the case of travel agencies, there is a quite big gap detected regarding the analysis of their efficiency and/or integration. Moreover, surprisingly, there are even fewer studies identified, which would try to investigate the agencies' efficiency in relation to their external integration. For instance, one such study is work of authors (Kovačić et al., 2015), where the relations between agencies'

external integration with different transport providers on one hand, and efficiency of the agencies on the other hand, is studied with emphasis on various estimators' comparison.

Conversely, some other studies have only partly examined integration and/or performance issues for the agencies, as they were quite limited, without any additional targeted concerns about the efficiency. For example, some researchers have investigated the collaboration of the agencies with single transport suppliers, such as airlines (Alamdari, 2002), or with multiple transport providers (bus, rail, water, air) ((Topolšek, Kovačić, et al., 2014). Alamdari (Alamdari, 2002) has discovered that the higher level of integration between the travel agencies and airline companies also results in faster and more effective way of purchasing airline tickets. On the other side, Topolšek and her colleagues (Topolšek, Kovačić, et al., 2014) have mostly focused on causes that affect the level of collaboration between the travel agencies and different transport providers.

Some scholars have also examined relationships between travel agencies and wholesalers (e.g. (Tsaur, 2006)), while the other have carried out a similar type of research for relations between the agencies and hotels (e.g. (Medina-Muñoz & García-Falcón, 2000)). Medina-Muñoz and García-Falcón (Medina-Muñoz & García-Falcón, 2000) have concluded that in order to establish good relations, communication between parties involved must be timely processed, accurate and performed in a credible manner.

Since our study investigates the agencies' efficiency related to the external integration with several other tourism supply chain members (accommodation and insurance companies, tour operators, other travel agencies), we believe that this might be one of the main contributions of this paper.

III. CONCEPTUAL FRAMEWORK, HYPOTHESIS DEVELOPMENT, AND SURVEY

A. Conceptual framework and questionnaire

For the purpose of research, a survey among selected Croatian travel agencies located along the Adriatic Sea was applied. For the assessing of behavioural magnitudes of agencies' external integration with other supply chain members, the following three crucial dimensions were used: consultation, interaction, and collaboration (Topolšek, Kovačić, et al., 2014). These measurement scales were based on some previously applied questionnaires (e.g. (Denise, 2007; Ellinger, 2000; Gimenez & Ventura, 2005; Topolšek, Čižman, & Lipičnik, 2010)) and then modified for our study.

The conceptual framework of hypothesized model is shown in Fig. 1. The conducted questionnaire was separated into two parts, the EIs part, and the efficiency's part. The first part referred to the agencies' external integration with accommodation companies, insurance companies, and tour operators or other travel agencies. Here, the behavioural dimensions were assessed via 11 ordinal indicator items, as follows (see Table 1 and Fig. 1): $T_i = Q_{i1}$, $i = 1,...,11$ (for tour operators/other travel agencies), $A_i = Q_{i2}$, $i = 1,...,11$ (for accommodation companies), and $I_i = Q_{i3}$, $i = 1,...,11$ (for insurance companies). The exact meaning of questions denoted by Q_{ij}, $i = 1,...,11$, $j = 1,2,3$ can be seen in Fig. 1 and in table in Appendix 1. The ordinal variables T_i, A_i, I_i were formed by interviewing the leaders of travel agencies. They were asked to estimate a strength of the relationships with other supply chain members, for which an ordinal scale from 1 to 5 (1 - 'zero cooperation',…, 5 - 'total cooperation') was employed.

The second part of the questionnaire contained five indicator variables (agencies' internal variables x_i, $i = 1,2,3$, y_j, $j = 1,2$), necessary to calculate the agencies' efficiencies (see Fig. 1 and Table 1 for the meaning of these variables). At this place, the leaders were asked to provide the data about two groups of variables: the three 'input' variables (x_i, $i = 1,2,3$), and the two 'output' variables (y_j, $j = 1,2$). These variables were later used in the DEA analysis, where the input-oriented model was applied to calculate the minimum possible inputs in order to achieve maximum outputs of the agencies (similarly as it was done in the study of Fuentes, 2011 (Fuentes, 2011)).
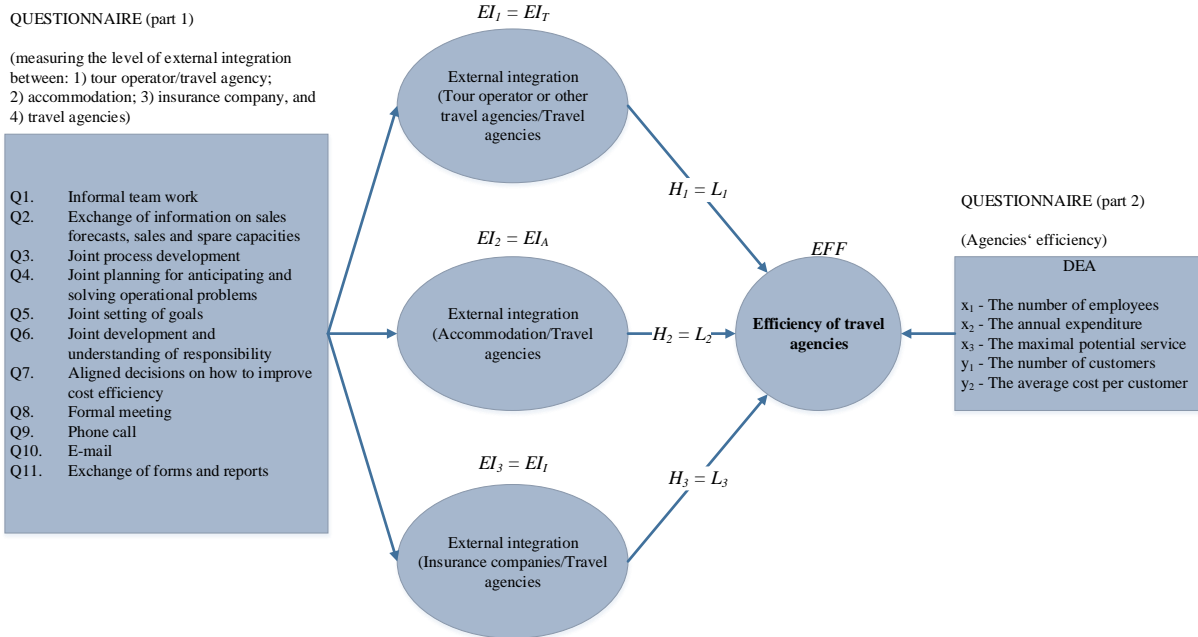
Figure 1. The conceptual framework.

Table 1. Applied variables of the questionnaire.

Questionnaire (first part)	
Variables	**Notation**
Items for EI with tour operators/other travel agencies	$T_i = Q_{i1}, i = 1,...,11$
Items for EI with accommodation companies	$A_i = Q_{i2}, i = 1,...,11$
Items for EI with insurance companies	$I_i = Q_{i3}, i = 1,...,11$
Questionnaire (second part)	
Variables	**Notation**
The number of employees	x_1
The annual expenditure	x_2
The potential service, which the agency can provide	x_3
The number of customers	y_1
The average cost per customer	y_2

B. *Hypothesis development*

As it can be seen in Fig. 1 and Table 2, we have conducted three main hypotheses H_i, $i = 1, 2, 3$ suggesting that there exists certain impact of integrations EI_i, $i = 1, 2, 3$ on the efficiency (*EFF*) of the agencies. By setting such causal relations between these unmeasurable constructs, we presumed that behavioral dimensions of agencies' external integration with other supply chain members might positively affect their efficiency.

Table 2. Presumed hypotheses.

Notation of Hypothesis	The Content of hypothesis
H_1:	EI between the *tour operators/other travel agencies* and the travel agencies (EI_1) **has a positive impact** on the travel agencies' efficiency *EFF*.
H_2:	EI between *the accommodation companies* and the travel agencies (EI_2) **has a positive impact** on the travel agencies' efficiency *EFF*.
H_3:	EI between *the insurance companies* and the travel agencies (EI_3) **has a positive impact** on the travel agencies' efficiency *EFF*.

C. Survey and collection of samples

The survey was conducted among 671 Croatian agencies, located along the Slovenian and northern Croatian coast. The agencies were generally smaller ones, concerning the number of employees. Their characteristics are given in Table 3.

As it turned out, only 64 questionnaires were fully completed and included in the research. The reasons for a low number of totally fulfilled questionnaires might be hidden in the awareness that the agencies were unwilling to disclose sensitive information about their economic activities.

However, although the relatively small sample size does not offer entirely optimal circumstances for the further statistical analysis, there have been several studies identified in the literature, confronted with this issue (for instance, they had years or countries as observed units). In these studies, it has been reported that the employed statistical estimation methods successfully completed their job regardless of the small sample size (Hox, 1998; Hoyle, 1995; Kenny, 2014; Müller, Bühner, & Ellgring, 2003; Weston, 2006).

Table 3. Characteristics of the observed travel agencies.

Number of employees	Percentage (%)	Work experience (in years)	Percentage (%)
1 - 5	69	< 5	14.8
5 - 10	12	5 - 10	29.7
10 - 20	8	10 - 20	34.6
> 20	11	> 20	22.9

IV. METHODOLOGY

A. Methods

Fig. 2 shows the methods used in the SEM modeling process. Firstly, the DEA analysis was conducted to estimate the efficiencies of the agencies. Here, the linear programming principles were applied for measuring the efficiency of a given decision-making unit (DMU) (Cooper et al., 2006; Fuentes, 2011). The most efficient DMU (i.e. company or some other organization) characterizes the "frontier", with which the relative performance of all other decision-making units in the sample must be compared. If there is any deviation of any DMU from the frontier, then such deviation is reflected as inefficiency.

Afterwards, the EFA analysis was applied to determine the factor model structure from the given data. The factor model has given us preliminary information, how the latent factors EI_i, $i = 1, 2, 3$ can be assessed via the observation of measured indicator items T_i, A_i, I_i.

Subsequently, the CFA analysis aided us to confirm the hypothesized EFA based factor structure, where a measurement part of SEM model was also derived. This way, the CFA statistically evaluated the correctness of estimated relationships between the latent factors EI_i, $i = 1, 2, 3$ and their observed indicators T_i, A_i, I_i.

Finally, the SEM modeling procedure was executed, with a derived structural part of the SEM model as the main result. Here, both sub-models, measurement and structural, were also combined together and converted into the overall SEM model. By doing this, the final SEM model has revealed the causal path relations between the constructs EI_i, $i = 1, 2, 3$ on one side, and the factor representing the efficiency EFF on the other.
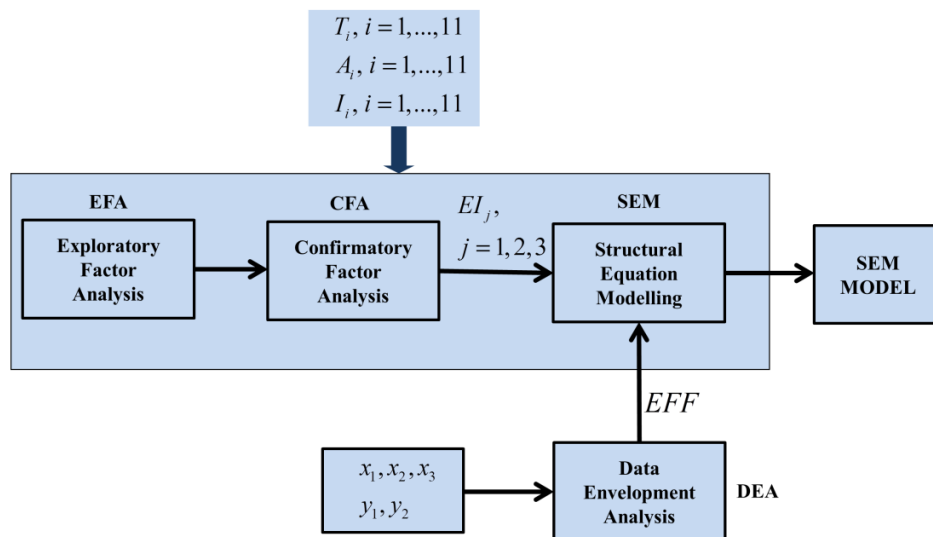

Figure 2. The methodological framework (the CFA gives the measurement part, while the SEM procedure provides the structural part of the SEM model).

B. Estimators

In order to estimate model's parameters in the CFA and SEM procedures, several estimation methods have been derived during the last decades (Byrne, 2009; Hair, 2010; Hoyle, 2012; Kline,

2005). The most common one is the maximum likelihood estimator (MLE), usually used in the case of at least approximately normally distributed data.

This kind of estimator was also used in our case, since the assumption about non-normality of the relevant indicator variables was only slightly violated (see Appendix 2). The justification for employing the MLE estimator is based on the conclusions of several other studies. Namely, in these studies it is stated that the MLE estimator calculates suitably accurate parameters, if the ordinal indicator data contain at least five stages and are approximately normal (El-Basyouny & El-Bassiouni, 2013; Hoyle, 2012).

V. RESULTS

The analysis of normality and the EFA analysis were conducted by the means of statistical package SPSS 21, while the CFA analysis and the structural equation modeling have been performed in the AMOS environment. The DEA has been executed by using the LINGO software.

A. *Descriptive statistics and normality*

The arithmetic mean, standard deviation (SD), skewness index (SI), and kurtosis index (KI) of the applied indicators are shown in Appendix 2. The level of non-normality is usually investigated by calculating the skewness index (SI) and kurtosis index (KI) of the given data.

In the existing literature, there is some disagreement about the most proper criterions regarding the non-normality level, which is still acceptable for an efficient use of the MLE estimator. Nevertheless, in general, the scholars agree that the values $|SI| < 3$ and $|KI| < 7$ are still permissible to apply a MLE method without any serious concerns, even in the case of relatively small sample size (Kline, 2005; Lei & Lomax, 2005; Ullman, 2006; Weston, 2006; Zhai, 2013).

In our study, the normality conditions about the data were not severely violated, since we had: $|SI_{items}| < 2.01, |KI_{items}| < 6.51$ (see Appendix 2). Accordingly, while conducting the CFA and SEM, we have decided to use the MLE estimator, since the latter provides quite big spectra of various Goodness-of-fit (GOF) indices needed during the model validation process.

B. *Factor analysis*

While doing the factor analysis, the EFA was applied as a beginning step. Here, two tests were first conducted, the Kaiser-Meyer-Olkin (KMO) test, and the Bartlett's test of sphericity (BTS) (Hair, 2010; Hoyle, 2012; Kline, 2005). It turned out that the BTS value was adequately significant ($\chi^2 = 960.346$ with $df = 91$ and $p < 0.001$), while the KMO value also reached an appropriate level: $0.868 > 0.5$. Accordingly, with the recommendation of several authors in mind (Frohlich & Westbrook, 2001; Li et al., 2013; Sahin, Todiras, Nijkamp, Neuts, & Behrens, 2012), we concluded that the EFA can be consistently conducted in the further research.

Some important details of the EFA analysis are shown in Table 4. The principle axis factoring (PAF) method was applied to extract the factors and estimate their loadings. Since the communalities h_i^2 of some indicator items were not acceptable, as well as the cross-loadings were significant, 19 ill-fitting items were dropped from the further analysis.

Afterwards, the PAF method was conducted again, with an additional use of the rotation based on Promax method with Kaiser Normalization. We have used three criterions for choosing the optimal number of extracted factors: the Kaiser's "Eigen value bigger than one rule", the Cattell's scree plot, and the computation of the percentage of variation (Hoyle, 2012; Kline, 2005). In the final factor model, only those indicator items were retained, which are significantly loaded on their factors (which means: loadings $\lambda_{ij} \geq 0.795 > 0.40$, according to (Hair, 2010)).

The adequacy of the derived factor model can be verified in the table in Appendix 3. Here, the rotated factor pattern matrix with the item loadings on corresponding factors is presented. Since the Cronbach alphas of all exposed factors are bigger than the recommended value 0.7 (according to (Hair, 2010)), we have concluded that the reliability and internal consistency are adequate.

Table 4. Characteristics of the EFA analysis.

Characteristics of EFA	
1. *Initial Estimation*	
Unrotated extraction (estimation) method:	Principal Axis Factoring (PAF)
Dropped ill-fitting items from the analysis:	$A_1, A_2, A_8, A_9, A_{10}, A_{11}$ $I_1, I_8, I_9, I_{10}, I_{11}$ $T_1, T_3, T_4, T_7, T_8, T_9, T_{10}, T_{11}$
2. *Estimation with additional rotation (retained variables)*	
Extraction (estimation) method:	Principal Axis Factoring (PAF)
Rotation method:	PROMAX with Kaiser Normalization
Optimal number of factors extracted and retained: **3**	Criterions: • Kaiser's "Eigen value bigger than one rule", • Cattell's scree plot, • Percentage of Variation Criterion (PVC).
Final loadings λ_{ij} and convergent validity (CV):	$\lambda_{ij} \geq 0.795$ (**CV is adequate**).
Communalities h_i^2 of the retained variables (range) :	$0.569 \leq h_i^2 \leq 0.948$ (**sufficiently large**)

The CFA analysis was employed as a next step in the factor analysis. Within this framework, the measurement part of the SEM model was also derived in the context of the first stage of SEM model construction. Here, the structure of the previously calculated factor model from the EFA analysis was applied as a starting point. The CFA tested if the structure of the factor model is consistent with the measurement theory. For this purpose, the MLE method was used to estimate model parameters in such way, that the difference between the model implied covariance matrix, and the data-based covariance matrix, was minimized (Hoyle, 2012).

When the allocation of indicator items on their factors was successfullly completed, the fitting performance of the derived CFA factor model was investigated in the next step. To do so, several model fit indices, typically suggested in the literature, were calculated, such as: the Comparative Fit Index (CFI), the Incremental fit index (IFI), the Tucker-Lewis index (TLI), the Normed fit index (NFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Residual (SRMR) (Byrne, 2009). It turned out that all of these indices were adequate with respect to their threshold ranges, suggested in the literature (Hair, 2010; Hooper, 2008; Hoyle, 2012; Kline, 2005).

The CFA analysis was completed by accessing the convergent and discriminant validity of the corresponding model. The convergent validity was inspected via the calculation of composite reliability (CR) and average variance extracted (AVE). According to Hair and his colleagues (Hair, 2010), the appropriate threshold levels of these two measures are: 0.70 for CR, and 0.5 for AVE. Table 5 shows that the CR and AVE values of all treated factors were above their threshold level, which indicates a satisfied convergent validity of the model.

When addressing the discriminant validity, the following condition must be fulfilled for each factor: $AVE > CORR^2$, or $\sqrt{AVE} > CORR$ (Fornell & Larcker, 1981; Hair, 2010), where $CORR$ refers to the cross-correlations between factors. From Table 5 it can be seen that the condition $\sqrt{AVE} > CORR$ was satisfied for each cross-correlation pair of the factors. Since the discriminant validity of the model was also adequate, we have concluded that there were no model's validity concerns.

When the CFA analysis was finalized, its main result, the measurement part of the structural equation model, was applied in the further SEM modeling process.

Table 5. Convergent and discriminant validity of the CFA model.

	CR	AVE ($\sqrt{AVE}$)	EI_I	EI_A	EI_T
EI_I	0.949	0.836 (0.914)	$\sqrt{AVE}$=0.914		
EI_A	0.968	0.788 (0.888)	$CORR$=0.482	$\sqrt{AVE}$=0.888	
EI_T	0.874	0.699 (0.836)	$CORR$=0.629	$CORR$=0.363	$\sqrt{AVE}$=0.836

C. Structural equation model

The structural equation modelling represented a second stage of the SEM model construction. Here, the structural part of the SEM model has also been derived. The combination of both parts, structural one, and measurement one, has given us the entire structure of the SEM model, conceptually consistent with the framework from Figure 1. Accordingly, the single-item construct representing the efficiency *EFF* was also integrated into the SEM model as hypothesized in Figure 1 and Figure 2.

During the structural equation modelling, the parameters of the overall SEM model were estimated by the means of the MLE. Moreover, the directed causal paths between the addressed factors were also identified. Similarly as in the case of the CFA, several fit indices were calculated to investigate the model's adequacy. Table 6 shows in its rightmost column the calculated values of the most important fit indices. According to the recommendations of many scholars (e.g. (Byrne, 2009; Hair, 2010; Hoyle, 2012; Kline, 2005; Nunkoo & Ramkissoon, 2012)), the fit indices have taken the adequate values regarding their threshold values. Hence, we assumed that the derived SEM model can provide the reasonably good fit to the real data.

Table 6. Fit indices of the derived SEM model.

Fit Index	Description	Acceptable Threshold Levels		Value
χ^2	Chi-Square χ^2 of the discrepancy between the sample and the fitted covariances' matrices	Low value relative to degrees of freedom *df*		83.787
$\left(\chi^2 / df\right)$	Relative Chi-Square χ^2 of the discrepancy	<3 <5	good permissible	1.102
RMSEA	Root Mean Square Error of Approximation	<0.07 $0.07 \square 0.10$ >0.10	good moderate bad	0.041

NFI	Normed-fit Index	> 0.90	acceptable	**0.923**
		> 0.95	good	
NNFI (TLI)	Non-Normed-fit Index (Tucker-Lewis Index)	> 0.95	good	**0.989**
		> 0.90	acceptable	
CFI	Comparative Fit Index	> 0.90	acceptable	**0.992**
		> 0.95	good	
IFI	Bollen's Incremental Fit Index	> 0.90	acceptable	**0.992**
		> 0.95	good	
SRMR	Standardized Root Mean Square Residual	< 0.08	good	**0.0586**

Fig. 3 illustrates the standardized SEM model with the estimated path coefficients significant at $p \leq 0.10$ level. This model corresponds to the conceptual hypothesized framework from Fig. 1. The numbers 0.32, 0.31, and 0.47, linked with the underlying directional paths, represent the standardized regression weights.

In Fig. 3, the retained indicator items are also shown. The causal paths that link the factors EI_I, EI_A, EI_T with the construct *EFF*, contain positive and statistically significant regression weights. Accordingly, we can conclude that all presumed hypotheses H_1, H_2, H_3 from Table 2 are confirmed (see Table 7). By other words, the agencies' external integrations with the other SC members indeed have a certain impact on the agencies' efficiency.
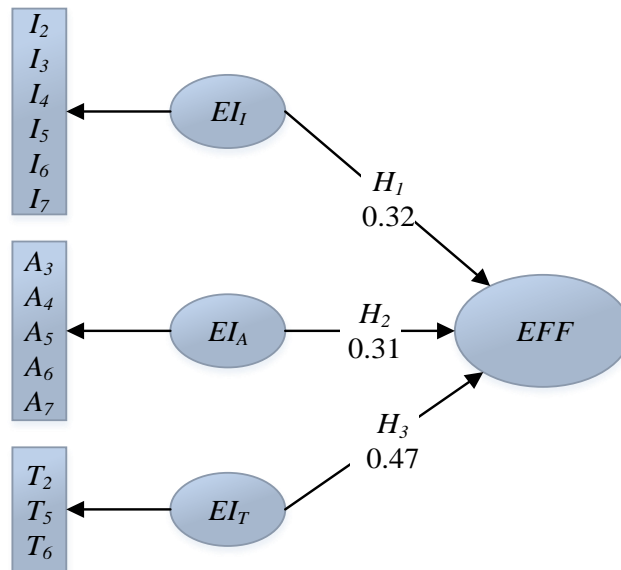

Figure 3. The standardized estimated SEM model.

Table 7. Confirmation of the presumed hypotheses.

Notation of Hypothesis	The Content of the hypothesis	Confirmation of hypothesis
$H_1:$	EI_T has **<u>a positive impact</u>** on the travel agencies' efficiency *EFF*.	**Accepted (supported)**
$H_2:$	EI_A has **<u>a positive impact</u>** on the travel agencies' efficiency *EFF*.	**Accepted (supported)**

		Accepted (supported)
$H_3:$	EI_I has **a positive impact** on the travel agencies' efficiency *EFF*.	

D. Discussion

From the descriptive statistics of an applied indicators in Appendix 2 can be seen that the agencies still most frequently collaborate with the other SC members on some more basic level (e.g. Phone, e-mail). Conversely, the deeper forms of collaboration, such as joint planning and setting of goals, joint development, and understanding of responsibility, as well as aligned decisions about improving the cost efficiency, are maybe too much neglected.

However, on the other side, the developed SEM model suggests (see the retained indicators in Fig. 3), that it is precisely such deeper form of cooperation needed to be amplified not only to influence positively on the efficiency, but also to accomplish such goal in the most effective manner. Hence, the level of integration, increased due to in-depth forms of cooperation would also lead to better exploitation of the identified positive interaction between the EI factors and efficiency of the agencies.

VI. CONCLUSION

Nowadays, the supply chain integration is becoming progressively important due to the increased complexity of environments, globalization effects, and the rising demands of customers. This is particularly true for the service sector with numerous supply chain members involved, where the quality of services must be increased as much as possible to ensure the maximal customer satisfaction.

The tourism sector is also one of the service industries that is essentially dependent on the customer satisfaction. To provide maximal possible quality to the customers, some forms of cooperation and integration between the supply chain members are unavoidable. Integration with the other supply chain members is also essential for the travel agencies as crucial members of tourism supply chains. This is not true only in a context of satisfying the customers' demands, but also to increase the agencies' efficiency in the largest possible manner.

In this paper, we have analyzed the relationships between the agencies' external integration with other supply chain members on one side, and their efficiency on the other. In the role of other supply chain members, the following members were employed: the accommodation companies, the insurance companies, the tour operators, and the other travel agencies.

In the course of research, the data from 64 Croatian agencies positioned along the north-eastern Adriatic Sea were treated. For the computation of the agencies' efficiencies, the data envelopment analysis was applied, while for the further analysis, the structural equation model was constructed. The model exposed the relationships between the external integrations' constructs, and the construct related to the agencies' efficiency.

The results show that an amplified external integration with other supply chain members might indeed have certain positive impacts on increased efficiency of the travel agencies. Moreover, the constructed SEM model implies that deeper forms of cooperation needed to be enforced not only to influence positively on the efficiency, but also to achieve such objective in the most efficient way. Accordingly, the integration level, risen due to in-depth forms of collaboration would also lead to the more efficient exploitation of the recognized positive interrelations between the external integration and efficiency of the travel agencies.

This conclusion could be a very motivating guideline for the management of the agencies in the sense of creating suitable integration strategies to achieve higher profits and a bigger number of customers, as well as to reduce the levels of costs. Also, better investment strategies and potential improvements in the operations management are more likely to be achieved as a result of the increased external integration with other supply chain members.

Since there is a quite big gap detected in the literature which addresses a similar type of research, we believe that our study might have brought some contribution to the existing literature on the topic.

One of the possible directions for future research could be the testing of the structural equation model for other travel agencies to examine the adequacy of the findings argued in this paper. Studying the agencies of the other countries, as well as whole regional areas is also intended to be carried out in future work.

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Appendix 1. The levels of integration considered (questions of the first part of the questionnaire).

Q1: Informal team work
Q2: Exchange of information on sales forecasts, sales, and spare capacity
Q3: Joint process development
Q4: Joint planning for anticipating and solving operational problems
Q5: Joint goal setting
Q6: Joint development and understanding of responsibility
Q7: Aligned decisions on how to improve cost efficiency
Q8: Formal meetings
Q9: Phone-calls
Q10: E-mail interactions
Q11: Exchange of forms and reports

Appendix 2. Descriptive statistics for the applied indicator variables.

Descriptive statistics (EI between TOUR OPERATORS/OTHER TRAVEL AGENCIES and the travel agencies)

Variable - description	Variable	Mean	SD	Skewness	Kurtosis
Informal team work	T_1	2.84	1.200	-.092	-.951
Exchange of information on sales forecasts. sales and spare capacities	T_2	3.48	1.337	-.552	-.745
Joint process development	T_3	2.75	1.513	.195	-1.434
Joint planning for anticipating and solving operational problems	T_4	2.84	1.440	-.015	-1.320
Joint setting of goals	T_5	2.93	1.504	-.037	-1.434
Joint development and understanding of responsibility	T_6	3.23	1.553	-.315	-1.382
Aligned decisions on how to improve cost efficiency	T_7	3.11	1.561	-.170	-1.454
Formal meeting	T_8	3.10	1.457	-.143	-1.299
Phone call	T_9	4.36	.932	-1.944	4.327
E-mail	T_{10}	4.65	.68	-2.019	6.509
Exchange of forms and reports	T_{11}	3.34	1.580	-.307	-1.482

Descriptive statistics (EI between ACCOMODATIONS and the travel agencies)

Variable - description	Variable	Mean	SD	Skewness	Kurtosis
Informal team work	A_1	2.90	1.434	-.032	-1.194
Exchange of information on sales forecasts. sales and spare capacities	A_2	3.25	1.502	-.436	-1.222
Joint process development	A_3	2.62	1.474	.235	-1.389
Joint planning for anticipating and solving operational problems	A_4	2.87	1.554	.033	-1.481
Joint setting of goals	A_5	2.75	1.513	.076	-1.517
Joint development and understanding of responsibility	A_6	2.77	1.553	.177	-1.507
Aligned decisions on how to improve cost efficiency	A_7	2.77	1.532	.257	-1.414
Formal meeting	A_8	3.34	1.459	-.396	-1.167
Phone call	A_9	4.42	0.846	-1.100	2.805
E-mail	A_{10}	4.67	.598	-1.674	1.782
Exchange of forms and reports	A_{11}	3.46	1.444	-.413	-1.218

Descriptive statistics (EI between INSURANCE COMPANIES and the travel agencies)

Variable - description	Variable	Mean	SD	Skewness	Kurtosis
Informal team work	I_1	2.03	1.238	.917	-.283
Exchange of information on sales forecasts. sales and spare capacities	I_2	2.16	1.368	.824	-.679
Joint process development	I_3	2.18	1.443	.842	-.727
Joint planning for anticipating and solving operational problems	I_4	2.26	1.389	.667	-.847
Joint setting of goals	I_5	2.00	1.197	.904	-.341
Joint development and understanding of responsibility	I_6	2.41	1.542	.569	-1.280
Aligned decisions on how to improve cost efficiency	I_7	2.13	1.443	.933	-.592
Formal meeting	I_8	2.66	1.569	.357	-1.397
Phone call	I_9	3.72	1.439	-.878	-.590
E-mail	I_{10}	3.89	1.415	-1.067	-.205

Exchange of forms and reports	I_{11}	3.31	1.618	-.356	-1.479

Appendix 3. The rotated factor pattern matrix from the EFA analysis.

Pattern Matrix	Factor		
	EI_I	EI_A	EI_T
Cronbach Alpha	**0.965**	**0.951**	**0.879**
Indicators/Loadings			
I_7	0.973		
I_5	0.970		
I_4	0.911		
I_3	0.887		
I_6	0.858		
I_2	0.826		
A_5		0.958	
A_4		0.893	
A_7		0.879	
A_6		0.863	
A_3		0.795	
T_5			0.826
T_2			0.820
T_6			0.814

Loadings are adequate:

$$\lambda_{ij} \geq 0.795 > 0.40$$

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.
Rotation converged in 5 iterations.

AUTHORS

A. Darja Topolšek, Phd, is the Associated Professor at the Faculty of Logistics, University of Maribor, Celje, Slovenia (e-mail: darja.topolsek@um.si).

B. Dejan Dragan, Phd, is the Assistant Professor at the Faculty of Logistics, University of Maribor, Celje, Slovenia (e-mail: dejan.dragan@um.si).