Proceedings of IAC 2022 in Prague

Prague, Czech Republic

May 27 - 28, 2022

Management, Economics and Marketing (IAC-MEM)
Teaching, Learning and E-learning (IAC-TLEl)
Transport, Logistics, Tourism and Sport Science (IAC-TLTS)

ISBN 978-80-88203-27-8

Impressum

Title:

"Proceedings of IAC 2022 in Prague", ISBN 978-80-88203-27-8

May 2022 in Prague, *1st edition*

Publisher / Creator of CD / Copyright holder:

Czech Institute of Academic Education z.s.

Address of Publisher:

Vodnicka 309/20, 149 00 - Prague 4, Czech Republic

Email: info@conferences-scientific.cz

Web: www.conferences-scientific.cz

Technical editorial staff this CD:

Helena Kratochvílová

Radek Kratochvíl, Ph.D.

Název:

"Proceedings of IAC 2022 in Prague", ISBN 978-80-88203-27-8

Květen 2022 v Praze, *První vydání*

Vydavatel / Tvůrce CD / Nositel autorských práv:

Czech Institute of Academic Education z.s.

Adresa vydavatele:

Vodnická 309/20, 149 00 - Praha 4, Česká Republika

Email: info@conferences-scientific.cz

Web: www.conferences-scientific.cz

Technická redakce tohoto vydání:

Mgr. Helena Kratochvílová, DiS.

Ing. Radek Kratochvíl, Ph.D.

Conference Scientific Committee / Reviewers

Assoc. Prof. PhDr. Maria Janesova - Slovakia
- *Czech Technical University in Prague*

Mgr. Helena Kratochvilova - Czech Republic
- *Czech Institute of Academic Education*

Piotr Jednaszewski, Ph.D. - Scotland
- *St Mary`s Academy Ltd*

Assist. Prof. Mario Konecki, Ph.D. - Croatia
- *University of Zagreb, Faculty of Organization and Informatics*

Assoc. Prof. Souvik Pal - India
- *Department of Computer Science and Engg. in Nalanda Institute of Technology*

Assoc. Prof. Dr. Ioan-Gheorghe Rotaru - Romania
- *'Timotheus' Brethren Theological Institute of Bucharest*

Assoc. Prof. Dr. Ömer Beyhan - Turkey
- *Konya NE.University, A.K. Education Faculty*

Assoc. Prof. Anjali - India
- *Department of Computer Science & Engg, GNIT, Mullana*

Assoc. Prof. Jitender Grover - India
- *Department of Computer Science & Engg., M.M. University*

Radek Kratochvil, Ph.D. - Czech Republic
- *Czech Institute of Academic Education, Czech Technical University in Prague*

Assist. Prof. Dr. Mohamad H. Atyeh - Kuwait
- *School of Business, Australian College of Kuwait*

Assoc. Prof. Dr. Ramazan Sak - Turkey
- *Yüzüncü Yıl University, Faculty of Education*

Assoc. Prof. Dr. İkbal Tuba Şahin-Sak - Turkey
- *Yüzüncü Yıl University, Faculty of Education*

Assist. Prof. Dr. Ayşegül Derman - Turkey
- *Konya NE.University, A.K. Education Faculty*

Assist. Prof. Dr. Serdar Derman - Turkey
- *Konya NE.University, A.K. Education Faculty*

Assoc. Prof. Dr. Fethi Kayalar - Turkey
- *Erzincan University, Faculty of Education*

Prof. Dr. Thomas Rachfall - Germany
- *Hochschule Merseburg*

Table of Contents

**Management, Economics and Marketing
(IAC-MEM 2022)**

Evaluation of E-Commerce Business Model Success Factors

Mehtap DURSUN[a*], Nazli GOKER[b]

[a] Galatasaray University, Industrial Engineering Department, Decision Analysisi Application and Research Center, Ortakoy, Istanbul, Turkey, mdursun@gsu.edu.tr
[b] Galatasaray University, Industrial Engineering Department, Ortakoy, Istanbul, Turkey, nagoker@gsu.edu.tr

Abstract

This study examines current e-commerce business models and customer satisfaction research. The factors that affect the success and efficiency of e-commerce business model are evaluated, and their importance weights are determined. Intuitionistic fuzzy cognitive map is a suitable tool due to the presence of interrelationships among evaluation criteria, fuzziness, vagueness, and hesitation in data.

Keywords: e-commerce business model, intuitionistic fuzzy cognitive map, hesitation

1. INTRODUCTION

Internet, which emerged towards the end of the twentieth century, brought about changes in many areas. It has touched every field. Therefore, it also affected the field of trade and brought great innovations. The main reason for the increase in the use of e-commerce can be exemplified by the Internet, but it cannot be said that e-commerce is so popular only because of the increase in the Internet. Being in the e-commerce system has many advantages for businesses. It is a system that can provide 24/7 service as it is not based on human power. In this way, companies can always serve their customers. Since there is no need to operate a real store during online sales, businesses have the flexibility to sell without having to pay fees such as office space fees and staff costs. With the development of the e-commerce system, businesses are not limited to their local regions and have the opportunity to address the global market. Moreover, thanks to the online trading system, inventory tracking has become easier and more traceable supply chain networks have been formed. The e-commerce system also offers many advantages for customers. Online shopping eliminates the need for customers to spend time shopping. Thanks to online shopping, prices have become clear and comparable. E-commerce is completely independent of time and place. In this way, he was not affected by the pandemic process induced by the corona virus, on the contrary, he became stronger. Also, there are many e-commerce benefits similar to these benefits.

As in physical business channels, customer satisfaction is very important in e-commerce. Businesses need to keep customer satisfaction at the maximum level in e-commerce. Just like physical stores, customers who leave happy with their purchases will have more online visits and purchase new products. Customers who leave satisfied with their purchases will tell other customers about it. This situation can get your potential customers to know you and increase your sales. Similarly, a customer who has had a negative online shopping experience can express their dissatisfaction through different channels.

––––––––––

* Corresponding author.

In this study, the evaluation of e-commerce business model success factors in terms of customer satisfaction will be discussed. Intuitionistic fuzzy cognitive map (IFCM) technique is employed to calculate the importance weights of the success factors. The rest of the study is organized as follows. IFCM method is explained in Section 2. Case study is illustrated in Section 3, and finally, conclusions are provided in the last section.

2. INTUITIONISTIC FUZZY COGNITIVE MAPS

Cognitive maps (CMs) aim to model decision support systems, and were originally proposed by Axelrod [1] to be used in social and political sciences. Directed arcs, which model causal relations among the factors CMs, are the main elements of a CM. Strategic planning, forecasting, and research and development may all be an application field for CMs.

A crisp CM, which is non determinate, may be modeled by revealing a numerical weighting, however, it needs computational operations [2]. If the causal edges are positively or negatively weighted, the indirect effect refers to the product of the weights in the corresponding route, and the total influence is the sum of these products. This weighting concept not also solves the problem of indeterminacy; yet also needs a more sensitive causal discrimination, which may be impossible for experts who are to construct the CM. Forcing them to construct CM with crisp numbers leads insufficient information, different numbers from different experts or different numbers from the same expert on different timeline. However, cause-and-effect relationships can be expressed by linguistic terms rather than numerical variables by developing fuzzy cognitive map (FCM) tool [3].

FCM is an information-based tool that can be used as a decision support to solve complicated decision making problems. FCM is emerged from the combination of fuzzy logic and neural networks [2]. Including fuzzy numbers or linguistic terms for indicating the causal relations among concepts provides the extension of FCM. These concepts denote an entity, a state, a variable or a characteristic of the system.

$C = \{C_1, C_2, ..., C_n\}$ refer to the set of concepts, edges (C_j, C_i) demonstrate how much concept C_j causes concept C_i. The value of each concept is calculated, considering the effect of the other concepts on the under-evaluation concept, by running the following iterative formulation until the system will be stabilized.

$$A_i^{(k+1)} = f\left(A_i^{(k)} + \sum_{\substack{j \neq i \\ j=1}}^{N} A_j^{(k)} w_{ji} \right) \tag{1}$$

where $A_i^{(k)}$ is the value of concept C_i at k^{th} iteration, w_{ji} is the weight of the connection from C_j to C_i, and f is a threshold function, which is identified as sigmoid function in this study [4].

Recently, intuitionistic extensions are proposed to cope with the drawbacks of FCM by using IFSs [5]. Firstly, Iakovidis and Papageorgiou [6] developed intuitionistic fuzzy cognitive map (IFCM) for the issues occurred in medical decision making. Then, Hadjistoykov and Atanassov [7] and Papageorgiou and Iakovidis [8] enhanced the method and introduced IFCM-II. More recently, Hadjistoykov and Atanassov [9] proposed temporal IFCM that provides the extension of the technique utilizing temporal parameters.

IFCM technique utilizes intuitionistic fuzzy numbers to reveal the power of causal relations in cognitive mapping framework [5]. At the initial step, concept nodes and power of causal relations among the concepts are determined by collecting decision makers' opinions. Afterwards, intuitionistic fuzzy scale is defined and the power of causal relations is stated by intuitionistic fuzzy numbers that are associated with intuitionistic scale. Thus, membership, non-membership, and hesitation values are identified. By making use of the information obtained from the experts, N x N weight matrix is obtained. For calculating the concepts' values, the following iterative formulation is run until the system will be stabilized, in other words, all factor weights will converge Iakovidis and Papageorgiou [6].

$$A_i^{(k+1)} = f\left(A_i^{(k)} + \sum_{\substack{j \neq i \\ j=1}}^{N} A_j^{(k)} w_{ji}^{\mu} - A_j^{(k)} w_{ji}^{\pi} \right) \tag{2}$$

where w_{ji}^{μ} and w_{ji}^{π} denote the weight matrices that show membership values and hesitation values of causal relations, respectively.

3. CASE STUDY

IFCM method is employed to evaluate the e-commerce business model success factors. First, success factors, which are given in Table 1, are identified by reviewing the literature as well as by collecting experts' opinions. The evaluation is provided by a committee of three decision-makers. The experts provide their opinions by reaching a consensus and they used the linguistic scale provided in Table 2.

Table 1. E-commerce business model success factors

F_1	Reliability
F_2	Accessibility
F_3	Performance
F_4	Design
F_5	Delivery
F_6	Product
F_7	After sale service

Table 2. Linguistic scale

Linguistic variables	IFS
VH	<0.95,0.05>
H	<0.70,0.25>
M	<0.50,0.40>
L	<0.25,0.70>
VL	<0.05,0.95>

The evaluations are given in Table 3.

Table 3. Evaluations of decision makers

	Reliability	Accessibility	Performance	Design	Delivery	Product	After sale service
Reliability			H		M		
Accessibility	L		M		H		M
Performance	M	M			H	L	L
Design			M			VH	
Delivery	M	H	L				
Product	M		M	H			
After sale service	H		L				

Membership, non-membership, and hesitation values of the evaluation are provided in Tables 4-6.

Table 4. Memebership values of the evaluations

	Reliability	Accessibility	Performance	Design	Delivery	Product	After sale service

Reliability	0	0	0.7	0	0.5	0	0
Accessibility	0.25	0	0.5	0	0.7	0	0.5
Performance	0.5	0.5	0	0	0.7	0.25	0.25
Design	0	0	0.5	0	0	0.95	0
Delivery	0.5	0.7	0.25	0	0	0	0
Product	0.5	0	0.5	0.7	0	0	0
After sale service	0.7	0	0.25	0	0	0	0

Table 5. Non-memebership values of the evaluations

	Reliability	Accessibility	Performance	Design	Delivery	Product	After sale service
Reliability	0	0	0.25	0	0.4	0	0
Accessibility	0.7	0	0.4	0	0.25	0	0.4
Performance	0.4	0.4	0	0	0.25	0.7	0.7
Design	0	0	0.4	0	0	0.05	0
Delivery	0.4	0.25	0.7	0	0	0	0
Product	0.4	0	0.4	0.25	0	0	0
After sale service	0.25	0	0.7	0	0	0	0

Table 6. Hesitation values of the evaluations

	Reliability	Accessibility	Performance	Design	Delivery	Product	After sale service
Reliability	0	0	0.05	0	0.1	0	0
Accessibility	0.05	0	0	0	0.05	0	0
Performance	0	0	0	0	0	0	0
Design	0	0	0	0	0	0	0
Delivery	0	0	0	0	0	0	0
Product	0.1	0	0.1	0	0	0	0
After sale service	0.05	0	0.05	0	0	0	0

By employing IFCM method, the weights of the success factors are calculated as in Table 7.

Table 7. Hesitation values of the evaluations

Factors	Weights
Reliability	0.950165981
Accessibility	0.881954091
Performance	0.95937284
Design	0.803818414
Delivery	0.927751262
Product	0.866448984
After sale service	0.81729289

4. CONCLUSIONS

To obtain the importance weights of success factors of e-commerce business model, evaluation criteria that influence success are determined through expert opinions and then algorithm of the work is reported by considering IFCM technique. Importance weights of concepts are assigned by applying IFCM methodology, time scheduling and self-motivation is the most important factors however construction of a working area and getting dressed as in the office are the least important criteria. Future research will focus on proposing group decision making approaches for determining the most appropriate e-commerce business model.

Acknowledgements

References

[1] Axelrod, R. (1976). Structure of decision, Princeton University Press, Princeton, New York, 1976.
[2] Kosko, B. (1986). Fuzzy cognitive maps. *International Journal of Man-Machine Studies*, 24, 65-75.
[3] Ross, T.J. (2010). Fuzzy logic with engineering applications, third edn, Wiley.
[4] Goker, N. & Dursun, M. (2019). A fuzzy scenario-based approach to analyzing neuromarketing technology evaluation factors. *Soft Computing*, 23, 12295-12304.
[5] Dogu, E. & Albayrak, Y.E. (2018). Criteria evaluation for pricing decisions in strategic marketing management using an intuitionistic cognitive map approach. *Soft Computing*, 22, 4989-5005.
[6] Iakovidis, D.K. & Papageorgiou, E. (2011). Intuitionistic fuzzy cognitive maps for medical decision making. *IEEE Transactions on Information Technology in Biomedicine*, 15, 100-107.
[7] Hadjistoykov, P.P. & Atanassov, K.T. (2014). On temporal intuitionistic fuzzy cognitive maps, *Comptes Rendus de l'Académie Bulgare des Sciences: Sciences Mathématiques et Naturelles*, 67, 1233-1240.
[8] Papageorgiou, E.I. & Iakovidis, D.K. (2013). Intuitionistic fuzzy cognitive maps. *IEEE Transactions on Fuzzy Systems*, 21, 342-354.
[9] Hadjistoykov, P.P. & Atanassov, K.T. (2013). Remark on intuitionistic fuzzy cognitive maps. *Notes on Intuitionistic Fuzzy Sets*, 19, 1-6.

BWM Method for Prioritization of Agile Supplier Selection Criteria Considering Management Capability Aspect

Nazli GOKER[a*], Mehtap DURSUN[b]

[a] Galatasaray University,Faculty of Engineering and Technology, Industrial Engineering Department, Ciragan Street, Istanbul, Turkey, nagoker@gsu.edu.tr

[b] Galatasaray University,Faculty of Engineering and Technology, Industrial Engineering Department, Ciragan Street, Istanbul, Turkey, mdursun@gsu.edu.tr

Abstract

Organizations should deal with uncertain and unpredictable changes while enhancing responsiveness skills in order to to survive in dynamic market circumstances. In recent years, agility concept becomes more and more popular to meet these needs in both management and manufacturing sectors. From supply chain aspect, collaborating with agile suppliers is essential for creating an agile supply chain, which is flexible, quick, and responsive. This study provides the prioritization of agile supplier selection criteria specifically focusing on the management capability aspect. Five factors are determined and then best-worst method (BWM), which is based on choosing the most important and least important criteria among the criteria, is employed for the evaluation process. The case study is conducted in Turkish dye industry.

Keywords: Best-worst method, decision support systems, multi-criteria decision making, agile supplier selection, agility

1. INTRODUCTION

Supplier selection is one of the key concepts of supply chain management. Generally, companies concentrate on previous experience and performance with the service/product to be purchased, and care the ability of suppliers to meet capacity needs and to follow delivery schedule predetermined. They also consider the willingness of the supplier to participate as a partner in order to develop and optimize design and a long-term relationship.

Although researchers contribute to the literature in supplier selection, agility is a highly untouched concept, which is considered within the context of supply chain management. Taking into account the current business environment, influenced by fluctuating demand, shorter lifecycles, and highly competitive market structure, agile suppliers undertake serious responsibility in their firms' success. Alertness, accessibility, decisiveness, swiftness and flexibility may be considered as five dimensions of supply chain agility [1].

The aim of this study is to provide the prioritization of agile supplier selection criteria specifically focusing on the management capability aspect. Five factors are determined and then best-worst method (BWM), which is based on choosing the most important and least important criteria among the criteria, is employed for the evaluation process.

---

* Corresponding author.

The rest of the study is organized as follows. In Section 2, best-worst method is briefly explained. The case study is illustrated in Section 3. Finally, concluding remarks and future research directions are given in the last section.

2. BEST-WORST METHOD

BWM was proposed by Rezaei [2] to reduce the number of pairwise comparisons in the AHP. In BWM, the decision makers specify the most and the least preferred criteria and they conduct pairwise comparisons among the best/worst criterion and the remaining criteria [3]. To compute the criteria weights, a mathematical model is constructed and consistency ratio is calculated to control the reliability of the method. BWM requires fewer comparisons and it provides more consistent weights compared to other matrix-based MCDM methods [2]. The steps of the BWM can be summarized as follows [2]:

Step 1. Determine a set of evaluation criteria (C_1, C_2,…, C_n)

Step 2. Determine the best (e.g. most desirable, most important) and the worst (e.g. least desirable, least important) criteria

Step 3. Determine the preference of the best criterion over all the other criteria using 1-9 scale. The resulting Best-to-others vector would be $A_B=(a_{B1}, a_{B2},…, a_{Bn})^T$ where a_{Bj} indicates the preference of the best criterion B over criterion j. It is clear that $a_{BB}=1$.

Step 4. Determine the preference of all the criteria over the worst criterion using 1-9 scale. The resulting Others-to-worst vector would be $A_W=(a_{W1}, a_{W2},…, a_{Wn})^T$ where a_{jW} indicates the preference of the criterion j over the worst criterion. It is clear that $a_{ww}=1$.

Step 5. Compute the optimal weights $w_1^*, w_2^*, …, w_n^*$ employing Eq. (1).

$$min\ \mathcal{E}$$

s.t.

(1)

$$\left|\frac{w_B}{w_j} - a_{B,j}\right| \le \mathcal{E}, \forall j$$

$$\left|\frac{w_j}{w_W} - a_{j,W}\right| \le \mathcal{E}, \forall j$$

$$\sum_{j=1}^{n} w_j = 1$$

$w_j \ge 0$, for all j

The reliability of the comparisons in BWM are determined using consistency ratio (CR). CR is computed via Eq. (2) [4]

$$CR = \frac{\varepsilon^*}{CI}$$

(2)

Consistency index are given in Table 1.

Table 1. Consistency index

a_{BW}	1	2	3	4	5	6	7	8	9
Consistency index	0	0.44	1	1.63	2.30	3	3.73	4.47	5.23

3. CASE STUDY

In this study, prioritization of the agile supplier selection factors considering management dimension in Turkish dye industry is conducted. Management and organization (C_1), financial position (C_2), customer relation (C_3), training aids (C_4), and reputation (C_5) are determined as the evaluation factors [1]. The best criteria and the worst criteria are identified as management and organization, and financial position, respectively by the decision makers. Best-to-others vector is constructed as in Table 2.

Table 2. Best-to-others vector

	C_1	C_2	C_3	C_4	C_5
C_2	1	9	3	5	7

Others-to-worst vector is constructed as in Table 3.

Table 3. Others-to-worst vector

	C_5
C_1	9
C_2	1
C_3	7
C_4	5
C_5	3

By solving Eq. (1), the optimal weights are obtained as in Table 4.

Table 4. Optimal weights

	Weights
C_1	0.524
C_2	0.046
C_3	0.211
C_4	0.127
C_5	0.091

4. CONCLUSIONS

In growing competition, companies require adapting differentiation strategies to their production and management structures for surviving in the market. A successful competitor should keep up with dynamic environment by dealing with uncertain and unpredictable changes as well as improving responsiveness skills. In this study, prioritization of the performance evaluation factors in dye industry is conducted. BWM, which is proposed to reduce the number of pairwise comparisons in the analytic hierarchy process, is employed. According to the results, the weight of the most important factor, management and organization, is computed as 0.524, and the weight of the least important factor, financial position is calculated as 0.046, and the consistency of the results is assured.

References

[1] Goker, N., Dursun, M., Cedolin, M. (2020). "A novel IFCM integrated distance based hierarchical intuitionistic decision making procedure for agile supplier selection", Journal of Intelligent & Fuzzy Systems, 38, 653-662.

[2] Rezai, J. (2015). Best-worst multi-criteria decision-making method. Omega 53, 49-57.

[3] Muneeb, F. M., Yazdi, A. K., Wanke, P., Yiyin, C., Chughtai, M. (2020). "Critical success factors for sustainable entrepreneurship in Pakistani Telecommunications industry: a hybrid grey systems theory/ best-worst method approach", Management Decision, 55 (11), 2565-2591.

[4] Mou, Q., Xu, Z., Liao, H. (2016). "An intuitionistic fuzzy multiplicative best-worst method for multi-criteria group decision making", Information Sciences, 374, 224-239.

Financial Factors Toward on Pension Real Estate in Greater Bay Area, Chian

Minglin CHEN[a], Chonlavit SUTUNYARAK[b*]

[a] Chakrabongse Bhuvanarth International Institute for Interdisciplinary Studies, Rajamangala University of Technology Tawan-Ok,Thailand. E-mail: 2071274079@qq.com
*[*b] Chakrabongse Bhuvanarth International Institute for Interdisciplinary Studies, Rajamangala University of Technology Tawan-Ok, Thailand. Email: chonlavit_su@rmutto.ac.th*

Abstract:

Based on the analysis of the financing status of senior care real estate in real estate development companies and buyers, this paper points out the current dilemma of senior care real estate under the influence of financial factors, and then draws on the experience of domestic and foreign countries, based on corporate financing theory, house purchase Based on the theoretical basis of the financing factors of investors, industry life cycle theory and financial innovation theory , the financial influence factors of pension real estate are studied from the perspectives of internal and external financing of enterprises and the sources of funds for purchases of houses. In terms of endogenous financing, based on the data of listed real estate companies engaged in pension real estate development, a comprehensive profitability model was constructed, and policy recommendations for optimizing endogenous financing were put forward; in terms of exogenous financing, external financing models were designed from different investment entities, And put forward policy recommendations for optimizing external financing ; from the perspective of house buyers to purchase houses, put forward the source of funds for analysis. Finally, the financial influencing factors of pension real estate are summarized .

Keywords: Pension reastate, Factors, Economic

1. INTRODUCTION

At present, due to the decline in living standards, health and medical conditions, and population fertility in some countries, population aging has become a global phenomenon. According to the United Nations "Population Aging and Its Social Economic Consequences" classification standards: "A country or region where the proportion of the population aged 60 and above reaches 10% or the proportion of the population aged 65 and above reaches 7%, then the country or region Entered the aging stage". Developed countries such as Germany, the United States, and Japan entered the aging stage before developing countries. At the end of 2011 the aging society issue start is increasing as the percentage of people of 65 among a population is continuously increasing like in Japan (22.9%), Germany (20.6%), or The United States (13.1%).

The data of China's sixth census on November 1, 2010 show (Special note: China's census is once every 10

---

* Corresponding author.

years, that is, respectively in 2000, 2010, and 2020. As the government has not released the 2020 census data, so this study can only use the 2010 census data), the proportion of the population aged 60 and above reached 13.26%, which was 2.93 percentage points higher than that of the fifth census in 2000; The proportion of the population aged 65 and over reached 5.87%, an increase of 1.91 percentage points from 2000. Except for the five provinces of Guangdong, Ningxia, Qinghai, Xinjiang, and Tibet, the proportion of the population aged 65 and over in the remaining provinces has reached 7%, which shows that most provinces in China have entered an aging society. In addition, Chinese aging has the characteristics of a large population base, and a majority of the family structure of 421 (four elderly people, one couple and one child).

The advent of the age of aging has brought unprecedented development opportunities to industries related to the elderly such as elderly care and elderly apartments. Senior care real estate is a new type of real estate that combines real estate and senior care services. It is a carrier that satisfies the elderly "housing for the elderly". It is based on the retirement community and is designed for the elderly physiological characteristics. The special building, which realizes the integration of "living" and "service", can provide the elderly with high-quality old-age life, meet the multi-level elderly needs of physiology, safety, social life, respect and self-realization, and enable the elderly people can enjoy a good old age. In recent years, with the successive promulgation of various national policies to support the elderly care industry, more and more real estate development companies have participated in the development and construction of elderly care real estate projects. The elderly care real estate is regarded as one of the important breakthrough directions of real estate transformation by many real estate enterprises. As of the end of 2018, more than 100 real estate companies, including Poly, Vanke, Wanda, China Resources, China Merchants, Greenland, and Sino-Ocean, have been involved in the development and construction of senior housing real estate. However, pension real estate has the characteristics of large capital demand and long investment recovery period, which makes it difficult for pension real estate to obtain loans from commercial banks. The huge pressure of lack of financial support makes some pension real estate projects eager to sell after completion. It loses the later operating value of senior care real estate and greatly reduces the profit of senior real estate projects, making some real estate companies discouraged from senior real estate. It can be seen that the financing dilemma of senior housing real estate has become an important problem for the development of senior housing real estate in my country. Therefore, how to solve the financial demand for the development of senior housing real estate in my country's Greater Bay Area has become the primary issue to promote the development of senior housing real estate.

2. RESEARCH OBJECTIVE

The purpose of this study is to determine financing situation of China's Bay Area senior care real estate development company and the demand factors of elderly care consumers for purchasing elderly care real estate.

3. LITERATURE REVIEW

Bing Li & A.Akintoye (2005) analyzed the application process of PFI (Private Finance Initiative) model in British construction companies, and divided the influencing factors of PFI into two major categories: positive factors and negative factors. Zhao Yi & Pang Min (2012) suggested introducing real estate trust investment funds (REITS) to solve the financing dilemma of pension real estate, and to reduce the risk of financing failure of emerging financing instruments through government policy guarantee companies to provide guarantees. In addition, they should also be required the developer pays a certain amount of risk deposit to the government to reduce the developer's credit risk, and the project will be refunded after the project is completed and accepted.

Ling Xiuli (2014) used the SWOT method to conduct an in-depth analysis of insurance institutions' investment in retirement real estate, and on this basis put forward countermeasures and suggestions for insurance institutions to invest in retirement real estate. For example, insurance institutions can develop insurance products that are linked to the provision of residential rights in the retirement community, which can not only invest the collected premiums as funds into the development of retirement real estate, but also increase the investment attractiveness of insurance products.

Lu Qiuhong & Deng Yonglin (2012) suggest a profit method that combines one-time income with long-term income, and can develop related derivatives to increase the source of income, or after the project is completed and enters normal operating conditions, the whole package is sold to investment To realize the return of funds .

Liu Yufeng & Li Zhengwei (2012) pointed out that senior care real estate is still in its infancy in China, and the

many uncertainties it faces increase project risks. This has become the main reason why many companies are hesitant to senior real estate projects. Therefore, design reasonable risk sharing the mechanism has important practical significance for the orderly development of the senior care real estate market.

Yang Zhihao (2012), after analyzing the characteristics of fund demand for pension real estate, believes that government funds, commercial funds and insurance funds are more suitable sources of funds. For example, the "Eternal Youth Fund" in the government fund belongs to the China Welfare Foundation, and its first purpose is to build housing suitable for the elderly. Commercial funds determine whether to invest in the retirement real estate project by measuring whether the development company has found a good business operation model. Insurance funds have participated in the development and construction of some domestic senior housing real estate projects, and insurance funds are bound to become the main source of financing for senior housing real estate.

Zhang Shuzhong (2013) conducted a rational analysis on the form of insurance funds investing in retirement real estate, and pointed out that more than 50% of insurance funds are medium and long-term funds, which matches the 10-15 year investment payback period of retirement real estate. The yield of pension real estate should be conservatively estimated to be between 4%-10%, which is higher than the yield of traditional investment channels such as bank deposits and bonds. And in the context of high inflation, investing in real estate is an important measure for insurance funds to effectively resist inflation risks. Xia Chao chen (2014) believes that pension real estate belongs to the category of quasi-public goods, and the PPP financing model can be used to solve the financing problem of pension real estate. Although the return on investment of pension real estate is lower than that of general real estate, its investment income is stable. This feature to match the requirements of insurance funds, PPP, a public-private partnership model, can be used to enable insurance companies to participate in the development and operation of pension real estate, thereby solving the financing difficulties of pension real estate.

Dong Weiyuan (2014) pointed out that to realize the long-term development of retirement real estate, more flexible financing channels must be adopted. For example, REITS funds are used to promote the capital turnover of pension real estate projects, insurance funds are introduced into the development of pension real estate to realize the organic integration of pension real estate and insurance funds, and financial innovation is used to realize the division and transfer of the right to use pension real estate.

Zou Yi & Liu Li (2013) pointed out that the financing model should be selected according to the different profit models of pension real estate. Specifically, the sales model can choose the financing method with a shorter period, while the leasing model should look for insurance institutions and asset management institutions. Such a long-term financing method.

Yan Yuejin (2014) believes that the state should introduce relevant policies and regulations to gradually improve the investment environment for individual investors to invest in retirement real estate based on the current situation that institutional investors are not very enthusiastic about investing in retirement real estate and individual investors have strong investment desires. This can not only meet the investment needs of individual investors, but also provide financial support for the development of retirement real estate.

Xie Xianci & Cao Xichun (2014) conducted a preliminary analysis of the financial innovation model of "retirement with housing". They believed that housing development should be promoted with the participation of insurance companies, information consulting agencies, housing asset evaluation agencies, and law firms. The implementation of pensions, and pointed out that the amount of pensions paid should be adjusted in a timely manner based on market interest rates, the health status of the elderly and changes in house prices.

Concepts of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) consists of the two special administrative regions of Hong Kong and Macau and the Guangzhou, Shenzhen, Zhuhai, Foshan, Huizhou, Dongguan, Zhongshan, Jiangmen, Zhaoqing (the nine cities in the Pearl River Delta) is composed of (the map of Guangdong Province and the map of China's Bay Area as shown below), with a total area of 56,000 square kilometers and a total population of 70 million at the end of 2018. It is the most open and economically dynamic region in China one. On February 18, 2019, the "Outline of Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area" (hereinafter referred to as the "Outline of Planning") was officially released. The "Planning Outline" points out that the four central cities of Hong Kong, Macau, Guangzhou, and Shenzhen will be used as the core engines of regional development to enhance the radiating and leading role in the development of the surrounding regions, and coordinate the division of labor for the "9+2" urban agglomeration in the Guangdong-Hong Kong-Macao Greater Bay Area Carry out "top-level design". The "Planning Outline" proposes to actively expand cooperation in the areas of education, culture, tourism, and social security in the Guangdong-Hong Kong-Macao Greater Bay Area, and jointly create a high-

quality life circle with high-quality public services, livable, industrial and touristic.

4. METHODOLOGY

The study was designed to analyze the key elements of the financial factors toward on pension real estate in greater bay area, Chian. The methodology of this survey and development research can be described as follows.

4.1. Selection of survey area and research object:

The research area of this paper is in the bay area of China. Guangdong Hong Kong Macao Greater Bay, China GBA, with a total area of 56000 square kilometers and a total population of 70 million by the end of 2018, is one of the regions with the highest degree of openness and the strongest economic vitality in China. The target sample of this study is 400 elderly consumers living in the bay area of China. Through the Chinese Questionnaire Application, namely "Star Software".

4.2. Data collection:

The questionnaire is divided into the following three parts

The first part is the basic information of the interviewees, including gender, age, living area, physical condition, number of children and occupation before retirement.

The second part is the survey of the elderly living conditions of the respondents.

The third part is the investigation of the influencing factors of pension real estate demand, including economic cost, pension real estate value, group recognition, incentive policy, living environment, behavior intention.

After finishing questionnaire design, the distribution of the questionnaires was done online by sending them out via Wechat. The research uses the methods of gatekeeper and snowball to collect questionnaire participants. Gatekeeper is the property management personnel of major real estate. With their help, more people could be reached for filling in the questionnaires. Snowballing means that the study will get more respondents through their help after looking for the elderly. Among them, because the elderly may have some problems when filling in the questionnaire, the investigator will use face-to-face communication when facing the elderly who cannot complete the questionnaire, so as to assist in completing the questionnaire.

4.3. Data analysis:

The method of data acquisition is based on questionnaire survey. Data collation and analysis are completed by SPSS software. The factor analysis method is used in the data analysis process, and the analysis results are presented in a pie chart to describe the impact of financial factors on the pension real estate.

5. RESULTS

The demographic information of the respondents: according to the results of this questionnaire, the demographic information of the respondents found that most of the respondents in women (63.2%). Among the age variables of the sample, the proportion of 55-65 years old exceeds more than half of the overall age segment (50.5%). The largest number of respondents lived in Huizhou (39.5%). Among the variables of education level of the sample, the respondents mostly have college education level, accounting for 34.3% (n=137).

Analysis of the element factors: the result of Kaiser Meyer Olkin test variable is KMO= 0.865 (KMO > 0.5), which shows that the data is suitable for factor analysis. The results of Bartlett sphericity test variables are chi square = 7780.444, DF = 171, p-value =. 000 (P < 0.05), which shows that there is a significant correlation between the variables in the data. In addition, the variables were analyzed by principal component analysis (PCA) and orthogonal rotation technique. The results showed that there were three components with eigenvalues greater than 1, ranging from 1.208 to 10.968, and the cumulative variance was 71.922%; the maximum factor load of each variable is used to determine which dimension it belongs to. In order to confirm the practical significance of variable classification, the factor load must be greater than 0.60. According to this standard, all variables remain. Factor analysis found that component 1 (F1) and incentive factor were composed of 11 variables, the factor load was between 0.61 and 0.785, and the variance explained 57.724% of the data. Component 2 (F2) and attitude factor are composed of five variables, the factor load is between 0.762 ~ 0.762, and the variance explains 7.842% of the data. Component 3 (F2) and

environmental factor are composed of four variables, the factor load is between 0.671 and 0.773, and the variance explains 6.356% of the data.

Factor agreement level analysis: All factors in this questionnaire are based on Likert five level scale, 5 = very agree, 4 = agree, 3 = general, 2 = disagree, 1 = very disagree. According to the standard formula of regional division of five level scale ((5-1))/5=0.8, we can know that: 5.00-4.21 means very much agree; 4.20-3.41 consent; 3.40-2.61 indicates general; 2.60-1.81 disagree; 1.80-1.00 means very disagree. Result display the average value of the attitude factor is 3.95, indicating that the respondents generally feel that they are in line, and the standard deviation is 0.76, indicating that the respondents agree with the attitude factor. The average value of environmental factors is 3.91, indicating that the respondents generally feel that they are in line, and the standard deviation is 0.80, indicating that the respondents agree with environmental factors. The average value of incentive factors is 3.71, indicating that the respondents generally feel that they are in line with the standard deviation of 0.76, indicating that the respondents agree with the incentive factors.

6. DISCUSSION AND CONCLUSION

Based on analysis and measurement, we get three most satisfactory factor results, namely attitude factor, environment factor and incentive factor. The attitude factor corresponds to the living attitude, the environmental factor corresponds to the living environment, and the incentive factor corresponds to the policy incentive. The living environment factor and attitude factor determine the attitude and environmental requirements of consumers to buy pension real estate, which is related to the theoretical goal of the development of pension cause in the bay area of China. The policy factor has a great impact on the research objectives, which can provide incentive policies for the Chinese government to purchase pension real estate and promote the development of pension real estate.

Acknowledgements

References

[1]. Bing Li,A.Akintoye, P.JEdwards, C.Hardcastle.(2005). Perceptions of positive and negative factors influencing the attractiveness of PPP/PFI procurement for construction projects in the UK Construction and Architectural management. *Legislative Studies Quarterly*. 19, 38-41.

[2]. Dong Weiyuan. (2014). Exploration and Suggestions on the Operation Model of China's Elderly Real Estate. National Business Conditions (Theoretical Research). *Journal of Technical Economics & Management*. 12, 33-35.

[3]. Ling Xiuli.)2014.(A brief talk on insurance institutions investing in pension communities . *Shanghai Insurance.Employee Responsibilities & Rights Journal*.15, 22-26.

[4]. Liu Yufeng, Li Zhengwei, Zhang.)2012(. Research on Risk Sharing Based on PFI Financing Model of Pension Real Estate. *China Real Estate.China Real Estate*.19, 40-44.

[5]. Lu Qiuhong, Deng Yonglin. (2012.) Theoretical and practical research on the development model of senior housing real estate in my country. Construction Economy. *Advances in Social Sciences*.24, 28-31.

[6]. Xia Chaochen. (2014). Role sharing of senior care real estate participants under the PPP model. *Urban and Rural Construction.Library*. 25, 35-39.

[7]. Xie Xianci, Cao Xichun. (2014). Analysis of the financial innovation of my country's senior housing real estate. *China Logistics and Purchasing.Logistics Engineering & Management*. 34, 34-36.

[8]. Yang Zhihao.(2012). The financing and profit model of pension real estate. *China's real estate market.Social Ence Electronic Publishing*. 45,33-36.

[9]. Yan Yuejin. (2014). New blue ocean of personal investment in pension real estate. Financial Expo (Wealth). *Continental Shelf Research*. 37,19-22.

[10]. Zhang Shuzhong. (2013). Insurance capital is the natural main force of the pension industry . China's real estate industry. *Land & Resources Information*.16, 45-49.

[11]. Zhao Yi, Pang Min.(2012). Research on the development model of elderly real estate in Nanchong City China Business. *Journal of Guangzhou University*. 35, 23-25.

[12]. Zou Yi, Liu Li. (2013). Profit Model of Pension Real Estate. *Shanghai-Hong Kong Economy.Reformation & Strategy*. 16, 22-27.

**Teaching, Learning and E-learning
(IAC-TLEl 2022)**

The Computer Technologies of Education in China

Lin LI *

Palacky University，Special Education Department,Zizkovo nam.5, Olomouc, Czech Republic, 77140,
18381687837@163.com

Abstract

In order to fully understand history and current situation of computer technologies application in China's education, and answer the four research questions. This article followed evidence-based research path to search and screen the relevant literature of computer technologies of education in China, then analyzed the 49 target literature from pioneers, utilizing and positive effects, and educational approaches of the computer technology of education three aspects. Result shows that with the efforts of three pioneers, Xia Peisu, Xu Jiafu, Xu Zhenyu and their teams, China has tried to establish smart learning environment and made full use of e-learning tools such as e-textbook, e-education game, and education app, making education to be convenient, efficient, funny and diversified, and promote education reform. Computer-assisted instruction is the most common way of education approach with computer technology in China. However, facing the challenges during the epidemic, how to improve the teaching quality of virtual education approach has become a common problem faced by all mankind.

Keywords: Computer Technologies, Education, China

1. INSTRUCTION

Computer is one of the most advanced scientific and technological inventions in the 20th century, it is a complex automation equipment composed of hardware and software (Bai, 2000). Since the first computer was born at the University of Pennsylvania in 1946, the use of computers has gradually spread from the military to all aspects of daily life (Gao, 2002). In 1958, American IBM designed the world's first computer assisted instruction which using computers to help and replace teachers in teaching tasks, transfer teaching information, impart knowledge and training skills to students, and directly serve students. With the maturity of computer assisted instruction, it has been widely used in education in many developed countries since the 1980s. It has set off a great mass fervor to promote the use of computers, and has become the most important form of computer applications in the field of education. (Jin, 2009; Zhang, 2003). With more than 188 million students over the age of 6 in school in China, the application of computers in China's education has a great potential (Zhou, 2014). Understanding the history and current situation of computer application in China's education and comparing it with the developed countries can not only promote the development of China's education, but also provide new ideas for relevant research.

2. MATERIAL AND METHOD

The purpose of this research is fully understand history and current situation of computer technologies application in China's education. Specific research questions are as follow:
1.How the computer technologies are utilized in China's education?
2.Which educational approach of computer is   the most common in China?

---

* Corresponding author.

3.How the positive effects of computer technologies on education are documented in China?

4.Who are the pioneers of computer use in education in China?

In order to answer these research questions, this article used CNKI (China National Knowledge Infrastructure) which is the biggest Chinese journal full-text database as the platform for literature search; followed the path of evidence-based research to search and screen the literature; used "computer" as the main searching key word to randomly match with "education", "teaching" and connected them by the the Boolean operator "AND". All of the search was in abstract, title and key words without time limitation, and carried out in December of 2021. Languages was limited to Chinese. Besides, in order to get qualified literature, the source of journal was limited in core journals.

After finished the search of literature, the results of search were going to match with the inclusive criteria and exclusive criteria to screen the literature and get final results for analyzing. The inclusive criteria and exclusive criteria are as follow:

Inclusive criteria: 1. The researches are relevant to specific research questions of this research.

Exclusive criteria: 1. The researches are not about the computer technology of education; 2. The researches are not about the computer technology of education in China; 3.The pages of article are less than 3 or the format does not conform to writing specification.

The information of literature searching and screening is showed in table 2.1.

Table 2.1 The Information of Literature Searching and Screening Results

Databases	Main key words	Matching key words	Searching results	Screening results
Core journals in CNKI	computer	education	777	49
		teaching	717	
Total			1494	49

Using the searching strategy, a total of 1494 articles were obtained. After matched the corresponding inclusion, exclusion criteria, and eliminate the repeated literature, 49 target articles were obtained. Then the target articles were analyzed from pioneers, utilizing and positive effects, and educational approaches of the computer technology of education three aspects.

3. RESULT

3.1. The Pioneers of Computer Use in China's Education

In the history of computer application in China's education, three pioneers' name should shine brightly, namely Xia Peisu, Xu Jiafu, Xu Zhenyu.

As the person in charge of the design and development of China's first computer, Xia Peisu and her team spent only 7 years from putting forward the plan to producing China's first computer in 1960 under the background of extremely strict technical blockade and weak components and equipment foundation. It was also the first computer used in higher education in China. In addition, Academician Xia also founded the major of computer in the University of Science and Technology of China, and under her leadership has fostered many students who have had a significant impact on the development of the computer industry in China (Liu, 2003).

Professor Xu Jiafu has been working on computer software development since the 1950s, he is the pioneer of computer software in China. The working group which is led by Professor Xu Jiafu successfully configured the ALGOL-60 system on different computer models in China since1964. Besides, he developed China's first software automation system----NDHD and a new programming system based on non-von Neumann architecture in 1970s. He is also the supervisor of the first software doctor in China (Liu, Zhang, 2004).

Professor Xu is the pioneer of basic computer education in China. He not only founded the computer major in Tianjin University, but also designed and developed my country's earliest computer drum memory, and is also the editor of first computer textbooks in China. In 1983, he first proposed the application of computer technology to

different professional disciplines at the Wuhan Computer Software Professional Teaching and Textbook Conference, and that all science and engineering majors should set up computer courses, taking computer as a basic subject. After that, he established the Association of Fundamental Computing Education in Chinese Universities in 1984, which laid the foundation for the popularization of computers in China (Liu, 2004).

Ten-year Development Plan for Education Informatization (2011-2020) pointed out that China's information infrastructure system has been initially formed, laying a solid foundation for the development of China's education informatization. The deep integration of computer technology and education is an important proposition in the process of education informatization construction (Yang, Jiao, Xia, 2014, as cited in Ministry of Education of the People's Republic of China, 2012).

3.2. The Computer Technologies Utilizing in China's Education and Their Positive Effects

With the maturity and popularization of computer technology, computer technology has been utilized in all aspects of China's education, and has reacted to the reform of education.

3.2.1. Smart Learning Environment

In the 1980s and 1990s, with the gradual popularization of computers, various elements in the learning environment interacted with computer software and hardware, and a smart learning environment came into being (Carter, 1990). The smart learning environment of school classrooms generally consists of central consoles, computers, projectors, electronic whiteboards and other equipment (Li, Jiang, Jiang, Chen, 2014; Feng, 2001). With the popularization of mobile devices such as smartphones and personal tablet computers, and the rapid development of information and communications technology, learning environment and learning forms are gradually diversified to meet different learning needs. However, China's use of modern educational technology in the field of special education is still fragmented, unsystematic, and lacking in purpose (Xu, 2000).

One-to-One digital learning environment means that each student has an internet-connected computer and has internet access to their shared learning space with a wealthy learning resources and tools (Xu, Song, Di, Gao, 2014; Yu, Chen, 2007; Li, Jiao, Ma, Shi, 2015; Jiao, Zhou, 2015). It greatly meets the development needs of students' personalized, mobile and online collaborative learning (Meng, Pan, 2009; Yu, 2007; Zhang, Xie, Sun, 2016;). Although the laptop is not particularly suitable for frequent movement due to its weight, it has incomparable advantages over other devices due to its support for various forms of media expression and powerful scalability. 1:1 digital learning relying on the laptop is the mainstream choice (Ma, 2007). At the same time, this kind of learning environment greatly improves the efficiency of classroom teaching, expands the breadth and depth of teaching and the participation of students. While promoting knowledge learning, it can effectively penetrate the cultivation of students' ability and quality (Yu, Chen, 2007; Li, 2013; Li, 2016). This learning environment has been piloted in Shanghai, Beijing and other places since 2007 (Meng, Pan, 2009; Yang etal, 2020).

Interactive learning environment is a new learning system built on the basis of mobile Internet as the communication carrier, multimedia as the information medium, and server cluster processing (cloud computing, data mining) as the technical support. It has the advantages of all-round interaction, resource sharing, i-studio real-time recording, and seamless learning (Zhong etal, 2016). As a result, the scope of learning will become wider and wider, and the learning environment will be expanded from the classroom to the virtual environment. It can greatly meet the personalized learning needs of learners (Laura etal, 2008; Fan, Ma, Li, Qiu, 2015; Yang, Xiong, Jiang, Wang, 2013). It plays an important role in improving teaching mode, enriching teaching methods and improving teaching efficiency, especially during the epidemic (Yang etal, 2020; Zhong etal, 2016).

3.2.2 E-learning Tools

With the development of computer technology, learning tools gradually change from paper textbooks, blackboards and chalk to information products (Pei, 1996). With the continuous popularization of learning devices such as laptops, tablets, and smartphones, primary and secondary schools have begun to advocate "Bring Your Own Device" (BYOD) for students to carry out learning activities (Zhao, Du, 2015). The intervention of e-learning tools has many advantages, such as stimulating students' interest and improving teaching efficiency; turning abstraction into concrete, which is conducive to students' understanding; promoting the transformation of teaching methods and realizing student-center; multi-sensory application, highlighting key points; easy to create teaching situations ; convenient and flexible lesson preparation (Zhang, Yang, 2017).

3.2.2.1 E-textbook

With the advent of tablet personal computers, the application of e-textbooks has entered a new era. Comparing with traditional paper textbooks, electronic textbooks have five advantages. First, e-textbooks break through the limitation of paper textbooks that only contain text and pictures. E-textbooks can organically combine text, pictures, audio, video, interactive programs, etc., to strengthen the learning effect through a variety of stimulation methods; Second, it creates new channels and new teaching spaces for teachers and students to communicate in the teaching process. E-textbooks allow teachers and students to communicate in real-time by using the Internet, expanding the space for teaching and learning; Third, e-textbooks are cost-effective and environmentally friendly. It can save a lot of paper and printing costs; Fourth, e-textbooks are easy to update. E-textbooks can be updated and adjusted according to the needs, and can be continuously improved; Fifth, e-textbooks are easy to be preserved. Electronic data will not be exposed to water, fire, etc., and it can be stored indefinitely (Li, Li, 2011; Zhuang, Geng, Shang, 2013;).

In general, e-textbooks can make full use of multimedia technology to perfectly present knowledge, innovate teaching methods, and improve teaching efficiency, which has always attracted the attention of the education community. Since 2010, China has promoted e-textbooks in primary and secondary schools in Shanghai and other cities (Li, Li, 2011; Jia, 2012; Yang, Jiao, Xia, 2014;). As of 2019, the proportion of the e-textbooks using in China's primary and secondary schools is 71% (Quan, Chen, Cai, Chen, 2019).

3.2.2.2 E-education Game

Games have the learning factors such as interactivity, repetition, fun, insight, and fragmentation. The "learning factor" in the games process play a subtly constructive role in the knowledge, thinking, ability and psychology of each participant (Tao, 2016). In addition, computer games can have an impact on the inertia, selectivity and conformity of players' attention. It can be applied to educational games well (Qian, Jin, Zhang, 2010). Some scholars have tried to introduce computer games into primary and secondary education, researches found that e-education games, in-class application can improve learning motivation and academic performance, and extra-curricular expansion can promote ability improvement and knowledge expansion (Yun, Jiang, Li, 2010; Wei, 2009). In addition, virtual educational games can significantly improve educational outcomes, especially for low-achieving students (Luo, Zha, 2008). The number of companies engaged in educational game development in China has grown rapidly, but how to properly apply e-education games is still a problem for many educators. Therefore, it is very important to propose strategies and programs for learning evaluation of e-education games (Ni, 2008). In many Chinese computer education conferences, digital game-based learning has always been a hot topic of discussion (Zhu, Qian, 2009; Li, 2010).

3.2.2.3 Education App

Abundant mobile APP resources which featuring mobility, socialization, gamification, intelligence and personalization are the key to the success of mobile education implementation. According to the "2014 China Education APP Industry Development and User Behavior Research Report", the utilization rate of Apps among users in the education market is about 76.1%. Educational mobile APP resources have integrated the advantages of various digital learning technologies in the fields of preschool education, basic education, higher education and special education (Liu, Hu, Li, Li, 2016; Ge, Zhang, 2018). In practice, the application of educational APPs has been refined to the corresponding disciplines, can promote the development of students in a broad, efficient, personalized and creative way (Gu etal, 2013; Li, 1999; Wang, Wang, Zeng, 2012). However, the research shows that there is a serious shortage of educational apps in some education fields, and there is still a big gap between the educational apps available in China and developed countries (Li, Wang, 2012).

3.2.3 E- Educational Evaluation

Objective and fair education evaluation results are an important measure to improve and guarantee teaching quality. The "Opinions of Ministry of Education of the People's Republic of China on Promoting the Reform of Comprehensive Education Evaluation in Primary and Secondary Schools" which was promulgated in 2013, emphasizes the need to reform evaluation methods, combine quantitative and qualitative evaluations, focus on comprehensive and objective collection of information, and analyze and judge based on data and facts (Li, &Zhou, 2016, as cited in Ministry of Education of the People's Republic of China, 2013). The characteristics of big data

such as volume, variety, velocity, veracity and value provide good support for multi-participation in educational evaluation and realization of developmental student evaluation (Li, &Zhou, 2016; Yan, He, 2017). Personal tablet computers, digital pens, wearable devices, etc. can digitize different types of learning data in real time, realize the collection of data in the whole process of students' learning, and provide educational evaluation and decision-making based on data analysis and rational evidence in the field of education (Li, &Zhou, 2016; Yan, He, 2017).

3.3 The Educational Approaches with Computer Technologies in China

Research shows that the number of mobile smart terminal users in China has reached 1.06 billion in 2014, of which students are the backbone (Zhao, Du, 2015). The huge number of mobile devices provides a practical basis for the diversification of educational approaches with computer technologies. According to the degree of dependence on computer technology and whether teachers and students are in a same physical space, education approaches can be divided into blended and virtual education approach.

3.3.1 Blended Education Approach

3.3.1.1 Computer Assisted Instruction

With the development of programmed logic and interactive electronics for automatic teaching operation and time-shared interactive computer-controlled information television, and the popularization of computers in the 1980s, Computer Assisted Instruction (CAI) has gradually transformed from a simple tool for presenting information to a completed education approach.

The use of CAI has procedures. First, determine the purpose of education, and analyze the feasibility of CAI; second, design and manufacture programs or software that can be used to achieve the education purpose;The use of CAI has certain procedures. First, determine the target behavior to be intervened before use, and analyze the feasibility of CAI; secondly, design and produce programs or software that can be used to intervene in the target behavior; thirdly, demonstrate the program or the operation method of the software to students and let them practice until they reach the established mastery standard; finally, formally enter the CAI. In CAI, the program or software often divides into two parts: teaching and evaluation. Research shows that CIA is the most common education approach with computer technology in China, and it has achieved remarkable educational results (Wang, 2018).

3.3.1.2 Flipped Classroom

Flipped classroom is an education approach in which students use teaching videos and other learning materials for self-study before class, and teachers organize students to carry out classroom teaching through group collaborative learning and other methods during class to maximize teaching performance (Fan, Ma, Li, Qiu, 2015). However, this educational approach faces problems such as difficulty in monitoring students' use of mobile devices, difficulties in solving pre-class learning problems in a timely manner, difficulty in monitoring the progress of self-study completion, and unclear group work. Therefore, it often needs to be mixed with other teaching equipment or education approach (Ding, 2017; Zhao, Du, 2015; Fan, Ma, Li, Qiu, 2015).

3.3.2 Virtual Education Approach

3.3.2.1 MOOC

In 2012, many world-class universities actively participated in providing free Massive Open Online Courses, so it was called the first year of MOOC. China announced that China will jointly build an online open course' sharing platform, with a view to promoting large-scale online education, establishing China's first-class   online courses, implementing education and teaching reforms based on large-scale online courses, and promoting high-quality teaching Co-construction and sharing of resources, improve teaching quality, and join hands to serve Chinese higher education and society at Shanghai Jiaotong University in July of 2013 (Ding, 2014). However, in the process of development, MOOC is also faced with insufficient openness, high dropout rate and low completion rate, single teaching mode, lack of face-to-face communication, etc., which make it difficult to guarantee the learning effect and teaching quality. Therefore, it is often regarded as an educational aid. (Ren, HU, 2014；Zhao, Du, 2015).

3.3.2.2 Community Online Education Approach

The sudden outbreak of COVID-19 has made online education to be the only education option for a long time. It reminds people that online education is no longer an optional educational option, but an educational undertaking that must be constructed and adapted, improved and enhanced at a faster pace. During this period, China adopted a community online education approach, applied software systems such as Zoom, Tencent Meeting, Zhuo Meeting, etc., taught in real time through PPT and video, and provided a chat community. After the course is taught, teachers use the chat community to conduct online discussions about the course and give feedback to the participants. However, since the effectiveness of online education depends on the students' self-discipline, and the students' home environment is difficult to monitor and manage, this approach of education has also drawn criticism from many scholars (Yang etal, 2020).

4. CONCLUSION

Comparing with developed countries, China's computer technology of education started late and has a weak foundation. However, with the efforts of three pioneers, Xia Peisu, Xu Jiafu, Xu Zhenyu and their teams, China has tried to establish smart learning environment and made full use of e-learning tools such as e-textbook, e-education game, and education app, making education to be convenient, efficient, funny and diversity, and promote education reform. However, in terms of meeting the needs of different disciplines and groups, the development of China's education of computer technology still lags behind developed countries. Computer-assisted instruction is the most common way of education approach with computer technology in China. However, facing the challenges during the epidemic, how to improve the teaching quality of virtual education approach has become a common problem faced by all mankind.

Acknowledgement

Reference

[1] Bai Zhongying. (2000). *Principles of Computer Composition*. Bei Jing: Science Press, 1.
[2] Carter, D. S. G. (1990). Knowledge Transmitter, Social Scientist or Reflective Thinker: Three Images of the Practitioner in Western Australian High Schools. *Theory and Research in Social Education*, 18, 274-309.
[3] Ding Lifu. (2014). On the Chinese Version of MOOC for Its Localization. *Social Sciences of Beijing*, 35-41.
[4] Fan Wenxiang, Ma Yan, Li Kai & Qiu Bingfa. (2015). A Practical Study in the Flipped Classroom Based on WeChat under Environment of Mobile Learning. *Open Education Research*, 90-97.
[5] Feng Yi Letter. (2001). Collaborative Translation Instruction on Classroom Net. *Chinese Translator Journal*, 37-40.
[6] Gao Wen. (2002). Computer Technology: and Overview of Last Century. *Bulletin of National Natural Science Foundation of China*, 35-38.
[7] Gu Suiqing, Gao Weifang, Xia Jianchun, Hao Qingmao, Gu Kunfeng & Liu Yuheng. (2013). Construction and Application of a Medical Mobile System . *Journal of Mathematics in Practice and Theory*, 45-49.
[8] Jia Jiyou. (2012). A Cost-effective portable Intelligent Electronic Study Companion and its Application in Traditional Classrooms. *China Electrochemical Education*, 120-126.
[9] Jiao Jianli & Zhou Xiaoqing. (2015). BA4C Model of One-to-One Digital Learning Based on Pad. *e-Education Research*, 9-17.
[10] Jin Tao. (2009). *Research on the History and Trend of Computer-assisted Instruction* (Master's thesis). Inner Mongolia Normal University, Inner Mongolia.
[11] Laura Naismith, Peter Lonsdale, Giasemi Vavoula, Mike Sharples, Yang Yuqin, Zhong Hongrui & Jiao Jianli. (2008). Literature Review of Mobile Technologies and Learning. *Journal of Distance Education*, 4-13.
[12] Li Baoping. (2013). The Application and Reflection of Tablet Computer in Primary School "1:1" Teaching. *China Educational Technology*, 105-110.
[13] Li Baoping. (2016). A Survey on the Application Effect of 1 to 1 Digital Learning Environment Based on Tablet PC. *Modern Distance Education Research*, 96-103.
[14] Li Baoping & Zhou Ying. (2016). Research on Educational Evaluation based on Big Data. *Modern Educational Technology*, 5-12.
[15] Li Baoping, Jiang Shaoxiang, Jiang Fengguang & Chen Xie. (2014). The Status and Trend of research Towards Smart Learning Environment - A Content Analysis of International Journal Publications in the Past Ten Years. *Open Education Research*, 111-119.
[16] Li Fangyuan & Li Famin. (2011). On Electronic Textbooks in the Tablet PCs. *Modern Educational Technology,* 124-126.
[17] Li Jiahou. (1999). Computer Music Educational Technology and Educational Innovation. *e-Education Research,* 7-10, 24.

[18] Li Qing & Wang Tao. (2012). A Review of the Method of Semantic Analysis in the Automated Problem Solving of ITS. *Modern Education Technology*, 98-103.

[19] Li Yan. (2010). Towards a New Era of Knowledge Construction—A Review of the 14th Global Chinese Computer Education Application Conference (GCCCE2010). *Journal of Distance Education,* 62-68.

[20] Li Yushun, Jiao Chenfei, Ma Qinyan & Shi Pengyue. (2015). Research of 1:1 Instruction Promoting Strategy and Stage Model in Primary and Secondary Schools. *China Educational Technology,* 78-83.

[21] Liu Ruiting. (2003). One of the Founders of China's Computer: Academician Xia Peisu. *Computer Education,* 18-20.

[22] Liu Ruiting. (2004). The Big Wings Hang Far from the Sky, and the Long Pines are High above the Ground—the Pioneer of Computer Basic Education in China: Professor Xu Zhenyu. *Computer Education,* 24-27.

[23] Liu Ruiting & Zhang Long.(2004). The Pioneer of Chinese Software: Professor Xu jiafu. *Computer Education,* 14-16.

[24] Luo Yifan & Zha Xiaoyu. (2009). Combining Game Software with Education: Evaluating Its Educational Effect. *China Educational Technology,* 108-110.

[25] Ma Xiaoqiang. (2007). The Current Situation of Wireless Network and Its Support for 1:1 Digital Learning. *China Educational Technology*, 19-22.

[26] Meng Qi & Pan Yuyi. (2009). A Practical Study of 1:1 Digital Learning——A Case Study on the Application of Student's Laptop Teaching. *China Educational Technology*, 28-31.

[27] Ministry of Education of the People's Republic of China. (2012. 03.13). *Ten-year Development Plan for Education Informatization (2011-2020)*. Retrieved from http://www.moe.gov.cn/srcsite/A16/s3342/201203/t20120313_133322.html.

[28] Ministry of Education of the People's Republic of China. (2013. 06. 03). *Opinions of Ministry of Education of the People's Republic of China on Promoting the Reform of Comprehensive Education Evaluation in Primary and Secondary Schools*. Retrieved from http://www.law-lib.com/law/law_view.asp?id=422250.

[29] Ni Yong. (2008). Analysis and Design of Game-Based Learning Evaluation Strategies and Programs. *China Educational Technology*, 71-75.

[30] Pei Xiaoliang. (1996). The Impact of Computer Networking on Scientific Research and Education in China and Its Countermeasures. *China Science & Technology Resources Review*, 19-21.

[31] Qian Li, Jin Ke & Zhang Sujing. (2010). Development Strategies of Learners' Attention Resources in Educational Games. *Journal of Distance Education*, 93-97.

[32] Quan Guolong, Chen Mingxuan, Cai Huiying & Chen Jinyan. (2019). Research on Supply Conduct Based on the Survey of Digital Education Resource Application. *Open Education Research,* 88-98.

[33] Ren Shuhuai & Hu Lizhong.(2014). Challenges and Countermeasures Facing University Libraries in the Emerging Technology Environment. *Journal of University Libraries,* 14-19.

[34] Tao Kan. (2006). The Value of "Learning Factor" in Computer Games and Its Enlightenment to Online Education. *e-Education Research*, 44-47.

[35] Wang Jijun, Wang Henan & Zeng Yi.(2012). Research on the Application of Tablet Computer in Early Childhood Mathematics Education. *China Educational Technology*, 107-110,118.

[36] Wang Yunfeng. (2018). Promoting the Academic Skills of Children with Autism Spectrum Disorders by Means of Computer-Assisted Instruction: A Research Review. *Chinese Journal of Special Education*, 25-31.

[37] Wei Ting. (2009). A Study on the Factors of Stimulating and Sustaining Students' Learning-motivation in Educational Games and Motivational Design Strategies. *Modern Educational Technology,* 55-58.

[38] Xu Hongmei. (2000). Compensating for Visual Defect by Using Modern Educational Technology. *Chinese Journal of Special Education*, 45-47.

[39] Xu Le, Song Lingqing, Di Miaoci & Gao Ting. (2014). The Areas and Challenges of One-to-One Digital Learning. *China Educational Technology,* 58-63.

[40] Yan Shengguang & He Lijuan. (2017). Analysis of Higher Education Quality Evaluation Based on Big Data. *China Adult Education,* 49-52.

[41] Yang Wenzheng, Xiong Caiping, Jiang Xingling & Wang Xuejun. (2013). Teaching Experience and Teachers' Role in the Context of Ubiquitous Technology. *Modern Distance Education Research,* 105-111.

[42] Yang Yang, Zhang Zhiqiang, Wu Guanjun, Zhang Feng, Wu Yongyi, Su De, Zhou Yueliang, Wang Jian, Li Zhengtao, Zhu Dequan, Li Mang, Xin Tao, Yuan Zhenguo. (2020). Talking about "Information Technology and Online Teaching under the Epidemic". *Journal of Schooling Studies*, 48-60.

[43] Yang Yue, Jiao Chenfei & Xia Changsheng. (2014). The Direction and Status of Practice on Integarting Mobile Terminals into Teaching Deeply and Smoothly. *China Educational Technology*, 69-73.

[44] Yu Li. (2007). The Role of Notebook Computers on Students' Personalized Growth. *China Educational Technology*, 22-24.

[45] Yun Ruwei, Jiang Yanyan & Li Xia. (2010). The Summaries of Studies of Application Effectiveness of Computer Games in Primary and Secondary Education. *Journal of Distance Education*, 86-92.

[46] Yu Shengquan & Chen Ling. (2007). 1:1 Teaching Reform in Classroom Network Learning Environment. *China Educational Technology,* 25-29.

[47] Zhang Jianping. (2003). *Theory and Practice : Modern Education Technology*. Bei Jing: Higher Education Press, 92.

[48] Zhang Meilin, Xie Li & Sun Guorong. (2016). Researching Status and Development Trend of Adult Mobile Learning. *Adult Education,* 23-26.

[49] Zhang Xinzheng & Yang Daoyu. (2017). Rethinking on "Internet + Education". *Educational Exploration*, 20-24.

[50] Zhao Huichen & Du Zhenliang. (2015). The Problems and Recommend about the Application of the BYOD in Education Under the Concept of Blended Learning. *China Educational Technology*, 126-131.

[51] Zhong Xiaoliu, Li Haixia, Song Shuqiang, Xu Junhua, Chen Jihe, Guan Shimin & Ma Yu. (2016). Research and Realization of C-campus Interactive Teaching Support System. *Experimental Technology and Management,* 152-155.

[52] Zhou Yuan. (2014). Reconstructing China's Education Development Index (EDI) - Based on the 6th National Census. *Population and Society*, 16-19.

[53] Zhu Zhiting & Qian Dongming. (2009). Review of the 13th Global Chinese Computer Education Application Conference (GCCCE2009). *Journal of Distance Education*, 3-5.

[54] Zhuang Shaoyong, Geng Jie & Shang Junjie. (2013). A Case Study of the Implementation of Tablet-Based E-Textbook in English Teaching and Learning in Hong Kong. *Modern Distance Education Research*, 92-99.

The Impact of School Organization and School Performance

Jiri STELZER[a*], Willi BATTS [b], Robert B. GREEN [c], Daesang KIM [d], William F. TRUBY [e]

[a] *Department of Kinesiology, Valdosta State University, Georgia, 31698, U.S.A; jstelzer@valdosta.edu*
[b] *Department of Curriculum, Leadership, and Technology, Valdosta State University, Georgia, 31698, U.S.A; wbatts@valdosta.edu*
[c] *Department of Curriculum, Leadership, and Technology, Valdosta State University, Georgia, 31698, U.S.A; rgreen@valdosta.edu.*
[d] *Department of Curriculum, Leadership, and Technology, Valdosta State University, Georgia, 31698, U.S.A; dkim@valdosta.edu.*
[e] *Department of Curriculum, Leadership, and Technology, Valdosta State University, Georgia, 31698, U.S.A; wtruby@valdosta.edu*

Abstract

The No Child Left Behind (NCLB) Act [1], Common Core State Standards [2], and U.S. Department of Education's [3] Race to the Top reforms have all placed accountability on compulsory education in the U.S.A. However, none of these reforms seems to help school leaders, principals, teachers, and students improve academic performance. Many elementary schools in the southeast of the U.S. had not made adequate gains in school performance as measured by the College and Career Readiness Index (CCRPI) score [4]. Some literatures suggest that there is a positive correlation between school organization and school performance; however, there is little consensus on which organizational characteristics promote school performance [5]. This study used School Culture Survey [6] to measure school organization in high (8 schools) and low (8 schools) performing elementary schools in the southeast of the U.S. to determine whether there is a correlation between the school organization and the school performance. The results of the Pearson correlation analyzes suggested that there was a statistically significant positive correlation between the school organization measured by the School Culture Survey and the school performance in elementary schools in the southeast of the U.S.

Keywords: School Organization; School Performance; School Culture Survey

1. INTRODUCTION

Over the past two decades, states in the U.S. have responded to many national school reform directives focused on improving school performance by contributing vast amounts of human, financial, and fiscal resources. During this time, many of the elementary schools in the southeast of the U.S. haven't made adequate gains in school performance as measured by the College and Career Readiness Index (CCRPI) score [4]. The study addresses the lack of improvement in the elementary schools in the southeast of the U.S. and how the school organization could contribute to teachers' ability to make adequate gains in school performance.

---

* Corresponding author.

The variations in school organization are challenging because of many components that can influence the organization. Danielson [7], defined school organization as "how schools arrange the resources of time, space, and personnel for maximum effect on student learning" (p. 1). How a school is organized can create an environment for success [8] and influence student behavior [9]. According to Bradshaw et al. [10], a school's organizational structure is one of the most crucial factors affecting students' learning. The purpose of this quantitative correlational study was to examine if there is a significant relationship between the school organization measured by the School Culture Survey [6] and school performance measured by the archived data from the College and Career Readiness Index (CCRPI).

2. PROCEDURE

The study instruments included the School Culture Survey [6] and archived data from the Georgia Department of Education (GDE). The School Culture Survey questionnaire was used to measure the school organization of the 16 selected elementary schools in southeast of the U.S. The archived data from the College and Career Readiness Index (CCRPI) score [4] were used to determine the schools' performance and separate them into two groups: (a) high-performing schools and (b) low-performing schools. The CCRPI is a comprehensive school improvement, accountability, and communication platform for all educational stakeholders to promote college and career readiness for all public school students [4]. Convenience sampling was used to select the 16 elementary schools and to select the teachers from the 16 elementary schools.

The schools were ranked from 1 to 16, the first eight in the list were grouped as the high-performing schools, and the remaining eight were grouped as low-performing schools; 382 teachers completed the survey. The survey has three subscales; norms, beliefs, and core values. The first subscale focused on behavioural norms, such as the quality of the environment where teachers were working. The second subscale focused on the shared beliefs about how the school should be operated. The third subscale focused on core values, especially what teachers wanted for their students. The three subscales are further divided into 10 themes, which include collaborative decision-making, continual school improvement focus, leadership, and management of excellence (norm subscale); concern for school/stakeholders, professionalism, and teaming (belief subscale); and empowerment, human resources needs, and intent/direction (core values subscale). The items were rated on a 5-point Likert type scale, wherein 1 was considered the lowest score (Well Below Expectation), and 5 was considered the highest score (Well Above Expectation). Example of the questionnaire instrument is in Table 1. The whole instrument has 50 questions that are scored, as shown in Table 2.

Table 1: An Example of School Culture Survey Question

Table 2: Scoring Instructions of the 10 SCHOOL CULTURE SURVEY Themes of the Subscales of Norms, Beliefs, and Core Values[*]

SCHOOL CULTURE SURVEY Themes	SCHOOL CULTURE SURVEY Item Numbers
1. Collaborative Decision-Making	1, 2, 3, 18, 20, 21, 22, 23
2. Continual School Improvement Focus	3, 14, 19, 25, 27, 28, 38, 41, 48, 50
3. Leadership	3, 4, 11, 13, 15, 16, 17, 18, 22, 26, 35, 37, 42, 44, 45, 46, 47, 48
4. Management of Excellence	2, 5, 7, 12, 16, 17, 18, 22, 23, 24, 32, 36, 49, 50
5. Concern for School/Stakeholders	7, 12, 23, 34, 36, 39, 43
6. Professionalism	2, 4, 8, 9, 10, 21, 24, 32, 33, 40, 47
7. Teaming	3, 4, 11, 15, 21, 46
8. Empowerment	1, 6, 8, 10, 20, 26, 29, 30, 35, 44, 45
9. Human Resources Needs	9, 10, 11, 12, 13, 43, 47
10. Intent/Direction	12, 14, 27, 28, 31, 33, 34, 42, 48

* Norms subscale includes themes 1 through 4; Beliefs subscale includes themes 5 through 7; Core values subscale includes themes 8 through 10.

3. ANALYSIS

To answer the question "Is there a statistically significant correlation between school organization as measured by the School Culture Survey and school performance in selected low and high performing elementary school in the southeast region of the U. S?" 382 teachers from 16 elementary schools took the survey. Pearson's correlation analysis was set to the level of significance of 0.05. The grouping of schools, whether it was high or low-performing, was based on the school performance rank information. The 16 elementary schools were ranked in order from 1 to 16 based on the school rankings. The first eight elementary schools in the list were grouped as the high-performing schools, and the remaining eight were grouped as low-performing schools. Descriptive statistics of the scores by the three subscales and ten themes from the School Culture Survey are presented in Table 3.

Table 3: Descriptive Statistic Summaries of Scores of Different School Culture Survey Themes between Low and High Performing Elementary Schools

School Culture Survey Subscales	School Culture Survey Themes	School type	N	M	Std. Dev.	Std. Error Mean
Norms	Collaborative Decision-Making	Low performing schools	8	51.85	2.37	0.84
		High performing schools	8	66.05	11.30	4.00
	Continual School Improvement Focus	Low performing schools	8	49.20	7.22	2.55
		High performing schools	8	67.75	10.05	3.55
	Leadership	Low performing schools	8	49.89	3.65	1.29
		High performing schools	8	66.52	11.39	4.03
	Management of Excellence	Low performing schools	8	50.98	5.84	2.06
		High performing schools	8	69.47	11.50	4.07
Beliefs	Concern for School/Stakeholders	Low performing schools	8	53.54	7.31	2.58
		High performing schools	8	69.80	9.52	3.37
	Professionalism	Low performing schools	8	52.29	3.93	1.39
		High performing schools	8	68.39	11.51	4.07
	Teaming	Low performing schools	8	50.02	2.39	0.85
		High performing schools	8	67.44	13.10	4.63

School Culture Survey Subscales	School Culture Survey Themes	School type	N	M	Std. Dev.	Std. Error Mean
Core Values	Empowerment	Low performing schools	8	48.22	3.43	1.21
		High performing schools	8	64.65	10.69	3.78
	Human Resources Needs	Low performing schools	8	50.66	3.32	1.17
		High performing schools	8	68.80	12.56	4.44
	Intent/ Direction	Low performing schools	8	51.94	8.94	3.16
		High performing schools	8	69.57	8.69	3.07

Comparison of the means showed a higher mean value for high-performing schools and a lower mean value for low-performing schools. The Pearson correlation results are presented in Table 4. The closer is the number of the correlation to number 1, the higher is the correlation between the specific team and the school performance. All ten themes from the three subscales are significantly negatively correlated. As the ranking is inverse (the smaller the number in school ranking, the better), the strong negative correlation shows high relationship between the school organization and school performance.

Table 4: Results of Pearson Correlation Analysis Between School Culture and School Performance

School Culture Survey Themes	Statistics	School Performance Rank
Collaborative Decision-Making	Pearson Correlation	-0.67*
	Sig. (2-tailed)	0.004
	N	16
Continual School Improvement Focus	Pearson Correlation	-0.74*
	Sig. (2-tailed)	0.001
	N	16
Leadership	Pearson Correlation	-0.71*
	Sig. (2-tailed)	0.002
	N	16
Management of Excellence	Pearson Correlation	-0.72*
	Sig. (2-tailed)	0.002
	N	16
Concern for School/Stakeholders	Pearson Correlation	-0.71*
	Sig. (2-tailed)	0.002
	N	16
Professionalism	Pearson Correlation	-0.70*
	Sig. (2-tailed)	0.003
	N	16
Teaming	Pearson Correlation	-0.70*
	Sig. (2-tailed)	0.003
	N	16
Empowerment	Pearson Correlation	-0.73*
	Sig. (2-tailed)	0.001
	N	16
Human Resources Needs	Pearson Correlation	-0.72*
	Sig. (2-tailed)	0.002
	N	16
Intent/Direction	Pearson Correlation	-0.72*
	Sig. (2-tailed)	0.002
	N	16

*. Correlation is significant at the 0.05 level (2-tailed).

4. CONCLUSION

The purpose of this quantitative correlational study was to examine if there is a significant relationship between the school organization measured by the School Culture Survey [6] and school performance at selected low and high performing elementary schools in the southeast of the U.S. The study suggested that all high-performing schools had

significantly higher scores on each of the three subscales measured and subsequently on each of ten themes. The literature supports our finding; school organization influenced teachers' and students' behaviors, performances, and overall school performances [11], [12], [13], [14]. The results showed a significant difference in the measure of school organization themes based on the School Culture Survey between selected low and high-performing elementary schools in the southeast region. School leaders and schools of higher education may use the results of the study to identify and further study the important teams that make the school organization better and educate future leaders on how to change the school organization. When the future leaders positively change the school organization, they will also positively change the school performance.

References

[1] No Child Left Behind Act of 2001, P.L. 107-110, 20 U.S.C. § 6319 (2002).

[2] Common Core State Standards Initiative. (2019). *Development process*. Retrieved from http://www.corestandards.org/about-the standards/development-process/

[3] U.S. Department of Education. (2009). *Race to the Top*. Retrieved from https://www2.ed.gov/programs/racetothetop/factsheet.html

[4] Georgia Department of Education. (2015). *2014 College and Career Readiness Performance Index.* Retrieved from http://ccrpi.gadoe.org/2014/ccrpi2014.aspx

[5] Schwartz, A. E., Stiefel, L., Rubenstein, R., & Zabel, J. (2011). The path not taken: How does school organization affect eighth-grade performance? *Educational Evaluation and Policy Analysis*, *33*(3), 293-317. DOI:10.3102/0162373711407062

[6] Saphier, J., & King, M. (1985). Good seeds grow in strong cultures. *Educational Leadership*, *42*(6), 67-74. Retrieved from http://www.ascd.org/publications/educational-leadership.aspx

[7] Danielson, C. (2002). *Enhancing student's performance. A framework for school improvement*. Alexandria, VA: Association for Supervision and Curriculum Development.

[8] Hughes, P. (2009). *Breaking barriers to learning in primary schools: An integrated approach to children's services*. London, England: Fulton

[9] Cusick, P. A. (1978). Organizational structure and student behavior in secondary school. *Studies in Educational Administration and Organization*, *7*(8), 106-18. Retrieved from https://www.emeraldinsight.com/series/sea

[10] Bradshaw, C. P., Waasdorp, T. E., Debnam, K. J., & Johnson, S. L. (2014). Measuring school climate in high schools: A focus on safety, engagement, and the environment. *Journal of School Health*, *84*(9), 593-604. DOI:10.1111/josh.12186

[11] Benbenishty, R., Astor, R., Roziner, I., & Wrabel, S. (2016). Testing the causal links between school climate, school violence, and school academic performance: A cross-lagged panel autoregressive model. *Educational Researcher*, *45*(3), 197-206. DOI:10.3102/0013189X16644603

[12] Cornell, D., Shukla, K., & Konold, T. (2015). Peer victimization and authoritative school climate: A multilevel approach. *Journal of Educational Psychology, 107*, 1186-1201. DOI:10.1037/edu0000038

[13] Espelage, D., Low, S., & Jimerson, S. (2014). Understanding school climate, aggression, peer victimization, and bully perpetration: Contemporary science, practice, and policy. *School Psychology Quarterly, 29*(3), 233-237. DOI:10.1037/spq0000090

[14]] O'Malley, M., Voight, A., Renshaw, T. L., & Eklund, K. (2015). School climate, family structure, and academic performance: A study of moderation effects. *School Psychology Quarterly*, *30*(1), 142. DOI:10.1037/spq0000076

Careers Choices in Conversations: Beyond Development and Career Maturity

James MOIR *

Abertay University, School of Business, Law and Social Science, Old College, Bell Street, Dundee, UK,
Email: j.moir@abertay.ac.uk

Abstract

Theories of career choice development portray the process as one of increasing maturity involving the ability to make a realistic and rational decision. Several theories have been proposed over the years in terms of a normative psychological process involving a self-reflexive process that can be aided through career counselling support. While arriving at a career choice can at first sight appear the outcome of individuals' increasing career awareness and maturity it is also possible to take an alternative view of how people talk about career decisions based on looking at how they discursively construct those choices within conversational exchanges in response to the demands of specific questions and actions being performed as a result. Nursing students and engineering students on vocational degree programmes were interviewed about their career choice as part of a larger study examining career decision-making discourse amongst vocational students. The analysis of the resulting transcript material reveals how their decisions are embedded within conversational sequences that co-construct accounts involving justifying courses of action as well as displaying vocational commitment. It is argued that rather than treating such answers as representing vocational maturity, they can be viewed as the justification and clarification of career-related courses of action in the course of talking these through as intelligible answers to questions that seek normatively credible responses.

Keywords: career, choice, maturity, development, conversation

1. INTRODUCTION

In Occupational Choice Ginzberg et al. (1951) advanced a career development theory based on the view that there are normative age-graded stages leading to an occupational choice. Accordingly, it is seen as a process which takes place over several years. Three stages are specified in the theory: fantasy, tentative and realistic. The fantasy stage extends from approximately age 6 to 11, the tentative from approximately age 11 to 17, and the realistic from age 18 years onwards. The underlying theme of this approach is therefore the maturation of the individual's capacity for realistic occupational decision-making.

The fantasy stage is characterized by the expression of occupational choice in terms of the child's wish to be an adult. As such it is argued that during this period choices, or more accurately preferences, are translates of impulses and needs and do not involve any self-assessment of capacities or the realities of the employment market. Interest forms the main criterion for the expression of occupational choice during this period. Thus, children of this age choose those occupations which appeal to them on the basis of things which interest them, which they enjoy doing or acting out in play, and which seem exciting and adventuresome. The content of these choices may vary according to the environment in which the child is reared (e.g., the influence of parental occupations).

---

* Corresponding author.

The tentative stage is subdivided into four substages. These substages: interest, capacity, value and transition. represent the adolescent's shifting basis for his or her choice and involve a growing awareness of both intra-individual and extra-individual factors that will affect the outcome. Initially interests are the primary basis for choice but there is the realization that abilities are also needed. Following the interest substage, individual capacities are taken into account, for example, academic performance in school subjects. However, knowledge of capacities are seen as being incomplete and therefore choices are tentative. Next, values enter into the process. There is an awareness that society attaches different values to different occupations in terms of, for example, status and financial rewards. There is also the realization that the choice of an occupation involves the choice of a particular set of values. In the final transition substage these factors are brought together and the adolescent becomes aware that a decision is impending. By this time the individual has become "aware more and more of the complex structure of reality with its job hierarchy, variety of working conditions, specific conditions of entrance into occupations, various income and security factors and the host of allied elements which are part of the working world" (1951, p.196).

The realistic stage consists of three substages: exploration, crystallization, and specification. During the exploratory substage stock is taken of past decisions and particular occupations are investigated. This might, for example, involve finding out about educational or vocational courses that lead to certain occupations. In the crystallization substage a commitment is made to enter an occupation whilst the specification substage involves the choice of a specific occupation.

Ginzberg (1972) modified the theory by suggesting that the process is lifelong and open-ended. Individuals are viewed as being engaged in an ongoing process which involves finding the optimal fit between occupational preparation, preferences and opportunities. A greater emphasis is also placed on constraints such as family income and situation, parental attitudes and values, employment opportunities and value orientations. these modifications the developmental basis of remained intact. However, despite the theory has gone on to influence other career development approaches. As Ginzberg et al. (1951, p.18) conclude "occupational choice is a developmental process: it is not a single decision, but a series of decisions made over a period of years. Each step in the process has a meaningful relation to those which precede and follow it."

In The Psychology of Careers Super (1957) put forward a developmental theory of career maturity stressing the importance of an individual's social environment and self-concept in vocational development. He specified series of progressive stages in the life-cycle although was mainly concerned with initial entry into employment and the development of realistic decision-making. Vocational maturity can be viewed in either of two ways. First, it can refer to the stage that an individual is at (as evidenced by the developmental tasks being encountered) compared with the stage he or she might be expected to be at in terms of age. Secondly, it can refer to how a person is coping with the developmental tasks of a particular stage regardless of his or her age. Thus, the rate and progress of an individual's vocational development are assumed to be assessable. Super (1980) provided decision-points within his decision-making theory of career stages. He envisaged the vocationally mature person as being able to carry out a series of steps which are analogous to his theory of career stages. Thus, decision-making is seen as following a pattern of (1) growth an awareness of an impending decision, (2) exploration alternatives are explored and evaluated, (3) establishment - a course of action is undertaken, (4) maintenance - seeing the plan through, and (5) decline - this stage may occur when the individual cannot meet certain requirements after a course of action has been undertaken and so a new decision-point is reached.

In more recent years Savickas (Savickas et al. 2009; Savickas, 2021) has incorporated elements of the notion of career maturity in his career construction theory (CCT). This theory asserts that individuals build a notion of self in relation to career through internalizing social and cultural practices. This involves career building through a self-reflexive, self-managed process in which vocational development tasks, of which of primary focus is the crystallization of a preference for a vocational field and level, and then entering a specific occupation. Related to this dimension is various aspects, of which career curiosity is of relevance to this study given that this relates to finding out about potential career pathways. Savickas (2021, p. 174) notes that "a lack of career curiosity can lead to unrealism about the world of work, often based on images and idea of what one hopes rather than what may be possible or likely".

What is apparent from these psychological approaches to career maturity is the view that individuals face the task of making informed and realistic choices about future career aspirations at crucial decision points. Such realistic decision making include not only having made efforts to find out about a particular career area or occupation, but also engaging in a process of decision making that is considered in line with normative expectations about what constitutes rational and deliberative action. In other words, making sound career decisions is considered as premised on the ability to demonstrate mature cognitive ability in terms of a group of actions required to recognize, select, plan, and implement career goals (Coertse & Schepers, 2004). This kind of career maturity is considered as a vital aspect in the

developmental process of moving from the unrealistic fantasy outlook on the world of work found in children towards a more realistic adult perspective.

The process can be aided by careers guidance which has traditionally aided career decision making through providing relevant career information and by matching occupations with interests. The Career Construction Counselling model (CCC) outlined by Savickas (2021) takes a different approach by transforming the individual's perspective career development by engaging in an ideographic process of reflection and meaning making and changing assumptions. The aim to help clients reposition themselves in relation to a career problem and plan accordingly to engage in self-regulation. However, despite this greater emphasis of self-reflection and meaning making, the aim of CCC approach is still very much aimed at aiding clients to engage in realistic and rational career planning by "taking purposive action to deal with career challenges and changes". While this type of approach to counselling is predicated on client agency and is arguably overly voluntaristic in outlook, they key point is the way in which career planning is rooted in a rational process of 'thinking through' career options. In accordance with this approach, Savickas has developed the Student Career Construction Inventory (SCCI, Savickas & Porfeli, 2012), as a measure of vocational development.

This study seeks to seeks to test the extent which career maturity can be evidenced in vocational undergraduates' accounts of the career choices. In this case a vocational programme of study that students are enrolled on have been taken as a proxy for career choice. What is of interest is the types of accounts that these students give of their career choices and the extent to which they accord with, or contradict, the career maturity approach. In other words, the aim was to find out if their career choice accounts offer an unambiguous reflection of successful career development and maturity. In approaching this work, the students' accounts of their career choices are not viewed as straightforward presentations of their career thinking and decision-making, but rather as discursive rationales put forward in the there-and-then of interview question-and-answer turns (Potter and Wetherell, 1987).

2. METHODOLOGY

Garfinkel (1967) suggests that retrospective accounting for decisions is a common feature of daily life. He argues that decision-making may have little to do with electing a course of action on the basis of available information but rather may be the product of people's ability to define the basis for a decision once made. This type of accounting can therefore be viewed as justifying a course of action and involves 'the possibility that the person defines retrospectively the decision that have been made" (114). He therefore poses the counterintuitive notion that "the outcome comes before the decision". The study presented here has adopted this retrospective view of decision-making and in doing so involves two important methodological implications. As noted above, attention was directed at individuals who had already made a career choice rather than those who had yet to decide. Second, those involved in the study were given an adequate opportunity to account for their choices in terms being given an opportunity to talk at length about their reasoning or as Garfinkel would have it the "task of justifying a course of action" (114).

The study focused on undergraduate nursing and engineering students at a Scottish university taking these two propositions into account. Students were recruited by direct in-class invitation across all stages of the degree programmes with a total of forty taking part in total. The participants were interviewed using a semi-structured format involving general questions about their choice of nursing as a course and career choice. These interview questions were designed to elicit answers that gave the students an opportunity to talk about themselves and their career interests (e.g. "Tell me about what interested you in nursing/engineering"), as well as account for their course choice (e.g. "Why did you decide to study for a degree in nursing/engineering?"). With regard to these kinds of questions, degree course choice was taken as a proxy for occupational career choice.

The interviews were transcribed on the basis of readability rather than including paralinguistic features. This is justified given that the basis of the analysis was to examine the participants' attempts to produce credible and coherent accounts of their choice of nursing as a career. With regard to the analytic procedure, the transcript material was read by taking into account a conversation analytic stance in which both questions and answers were considered in relation to each other as turns at talk. Use was made of Sack's (1972, 1974) work on membership categories. Sack noted that persons may be described according to certain membership categories, for example, by occupation. These categories can be drawn from certain conventional collections which Sacks referred to as membership categorization devices. An important feature of these is that they can be used as a means of ascribing to person activities or characteristics that they are conventionally associated with. When a certain category is used by a speaker, the hearer is able to make use of a stock of conventional knowledge about the category and thereby make certain inferences. In interviews concerning career choices these stock of conventional knowledge can be used in order to guide interviewers in how

the respond to interviewees, and in turn how interviewees produce the kinds of answers expected so as to produce intelligible responses.

3. ANALYSIS AND DISCUSSION

A superficial examination of the data might support the psychological reality signs of realistic thinking within the career maturity of individuals in the study. However, a close examination of the question-and-answer sequences provides an alternative perspective on these responses. In scrutinizing the responses, it is useful to consider the context of these interviews. Respondents had prior knowledge that they were on the topic of career and course choice. It is therefore likely that they would have least expected to be asked 'why' questions about their choices. Indeed, the rationale behind the interviews was that respondents could provide credible answers to such questions. Thus, the notion of an active and thought through career choice is manifest in the questions themselves.

3.1 Co-constructing rational and realistic career choices

Questions that imply rational career choices therefore elicit a collusion between interviewer and respondent in terms of the co-creation of such accounts. The students were asked a series of questions about the way in which they obtained information about the career, the assumption being that such information was taken into account in a rational decision-making process. An example of this line of questioning with a nursing is presented below.

NRS16
Int: How did you find out about nursing?
Resp: Well, there's quite a lot of connections with nurses in the family.
Int: And you've talked with them at length about nursing?
Resp: Yes.
Int: Did you read anything about nursing?
Reps: I read when I was. young, Sue Barton, I think. She was a nurse, 1 liked that when 1 was young but after that no .
Int: Did you read textbooks on nursing?
Resp: No, but I've read leaflets from the courses and things.
Int: Did you do any work in a hospital prior to commencing your degree?
Resp: I wrote away for a summer job in a hospital working as anything but they wrote back saying they had no vacancies.
Int: Nursing is a very large field, where do you think your interests lie?

The student responds to the initial question on how she found out about nursing by referring to "a lot of connections with nurses" in her family. Although she does not explicitly state that she has been informed by these other family members she invites this inference. The next question is a form of understanding-check on this point ("And you've talked with them at length") but the applicant's simple "yes" reply invites further probing. The interviewer therefore continues pursuing the informed or realistic nature of the student's choice but switches from asking about information obtained from family members and friends to information gained from reading about nursing. The student responds by mentioning an author she had read when she was younger, but the following question moves on to factual information gained through textbooks. The student mentions "leaflets from the course and thing", and although not what was directly being enquired about (i.e., textbooks), these sources nevertheless constitute a source of factual information relevant to the impression of an informed choice having been made. The interviewer still pursues the extent of the informed nature of the applicant's choice by enquiring about information and impressions gained from personal experience of working in a hospital. The student's response mentions the fact that she had applied to work in a hospital thereby demonstrating evidence of her commitment to gain some first-hand experience of a hospital environment. By doing so she manages to create the impression that such experience is a part of the decision-making process in choosing a career. It is at this point that the applicant appears to have amassed enough 'realistic' choice vocabulary to satisfy the interviewer who initiates a new question topic. From the above analysis we can see how the applicant is drawn into a process of collusion or co-construction with the interviewer in order to produce the required impression of a realistic choice over a series of turns.

However, issues emerge when apparently realistic responses are given followed by others that are apparently contradictory. The following extracts taken from an interview with a first year engineering student illustrates this problem for the developmental view.

ENG6
(1)
Int: Why do you want to enter the field of engineering?
Resp: Because I think it strongly relates to the subject I'm best at, physics. I've always enjoyed this work, many not exactly the same thing but working on cars, motorbikes and things. It's at a slightly higher level than that, that's all

(2)
Int: Did you consider any other career at all?
Resp: 1 considered electronic engineering as well. I felt that so many people do that that there would be a huge flood of them, everyone seems to be going into that just now ....
Int: You say there would be a whole flood of them, what significance would that have?
Resp: Well, there would be less jobs at the end of the course, less available jobs.

(3)
Int: You say you're interested in physics, why then not take up a career involving physics?
Resp: I'm not that deeply into the subject, I always like to broaden my horizons, not get narrow-minded into physics. I did consider doing physics certainly, but I feel this is the better subject to do.

In the first extract the respondent refers to his ability in physics and in the second extract he produces a reason for doing engineering in terms of job opportunities. Taken together these responses would appear to indicate that he is at the realistic stage of development. However, in Extract 3 the respondent appears to contradict his interest in physics ("I'm not that deeply into the subject") before producing a rationale in terms of thinking of a broader career area beyond the subject discipline. The problem here is in order to maintain the developmental approach to career maturity we have to ignore the contradictions which undermine these categorizations in respondents' answers. The simple theoretical account of developmental stages slips away from us as we open up a dialogue with our respondents. Their career choices reveal a much greater flexibility than the developmental theories permit and again this points to the co-construction of accounts.

3.2 Running out of reasons and rationalizations

In the next example extracts we can see how not all respondents managed to sustain a line of answers that demonstrated a credible career choice in response to the interviewer's to the questions. In effect, this following nursing respondent ran out of reasons and rationalizations.

NRS1
Int: I'll begin by asking you why do you want to enter nursing?
Resp: Yell, when I was deciding what I was going to do I thought of all sorts of things, I don't want to sound big-headed but I could have chosen from most things you see. Em, and I felt that I really wanted to work with people. I mean I work on a Saturday in a shop and I get on with folk, with the public, and em, I just wanted to meet, I felt nursing would give me a chance to meet people and help them as well. Em, I don't know. My mum is a nurse, I suppose that kind of influenced me a little bit. She was, she, my parents didn't say do this or do that, I mean I was free to make my own decision. I feel it's an excellent career to get into and especially if you do the degree you're going to stand a better chance, if I wanted to go on and branch out and maybe do administration or lecturing then I would stand a better chance with the degree. And if I wanted to stop and have a family or whatever then it's always something I could go back to ...
Int: Okay, so you say you want to work with people, why then not go into some other job where you are working with people?
Resp: I'm not sure, I really think it's the caring aspect, I really I think I feel I'm sensitive to other people's needs, I can tell when somebody needs help. I don't know, I think that's one of the reasons. It's not - I couldn't handle doing

a business sort of thing where everything is sort of formal, em I prefer a closer sort of, em atmosphere, if you could call it that.
Int: But is there not formality in hospitals where you're under ...
Resp: Yeah, I suppose there is, yeah under the charge of other nurses, I don't know.
Int: I mean it could be argued that in a hospital it is a fairly regimented routine.
Resp: Yeah, it 1s, yeah but just like you said, when it comes to the crunch of asking people why do they enter it they're kind of lost for words.

In the interview with respondent NRS1 the interviewer picks up on her claim to like work involving interpersonal contact, and challenges the respondent to be more specific about the choice of nursing. The respondent recognizes the question as such and refers to a caring 'disposition' and contrasts this with what is claimed to be the formal relations of work in the business arena. The interviewer continues by challenging the respondent on the point of formality in nursing. The respondent predicts the end of the interviewer's turn and completes the assertion ("yeah under the charge of other nurses"). The respondent also indicates that this is problematic for her by tagging her answer with the phrase "I don't know". At this point the interviewer explicitly makes the assertion that working in a hospital environment involves formality although this is put in third person terms. The respondent agrees with this assertion and gives up the line of rationalization she has been following. This failure is mitigated by stating that asking people why the enter nursing leaves them "lost for words". What is evident here is that in the face of repeated invitations to repair, the respondent cannot maintain the conversation any further and, in effect, runs out of rationalizations. In the next extract with an engineering student we can see a similar pattern where the respondent runs out of constructing rational and credible response.

ENG 8
Int: Why do you want to enter the field of engineering?
Resp: It's what I wanted to do when I started school, the actual course, well the subjects I took at school to go onto engineering 'cause 1 think I would like it, to be an engineer.
Int: Was this at the start of secondary school?
Resp: Yes.
Int: That's quite early. what is it that drew you to that area that early?
Resp: Well, my brother took engineering as well and 1 think him taking it I just wanted to take it as well.
Int: Would you say he influenced you then?
Resp: Yeah, and I was more interested in engineering than english, or accountancy, or that.
Int: What was it that drew you to engineering specifically?
Resp: Well, 1 liked it because that's what I thought I was most interested in.
Int: Do think there's any particular qualities you need to do engineering?
Resp: I think you would be better if you were interested in some parts that are (inaud) but if you wanted to do it.
Int: When you say you're interested what is it that appeals to you about engineering?
Resp: I don't know.

Respondent ENG8 answers the opening question by claiming and interest in doing an engineering course when starting secondary school. Reference is made to subjects he took at school although these are left unspecified. Over the following question-and-answer turns it emerges that the respondent's brother had some influence, although care is taken not to attribute career choice solely to this influence ("I was more interested in engineering than english or accountancy or that"). In the following two turns the interviewer attempts to elicit specific reasons for his choice of engineering. The respondent's answers do not close the matter but instead fall back on vague claims to being "interested". That these responses are not regarded as satisfactory is demonstrated by the fact that the interviewer's final question in the sequence pursues the same issue. The respondent can go no further at this point ("I don't know") and therefore has run out realistic or rational answers.

3.3 Fantasy responses as functional discourse

From a career maturity perspective apparent fantasy responses are problematic and undermine the notion of the realistic development in vocational thinking. It might be possible to explain such discrepancies by claiming that they are indicative of a failure of occupational curiosity. However, an examination of the conversational context in which

these responses were given again provides an alternative explanation. The first set of extracts below are drawn from the nursing student interviews. Typically, these students would refer to "always wanting to be a nurse" from childhood.

NRS3
Int: When you say you always wanted to do that, was there any particular reason for that? Was there anyone in your family ...
Resp: Em, well I've got a couple of cousins and things that are nurses, and they'd talk about their work. But I think when you say you're always wanting to be a teacher, and a nurse, and I just never got away from that.

NRS6
Int: What brought you to be interested in nursing?
Resp: I've always been interested in nursing, it's always been something that I would like to have done from an early age.
Int: Why what started it?
Resp: Just meeting people, I enjoy that, and em, helping people as best as I can. Just getting into an environment of nursing, you know, helping people and being sociable and things like that. I think just being able to talk to people when they need someone to talk to.

NRS12
Int: Why did you want to enter the field of nursing?
Resp: Well originally, I mean I'd always wanted to be a nurse, it's a calling from when I was very small, I've got nursing in my family, a lot of my family members are nurses. I mean, I think why I went into nursing was very different, before I started it was just you know you think of your what you see on TV dramas, that sort of thing. Now it's more a case of thinking what nursing is and I enjoy it.

In the exemplar extracts above, what is also apparent is how the responses could be interpreted as showing a lack of career maturity given references to childhood and popular media images. However, an alternative explanation can be offered without recourse to the concept of vocational maturity. This involves paying close attention to additional aspects of the responses where information is provided in response to the interviewer's questions such that realistic career decision-making is brought back into play (NRS3 – "I've got a couple of cousins and things that are nurses, and they'd talk about their work"; NRS6 – "…helping people as best as I can… just being able to talk to people when they need someone to talk to"; NRS12 – "I've got nursing in my family, a lot of my family members are nurses…" Now it's more a case of thinking what nursing is and I enjoy that"). These kind of modifying responses indicate that while the respondents often refer back to an early age and point at times to the influence of stereotypical career images, they nonetheless also attempt to show some underlying rationale to their career choice that is rooted in family influences or dispositional traits. This is very much on accordance with Sack's (1972, 1974) concept of membership categories being used to present answers that the interviewer that would conventionally be associated with nursing as a career choice: commitment, dedication, an interest in working with people and helping them, and perhaps a family tradition of working in this field.

ENG10
Int: So you think you may get into management once you finish?
Resp: Yeah.
Int: And what do you see yourself doing then?
Resp: Well, I'm going to try and get a scholarship in the navy and do something like marine engineering.
Int: But I would imagine that when you're in the navy you'd be working with turbines and other machinery like that, yet you say you want to go into management.
Resp: Yeah, a marine engineer, in charge of folk who are doing that.
Int: I see.
Resp: I'm the manager of the ship type-of-thing.

ENG7
Int: You say you want to go into design, what is it that draws you to that area?
Resp: Just always watching motor sport and that, you here about all these designers who design all these grand prix cars and rally cars. It's really been my ambition because I do watch that kind of stuff on TV and I'd like to be

involved in that. I've watched it for many years and it's become a hobby as well and I'd like to become more actively involved in it.

Respondents ENG10 and ENG7 refers to areas of employment, whilst although being out of the ordinary, are characterized in a somewhat glamorous manner in their answers (ENG10: "I'm the manager of the ship type of thing";ENG7: "...you hear about all these designers who design all these grand prix cars and rally cars"). It is possible to view these responses as a way of enhancing the status of these occupations. It can be therefore argued that these respondents may therefore be attempting to glamourize their intended areas of employment.

4. CONCLUSION

In applying the notion of career maturity, several kinds of within-interview categorization conflict became apparent. This included instances where respondents appeared to contradict their earlier claims of making informed choices, as well as the appearance of what might categorize as fantasy responses in otherwise realistic discourse. This undermines the notion of such talk representing career maturity. By focusing on the interactive nature of the interviews it is evident that realistic type responses were made in reply to questions which implicitly assumed rational decision-making. The maintenance of rational accounts operates through respondents colluding with the interviewer so as to provide answers which confirmed the realistic demands implicit in the questions that were asked. Some respondents were found to be less adept at this as others and ran out of rational responses.

The predominately rational answers given by the respondents need not be thought of as a reflection of their cognitive architecture. As was noted earlier, rational discourse conforms to a cultural expectation. Thus 'rationality' in discourse is socially generated rather than expressing a particular mental organization. In other words, the assumption need not be made that rational thought underlies rational discourse. It is the ability to rationalize actions and make them appear 'sense-able' which is of key importance. It can be argued that introspectively we appear to have a sense of having made a rational choice of occupation. Yet this may have more to do with accounting for our career choice stories than with some inner mental process involving career maturity. As Harper, Randall and Sharrock (2016: 204 - 209) argue reasons are not causal in relation to choices but rather are embedded within different language games (Wittgenstein, 1953) and bound up with reasoning as cultural knowledge. Interview participants, through their question-and-answer turns, display to one another this cultural reasoning in relation to framing their courses of action as reflective of career maturity that involve a reasoned process of decision-making. Instead of treating responses as revealing something about respondents' level of career maturity, this study offers an altogether different proposition, one that considers these matters as being produced through the question-and-answer turns within interviews designed to elicit career choice narratives.

This perspective allows the researcher to examine how responses are contextually tied to the questions asked and their presuppositions. In other words, the researcher focuses on issues of intelligibility and accountability. This also allows for the study whole conversational patterns rather than selected aspects that seem to align with a career maturity model when abstracted out. Interviewing students about why they chose their vocational field presupposes an active process of decision-making and selection. Students therefore attend to this as an accountable matter in the interviews in terms of the expression of vocational commitment. In westernized culture finding out about one's options and 'thinking them through' as part of arriving at decision is considered desirable in terms of the operation of reason. This is also tempered by the notion that people are in possession of interests that are reflective of their preferences and that this can be read off as an index of their disposition. In the case of nursing, a strong interest in helping and caring for others is considered as a vital aspect of the job and that, given this common understanding, must be publicly avowed and expressed in terms of a longstanding commitment. For engineering students, attempts to go beyond the mathematical and physical sciences foundations of field and present real word, sometimes high status positions, can be seen as a way of enhancing the status of the career. A superficial examination of the data might support the psychological reality signs of realistic thinking within the career maturity of individuals in the study. However, a close examination of the question-and-answer sequences provides an alternative perspective on these responses. In scrutinizing the responses, it is useful to consider the context of these interviews. Respondents had prior knowledge that they were on the topic of career and course choice. It is therefore likely that they would have least expected to be asked 'why' questions about their choices. Indeed, the rationale behind the interviews was that respondents could provide credible answers to such questions. Thus, the notion of an active and thought through career choice is manifest in the questions themselves.

References

[1] Coertse, S., & Schepers, J. M. (2014). Some personality and cognitive correlates of career maturity. *SA Journal of Industrial Psychology*, 30(2), 56–73.

[2] Garfinkel, H. (1967) *Studies in Ethnomethodology*. Englewood Cliffs, NJ: Prentice Hall.

[3] Ginzberg, E. (1972) Toward a theory of occupational choice: A restatement. *Vocational Guidance Quarterly*, 20, 169-76.

[4] Ginzberg, E., Ginsburg, S. W., Axelrad, S. and Herma, J. L. (1951) *Occupational Choice: An Approach to a General Theory*. New York: Columbia University Press.

[5] Harper, R; Randall, D. & Sharrock, W. (2016) *Choice : the sciences of reason in the 21st century : a critical assessment*. Cambridge : Polity.

[6] Potter, J. & Wetherell, M. *Discourse and Social Psychology: Beyond Attitides and Behaviour*. London: Sage.

[7] Sacks, H. (1972). On the analyzability of stories by children. *Directions in sociolinguistics*, 325-345.

[8] Sacks, H. (1974) "On the Analyzability of Stories by Children," in R. Turner (ed.) *Ethnomethodology*, Penguin, Harmondsworth, pp. 216–232.

[9] Savickas, M. L. (2021). Career construction theory and counseling model. In Brown, S. D. & R. W. Lent. (Eds.) *Career development and counseling: Putting theory and research to work*. (3rd. Edn.) Hoboken, NJ: John Wiley and Sons.

[10] Savickas, M. L., Nota, L., Rossier, J., Dauwalder, J. P., Duarte, M. E., Guichard, J., & Van Vianen, A. E. (2009). Life designing: A paradigm for career construction in the 21st century. *Journal of Vocational Behavior*, 75(3), 239–250.

[11] Savickas, M. L., & Porfeli, E. J. (2012). Student career construction inventory. Rootstown, OH: Vocopher.com.

[12] Super, D. E. (1957). *The psychology of careers*. New York: Harper & Row.

[13] Super, D. E. (1980) A life-span, life-space approach to career development. *Journal of Vocational Behaviour*, 16, 282-298.

[14] Wittgenstein, L. 1953, *Philosophical Investigations*, Oxford: Blackwell (translated by G.E.M. Anscombe and G.H. von Wright).

Experiential Learning Portfolios at Barry University - Our Journey from Hard Copies to Electronic Copies

Anita ZÁVODSKÁ[a*], Sandra L. ROBERTS[b], Timothy J. De PALMA[c]

[a] Barry University, College of Arts and Sciences, Department of Biology, 11300 NE 2nd Avenue, Miami Shores, FL 33161-6695, USA, azavodska@barry.edu
[b] Barry University , School of Education, Organizational Leadership, 11300 NE 2nd Avenue, Miami Shores, FL 33161-6695, USA, sroberts@barry.edu
[c] Barry University, School of Business, Emergency Management, 11300 NE 2nd Avenue, Miami Shores, FL 33161-6695, USA, tdepalma@barry.edu

Abstract

The purpose of this paper was threefold: 1) to provide a general history of experiential learning by theorists in the field; 2) to discuss the general development and use of paper-based and electronic portfolios (e-portfolios); and 3) Barry University's history of experiential learning portfolios and the process of moving from hard copies to electronic copies as seen through the lens of two pilot studies. The authors also make recommendations for streamlining the current experiential learning e-portfolio process based upon Barry University's experience with both hard copy and electronic copy versions.

Keywords: prior-learning assessment, experiential learning, e-portfolios, adult learners, credit for prior learning, Barry University

1. INTRODUCTION

1.1 A history of experiential learning

Experiential learning is learning from experience; it is "learning by doing", and it is not new. The experiential learning movement began in the mid-nineteenth century in the United States in order to shift from formal, abstract education, where teachers present information, to where students learn from experience-based approaches. At this time, offering a justification for "learning by doing," John Dewey published *Experience and Education,* in which he stressed that the creation of new knowledge or the transformation of oneself through learning to perform new roles was more fundamental than simply learning how to do something [1]. Then, in 1984, David Kolbs' book *Experiential Learning: Experience As The Source Of Learning And Development* served as a turning point where theory was linked to actual practice. He proposed learning as the process whereby knowledge is created through the transformation of experience. He developed a model in which true learning is explained as a four-part process: 1) Learners have *concrete experiences* upon which they reflect. 2) These reflections are called *reflective observations.* 3) The learners then engage in *abstract conceptualization,* creating generalizations or principles that integrate their observations into theories. And, 4) when they then use these generalizations as guides to engage in further action, called *active experimentation,* where they test what they have learned in other more complex situations [1].

In the last thirty years, experiential learning has become an important part of the adult (non-traditional) student curriculum. In 1994, Lewis and Williams wrote "During the last decade experiential learning has moved from the periphery of education to the center. No longer supplemental to the acquisition of content, experiential approaches are considered fundamental to meaningful learning." They gave the following three reasons for this shift in perspective: 1) the dramatic change in the conception of learning where we had moved away from the

---

* Corresponding author.

notion of teachers as purveyors of knowledge and learners as passive receivers and the realization that models of good practice in adult education must utilize learners' previous experiences; 2) higher education experienced an unprecedented influx of adult learners who were bringing with them a wealth of prior experience; and 3) the rapidly changing environment leading to an increased demand for flexibility and the capacity to leverage previous knowledge and experience in new and different ways where educators were being held accountable for what learners know and were able to do.

According to Jimenez [2], one of the most unique and definitive characteristics of adult learners is their experience. This experience, along with their other attributes such as life style, responsibilities, and age, set them apart from traditional undergraduate students. These adult/non-traditional learners now make up a significant part of the undergraduate student population in the United States. "Prior Learning Assessment" (PLA) programs are the mechanism for granting adult learners the opportunity of earning college-level credit for experiences and knowledge acquired as adults in various life contexts [3].

The Council for Adult and Experiential Learning (CAEL), which is a non-profit organization that helps support adult learners in the United States (US), announced in 2022 that it would now use the term "Credit for Prior Learning" (CPL), rather than PLA, reflecting internal discussions as well as discussions with external experts and members, including a national student opinion survey [4]. Further, CPL "…is more inclusive of all methods used to evaluate learning". It is more understandable and is a term more students prefer based on a national survey of 1,000 US adults 25-64 years old who are likely to enroll within a 2- or 4-year degree program in the next six months. The term currently used by CAEL (i.e., PLA) was ranked near the bottom of the survey [4]. The survey findings suggest that it is time for CAEL, as well as institutions engaged in awarding credit for prior learning, to make a shift in terminology.

1.2 Experiential learning portfolios

The way that prior learning is documented by adult students is most often by using portfolios. According to MacDonald *et al.* [5], the word "portfolio" can bring up a range of mental images ranging from an artist's case bulging with sketches to familiar collections of report cards, crayon drawings and dioramas from childhood as well as to the documentation and reflection of adult careers. In adult education, the portfolios can be either electronic, paper-based or some combination of both, where the crucial part is that the artifacts included have been chosen and arranged with thought and purpose. These adult portfolios may be created for various purposes – credit acquisition towards graduation requirements where the student has demonstrated competence in various assessment areas, planning for a forthcoming job search or as a showcase of an individual's strengths with different kinds of art or media production. Whatever the purpose, its completion results in "... a powerful tool for demonstrating growth over time which is the primary value of a portfolio" [6]. Additionally, Campbell *et al.* [7] define portfolios as "organized, goal driven documentation of professional growth and achieved competence" while Kimball [8] defines them as a "reflective collection of work." For the adult student who is seeking credit for experiential learning, a portfolio will mean college credits applied towards their academic degree.

During the completion of a portfolio, students have the opportunity to "collect, select, and reflect" [6] on their work where the portfolio design involves problem solving, researching, analyzing and writing. In 1999, Bayles-Martin [9] referred to this process as an active and learner-centered activity that reflected the then-current trend towards constructivist learning environments. The act of developing a portfolio requires self-reflection of past growth and learning, while leading to learning during this process and enabling students to connect real-life learning with academic disciplines. The reflection then needs to be supported by documentation or proof of said activities. This is critical when the portfolios are used to earn academic credit.

Until the 1990's, paper-based hard copy portfolios were the norm until technology became part of mainstream society and educational technology became an integral part of education [10].

Currently, more than 1,000 US institutions of higher education offer the e-portfolio option. In addition to Barry University, other institutions include Arkansas Northeastern College, Miami Dade Community College, and Penn State University. International institutions of higher education that also offer e-portfolios include Open University and Coventry University, UK, and the Federal University of Alagoas, Maceió, Brazil.

The self-inventory process of portfolio development in general, and the demonstration of knowledge facilitated by e-portfolios in particular, produces a powerful tool that promotes connections between academic, workplace, and web-based learning by exhibiting the unique talents of the learner. Unfortunately, in many higher education institutions, the emphasis is on what types of new learning academic and teaching e-portfolios may produce rather than recognizing the possibilities that prior learning portfolios in an e-format may produce [11].

While the conversion of experiential learning to academic credit is a step-by-step process, the journey to completion is a very personal one. In an in-depth study performed by Jimenez [2], he noted three main motivators for adult students who take this path: 1) saving time and saving money towards graduation; 2) it being "the student's turn" to do this with respect to those around them, particularly family; and 3) it being a goal that they may have had and are able to finally achieve. In order to be successful in this journey, several important factors are required: 1) the

students need to be dedicated and motivated about the process; 2) the students must make the time to do the portfolio well; and 3) the students will need to have the support of those around them, particularly family and sometimes, employers. Support was found to be a critical variable in successful completion.

The adult learners interviewed in Jimenez's study also described additional elements required for successful portfolio completion. These insights included avoiding procrastination, taking an honest and critical approach to their prior learning, realizing the amount of work that is involved with the portfolio process, and respecting the feedback loop from portfolio staff associated with the process.

The prior discussion of Jimenez's findings showed why students are motivated to complete the experiential learning to academic credit process. Furthermore, it reviewed important factors needed to help them navigate their way through the process, which is supported by some similar and additional findings in a 2021 study discussed next.

Bertolini [12] wrote about CAEL's partnerships with the "Education Quality Outcome Standards Board" (EQOSB) and Northeastern University's "Center for the Future of Higher Education and Talent Strategy" (CFHETS) regarding "Ten Principles for Effectively Serving Adults", which is a revised and growing list of best practices designed to increase the ability of institutions of higher education to better serve adult learners [13]. The partnership also includes 6 of the 10 top-performing adult learning programs that contributed data via questionnaires, focus group and networking events [14].

Gallagher, executive director of CFHETS, noted that although research stretched back several years, it was not as robust as some may think. Many of the adult learning publications had been written by scholars who were not specialists, but rather, were grounded in "financial aid, retention, or technology" [12]. The literature review searched white papers, case studies and blogs, often the types of resources that show the "latest best practices and trends", which are outside normal academic journals [12].

As expected, findings addressed both persistent imperatives and shifting priorities. Adult learners with limited time are drawn to institutions that are flexible given their increasing challenges like family demands and access to childcare [12]. Additionally, the support of both employers and managers enhanced the persistence and success of adult learners. The literature also discussed, "The value of credit transfer, credit for prior learning and the potential for stackable credentials" [12]. Adult learners also want to be recognized for their experience, so when they are in a class with traditional-aged students, honoring and building on those experiences is important to them. Lastly, adult learners recognize the accelerator function of online learning, but they also want to know, for example, whether the pace can be adjusted due to an illness or other extenuating circumstances [12].

It should be evident that adult learners are drawn to certain institutional characteristics including the institution's 1) ability to work around family demands on time; 2) awareness of what motivates adult learners to complete the portfolio process; 3) ability to provide adult learner support; and 4) recognition and honoring of adult learners' experience [2], [14].

2. BARRY UNIVERSITY

2.1 Our journey with experiential learning

Barry University's Division of Extended Learning [first, formerly known as the School of Adult and Continuing Education (ACE) and then, as the School of Professional and Career Education (PACE)] employs a variety of strategies to help non-traditional-aged students balance the demands of family, work, and undergraduate degree completion. Originally, ACE was designed to serve adult learners in the completion of their undergraduate degrees. This was accomplished by offering night and evening classes, a host of standardized test-out examinations, and a portfolio program. Since ACE's inception in the mid-1970s, portfolios have been a major component of degree completion for over 80% of the school's student body. The experiential learning portfolio in adult higher education, unlike the academic or teaching portfolio, is a purposeful compilation of document-supported descriptions of learning outcomes acquired from professional and personal experiences [15].

Students have always been guided throughout the development process by their academic advisors. When only hard copies of the portfolios were being submitted, students would bring all documents for review to in-person meetings with their advisors. No part of this process was electronic.

In 2005, ACE's portfolio committee decided to pilot an e-portfolio model. The intent was to encourage adult learners to go beyond paper media in the expression of experiential learning. Administrators and faculty engaged in the portfolio process wanted to explore the potential of experiential learning e-portfolios to augment the connections between academic, workplace, and web-based learning by allowing learners to communicate what they know and to demonstrate how they know it [11]. Two pilot studies were conducted. The learning management system that was used for the electronic submission of both pilot study portfolios was Canvas.

2.1.1. The first pilot study

The portfolio committee piloted its first e-portfolio model in 2005. In this pilot study, 30 adult learners with a variety of academic majors, who were in geographic proximity to each other, were able to attend three face-to-face technical development workshops and met a set of criteria, were solicited to create experiential learning e-portfolios. Out of the 30, 12 students accepted the invitation to participate. They attended a face-to-face portfolio seminar and three workshops over a two-month period to gain an understanding of the various sections of an experiential learning portfolio before submitting the final product, while working with their academic advisors. Ten students completed this first pilot, which ended in 2006 [11].

2.1.2 The second pilot study

In January 2007, a second pilot study was launched. This time a system-wide approach was initiated at PACE's 18 off-campus sites throughout the state of Florida. Nine students throughout the school's statewide system agreed to participate in this second e-portfolio pilot study. Due to the distance between these sites, face-to-face sessions for technical support were eliminated. Instead, online Blackboard tutorials with voice-overs and advisor support through e-mail and telephone were offered. Moreover, the second pilot study's participants had to have completed introductory software application courses that covered PowerPoint, hyper-linking, folder creation, and scanning of documents. Thus, by selecting adult learners who had a basic understanding of information and communication technology, the committee strove to mitigate concerns noted in the first group's comments about the additional time needed to learn software programs. The second pilot was completed in the fall of 2008 wherein five students developed an e-portfolio [11].

2.1.3. Today

While, following these two pilot studies, the option of submitting an e-portfolio was available to all students, the majority chose to continue to submit hard copies. This all changed abruptly with the onset of the COVID-19 pandemic in March 2020, when overnight, all submission became electronic. Since then, all submissions have remained electronic, and portfolio review committee meetings, which were previously conducted in person, have continued to be virtual. Canvas remains as the learning management system used for submissions.

2.2. The journey continues

2.2.1. The hard copy experience

The submission of the hard copies at ACE (and then PACE) was a process that had been perfected over several decades. Advisors and students would set up in-person meetings to go over the various parts of the portfolio. Communication leading up to the meetings would include phone calls and emails, but the document reviews would always be done in person. The student and advisor would have at least one meeting where the student would present document drafts for advisor review. At this point, even though the students were using specific templates for the various sections, the advisors' roles were critical in ensuring that the final product met all submission requirements. This in-person meeting allowed for clear feedback on any section that needed to be corrected or improved upon and included all parts of the portfolio. Once every section was complete and all documentation approved by the advisor, it would all be put into a folder and would be submitted, in person, to the advisor. This meant that all of the sections had met submission requirements and that the advisor had given it one final review. Once the portfolio was officially submitted, no more changes or additions were allowed. The portfolio was then, given to committee members for evaluation.

From the students' point-of-view, having this folder that they could look at and touch, resulted in an emotional response. It gave them the feeling of profound accomplishment. They were able to look back at this concise documentation of their professional lives, some of whom have been nothing short of amazing, which does show that even without college degrees, many students are able to achieve high-level positions with a great deal of responsibility.

From the reviewers' point-of-view, the hard copy was easy to evaluate as one was able to flip back and forth through the various sections during the review. Because the folders were in a 3-ring binder, it also allowed the reviewer to take out some pages and have them spread around as they did the review, expediting it. This was also very handy for the in-person committee reviews where various members of the committee could have different sections of the portfolio to review at the same time.

2.2.2 The e-portfolio experience

Some benefits of e-portfolios, by virtue of electronics, are allowing for a faster review of their content and they are paperless, thus environmentally friendly. However, Barry University's switch from hard copy to electronic portfolios has had both advantages and disadvantages.

From the students' point-of-view, submitting documents into Canvas is a big time-saver as they no longer need to travel to in-person appointments with their advisors but can instead conduct the reviews via email or Zoom/Webex. Also, because prior to the COVID-19 pandemic, many adult Barry students had taken at least some classes online while others were enrolled fully online, thus making the transition to only online portfolio submissions was relatively simple as they were already very familiar with the Canvas system.

From the reviewers' point-of-view, the reaction is mixed. While the committee members understand the advantage of online submissions by saving students' time in allowing much faster submission, the evaluation of the finished product was easier in hard copy where, as previously mentioned, committee members could spread out various sections of the portfolio during the review. A notable disadvantage of conducting student-advisor reviews via email, as most are, is the fact that there can be a misunderstanding on behalf of the students as to which changes and which additional documents may be required. Another disadvantage of the Canvas uploads is the quality of the review of the documents. With the e-portfolio, the task of reviewing documents to assure that they are properly completed and posted is not as routinely accomplished by advisors compared to earlier years when hard copy documents were submitted. This, at times, insufficient review, results in delays of the portfolio evaluation because committee members are often required to request additional or improved documentation.

For both students and advisors, while the electronic submissions at times allow for expedited review of the documents, a downside is the decreased personal interaction between student and advisor.

3. CONCLUSIONS AND RECOMMENDATIONS

While e-portfolios are the new norm and their use continues to grow, without a comprehensive and appropriate policy framework, coupled with adequate management and support, successful evaluation of e-portfolios could run into challenges.

In an effort to confront the challenges faced by the portfolio committee at Barry University, the two following recommendations are being suggested:

1. Require mandatory pre-submission committee seminar attendance. – To ensure that students understand the need for proper documentation and formatting, all students must attend recently-implemented committee seminars where students who are close to submission may ask the committee for any clarification needed.

2. Change the upload process. – Instead of having students upload, have advisors upload the final documents. This way, after they have done the final review, the committee can be sure that the uploaded document is the final, approved version. Advisors should confirm the upload with their initials in the file name.

The importance of recognizing learning, no matter where or how it takes place, is a necessity in today's knowledge-based world. Yet, while the expansive nature of the web beacons to many, it is important to note that critical thinking plays an important role in discerning web-based knowledge and learning from the ever-expanding sources and amount of information individuals are exposed to on a daily basis. Keeping in mind this caveat, it has become increasingly evident in this high-tech age that "change is now so great and so far reaching that no amount of education during youth can prepare adults to meet the demands that will be made on them" [16]. Consequently, "adult and lifelong learning represent a more and more essential part of …traditional educational institutions". Learning does not begin or end within formal educational institutions [16].

References

[1] Lewis, L. H. and C. Williams. (1994). *Experiential Learning: Past and Present.* NEW DIRECTIONS FOR ADULT AND CONTINUING EDUCATION, no. 62.
[2] Jimenez, B. (2015). *A phenomenological study of adult learners' experiences with the portfolio form of prior learning assessment.* Doctoral dissertation. Texas State University.
[3] Michelson, E. and A. Mandell. (2004). *Portfolio development and the assessment of prior learning: Perspectives, models, and practices.* Sterling, VA: Stylus Publishing.
[4] Klein-Collins, B. (2022). *Using the Right Terms: Announcing CAEL's Switch from PLA to CPL. https://www.cael.org/news-and-resources/using-the-right-terms-announcing-caels-switch-from-pla-to-cpl* Viewed 21st April 2022.
[5] MacDonald, L., Peilin, L., Lowell, K., Howard, T. and L. Linda. (2004). *Graduate Student Perspectives on the Development of Electronic Portfolios.* Tech Trends, v (43)3.

[6] Barrett, H. C. (2000). *Electronic Portfolios = Multimedia Development + Portfolio Development: The Electronic Portfolio Development Process.* http://transition.alaska.edu/www/portfolios/EPDevProcess.html
Viewed 21st April 2022.

[7] Campbell, D. M., Cignetti, P. B., Melenyzer, B. J., Nettles, D. H. and R.M. Wyman. (2001). *How to Develop A Professional Portfolio: A Manual For Teachers.* Boston: Allyn and Bacon.

[8] Kimball, M. A. (2002). *The Web Portfolio Guide.* New York: Addison-Wesley Longman.

[9] Bayles-Martin, D. (1999). *The Portfolio Planner: Making professional portfolios work for you.* Columbus, OH: Upper Saddle River.

[10]   Farrell, O. (2020). E-portfolio a history. Dublin City University.
https://www.researchgate.net/publication/346481538_ePortfolio_A_history
Viewed 21st April 2022.

[11]   Brown, JO. (2011). Dwell in Possibility: PLAR and e-Portfolios in the Age of Information and Communication Technologies. International Review of Research in Open and Distance Learning. 2011:13(1)-23.

[12] Bertolini, C. (2021). *Adult Learning Lit Review: Framework Findings and Next Steps. https://www.cael.org/news-and-resource*
Viewed 23rd April 2022.

[13] Council for Adult and Experiential Learning (2010). *Ten Principles for Effectively Serving Adults. cael.org/higher-education-ten-principles.*
Viewed 23rd April 2022.

[14] Bertolini, C. (2022). *What Adult Learners Say You Can Do To Support Their Success*. https://www.cael.org/news-and-resources/what-adult-learners-say-you-can-do-to-support-their-success.
Viewed 23rd April 2022.

[15] Brown, J. O. (2005). The portfolio. In Leona M. English (Ed.), *International Encyclopedia of Adult Education,* pp 485–489. Basingstoke, UK: Palgrave MacMillan.

[16] Cross, K. P. (1991). The adult learner. San Francisco. Jossey-Bass.

Using Content-based Instruction to Enhance Thai Students' Collocation Competence in English Language

Adisak KITTIVORAWIT[a*], Usaporn SUCAROMANA[b]

[a] Master of Arts (English), Faculty of Humanities, Srinakharinwirot University, adisak.kit@g.swu.ac.th
[b] Assistant Professor, Faculty of Humanities, Srinakharinwirot University, Thailand, usaporn@g.swu.ac.th

Abstract

The study was modelled to use content-based instruction to enhance high school students' collocation competence in Thailand. Sixty grade eleven students studying in one of the most prestigious schools in Thailand volunteered to participate in the study. The students received content-based instruction. The class tools were online reading materials full of target collocations. The collocation competence test was conducted before and after the six-week instruction. The semi-structured interview was conducted to review the students' satisfaction with the content-based instruction. The data collected from the tests were analyzed using a T-test to determine whether there was any difference between the students' pre-test and the post-test scores. Content analysis was deployed to analyze the qualitative data. The findings indicated that the scores of the students on the pretest were significantly higher than on the posttest. Moreover, it showed that the students had high satisfaction with the content-based instructions. The study's findings yielded an alternate pedagogy to teach collocations and related lexical items. Using online reading materials played essential roles in fostering the students' engagements and allowing students to expose the contextual and natural collocation usages.

Keywords: Content-based Instruction, Online reading materials, Collocation, Collocation Competence

1. INTRODUCTION

Vocabulary is an essential ingredient in language learning success [1] and collocation, one of its types, is too. Collocation is a crucial area to which EFL learners and teachers should pay full attention. Ek-Dakhs [2] claimed that collocation could help EFL learners acquire efficient language insights. Mueller [3], likewise, added that collocation could partially determine the language achievements of EFL learners. The more collocation one masters, the more achievement one may obtain.

If mastered, collocation helps contribute to mental benefits. Skrzypek [4] stated that collocation allowed EFL learners to gain confidence in communication. The confidence gained therefore fosters certain language learnings [5]. In addition to mental benefits, many pieces of empirical evidence show that collocation increases language development. For example, Uchihara, Eguchi, Clenton, Kyle and Saito [6] claimed in findings that EFL learners became more fluent in speaking with collocation master. Likewise, the finding of Abdi and Ariffin [7] showed that using collocation in writing helped EFL learners make an impression on examiners. Therefore, collocation is definitely one of the promising tools in language enhancement [8].

---

* Corresponding author.

Frequent exposure to collocation usage in sentences potentially helps foster collocation learning. Apart from language exposure, using collocation to communicate with others in life is also a good approach. Speaking goes hand-in-hand with listening. Therefore, mastering collocation through interactive experience potentially works [9].

Whilst different schools of thoughts were proposed, content-based instruction was frequently employed in many previous language teaching studies. According to Maguire [10], content-based learning is a language teaching approach where academic content is taught in English. Content-based instruction may be a great approach to be used to improve vocabulary and help students overcome related challenges which are a lack of authentic, and meaningful language exposure.

Authentic and meaningful data exposure occurs most easily than ever nowadays with the revolution of technology. Many pieces of paper well illustrate how technology plays big parts in exposing authentic and meaningful data to students and being used applicably in class. For example, Petchprasert [11] used an automated tool analysis to improve students' writing skill. Shine et all [12] fostered students' writing performance using online language resources. Choi [13] used digital technology implant learner autonomy in EFL reading. Online resources play essential roles in education, and the papers with digital integration by Francisco Javier, Cristina, and Maria Elena [14] and Alazemi, Sadi and Al-Jamal [15] are solid evidence.

2. LITERATURE REVIEW

2.1. Collocation

Based on the varied definitions from the scholars and dictionaries, collocation can be referred to as lexical words with four crucial elements. Firstly, collocation appears in chunks, meaning at least two words combined. Secondly, collocation is combined with no particular exact reason. Thirdly, collocation provides specific meaning and is hard to guess for non-native speakers and, lastly, collocation sounds right and natural in speech.

The significance of collocation lies in these four outstanding elements and can be narrated with the arguments followed. First and foremost, collocation can enable EFL learners to enrich their expertise in lexical phrases and overcome the challenges of interpreting meanings [3]. That is to say, without collocation instruction, EFL learners may only connect individual words to communicate. Secondly, collocation can deal with a lack of EFL learners' confidence [4]. Aware of the forms and meanings, EFL learners are encouraged to deliver longer and more meaningful messages. Lastly, collocation also increases learners' language development [16]. This is shown in many previous studies. For instance, Shamsudin, Sadoughvanini and Zaid [17] was convinced that collocation boosted speaking skills. Parkinson [18] claimed that the learning scope of collocation helped improve learners' writing competence. Ackerman and Chen [19] stated that collocation mastery enhanced not only collocation itself but also English academic proficiency. Ramhimi and Momeni's findings [20] showed that collocation knowledge could better students' language proficiency. Therefore, collocation is an ideal language subject that enables students to learn a higher level of language use.

Originally perceived in the early 1950s, collocation has long been recognized and can be grouped in three ways. Firstly, according to Benson [21], lexical collocation and grammatical collocation are the categories of collocation. On the one hand, lexical collocation refers to the formation of purely open class words, known as content words like nouns, verbs, and adjectives. For example, the chunk *'exceptional circumstance'* is formed using one adjective and one noun. On the other hand, grammatical collocation is a formation of at least one open-class word and another one closed-class word, known as functional words. For instance, the phrase *'succeed in'* is combined using one verb and one preposition. Given the way of grammatical collocation occurrence, phrasal verbs are regarded as grammatical collocation.

Secondly, according to Lewis [22], collocation is generally categorized into 20 types which are a. adjective + noun, b. verb + noun, c. noun + noun, d. verb + adverb, e. adverb + adjective, f. verb + adjective + noun, g. noun + verb, h. discourse marker, i. multi-word prepositional phrase, j. phrasal verbs, k. adjective and preposition fixed expression, l. compound noun, m. binomial, n. trinomial, o. fixed phrase, p. incomplete fixed phrase, q. fixed expression, r. semi-fixed expression, s. part of a proverb and t. part of a quotation.

Finally, Hill [23] grouped collocation into four types using 'the degree of the bond between the words' as criteria which includes unique, strong, medium-strength and weak collocation. Firstly, unique collocation refers to the collocation that another possible word cannot replace. The only single way to form collocation gives uniqueness to this collocation type. For example, in the phrase *'hold your tongue'*. Secondly, strong collocation refers to the collocation that is predictably formed together. It seems unlikely to go together with other words. For instance, in the phrase *'blissfully happy'*, the word *'blissfully'* often collates with *'happy'* although sometimes it can go together with the word *'unaware'* – *'blissfully unaware.* It rarely sticks to other words. Thirdly, medium-strength collocation refers

to the collocation that is in the middle of strong collocation and weak collocation. It is when EFL learners know and understand the meanings of words but may never think of the possibility to combine them, possibly because of inadequate exposure to the language. For example, '*make*' and '*discovery*' can be formed as '*make a discovery*' to mean discovering something. Lastly, weak collocation refers to the collocation that is easily formed based on its innate meaning. The adjectives like '*good*' are often exemplified. For instance, there are '*a good doctor*', '*a good tool*', '*a good time*' and a lot more.

However, EFL learners should be aware that some words can also be used in the unique collocation or strong collocation. The word '*red*' can be used with '*tape*' to form 'red tape', meaning the rigid procedures. Similarly, the word '*good*' goes together with '*while*', leading to the phrase '*a good while*', meaning a fairly long time. Simple words need recognizing for their many uses.

2.2. Content-based instruction and its significance

Content-based instruction (CBI) goes hand-in-hand with language teaching for a long time [24]. However, since Mohan's publication in 1986 firstly featured the CBI, many researchers have investigated and viewed the CBI differently through their varied lens. Stoller and Grabe [25] proposed that the CBI was a convincing innovation in language teaching full of various instructional contexts. However, Brinton and Snow [26] defined the CBI differently. Through different periods, it was claimed to be an approach that integrates the second language and meaningful content in class. Also, in the early days, Stryker [27] connected the CBI with the vibe of the class. CBI was regarded as a provocative and independent language teaching approach that can solve teachers and students' boredom by selected materials. That is similar to the view of the researchers in the modern era. For example, according to Saifurahman and Zahid [24], the CBI was defined as a method that concentrates on teaching language through meaningful, authentic contexts where students become engaged and involved by raised content.

To conclude, despite the researchers' different views, content-based learning can be briefly defined as the teaching approach with the following three solid elements. First and foremost, instructors blend essential content with language teaching. Also, students acquire academic content, language, and skills at the same time. Last but not least, chosen materials can attract and stimulate students to participate in the activities.

The popularity of content-based instruction can be fluctuating but is nowhere near extinct. Many scholars, researchers and instructors have been deploying it for a long time because of its tangible and fruitful benefits. According to Genesee and Lindholm-Leary [28], the CBI can not only enhance students' language, social and cognitive skills but also encourage students to think critically following the content. Moreover, the CBI provides opportunities for students to communicate expressly following the content and allows students to acquire original and valuable forms of language. Ultimately, it prompts students to learn more profound concepts based on prior knowledge Apart from that, Saifurahman and Zahid [24] also detailed the strong points of implementing the CBI in class. Firstly, the CBI not only offers different interesting subjects in class but also filters varied sources and offers selection of the best material for students. Moreover, the CBI helps learners to use English for specialized contexts. It allows students to practice in the way that native speakers do, fosters students' study skills, and creates a motivational and fascinating class atmosphere. Importantly, the CBI also develops teamwork, social skills and the students' leadership.

With the benefits mentioned above, content-based learning is considered an integral approach that can help students achieve many goals. For example, through authentic texts, a lack of language exposure can be reduced. At the same time, activities in class can encourage students to interact and use learnt language knowledge through content in a meaningful and natural way.

2.3. Online Reading Materials

Online reading materials can be defined in a similar way. They can be defined as any reading material that internet users can access. Reading materials include a wide range of types of resources ranging from books, journals, newspapers, articles to blogs [29]. Moreover, these types of online reading resources own many advantages. For example, it can be original and creative due to a number of groups of authors. On condition that the resources are written by native speakers, the reading resources can be considered authentic and real-use English. Also, the language used in online reading resources are empirically meaningful as it is designed and written to communicate with target or non-target reader. Despite the strengths, online learning materials need to be chosen carefully. As a great number of present online resources are produced by different authors, the resources can share various characteristics of information, for instance, being accurate, inaccurate, academic or non-academic [30]. As a result, selecting a proper reading material is also instructors' challenges for certain courses.

To conclude, using online reading materials in class can be amazingly intriguing owing to novel, authentic and meaningful features. Still, it needs instructors to look at before chosen. In this present study, the researcher uses certain criteria to choose online reading materials, hoping they may meet students' interest and course's characteristics.

3. METHODOLOGY

3.1. Research strategy

Both qualitative and quantitative approaches were carried out to achieve the two stated objectives in this research. The research was conducted in Analytical Reading and Writing 2 course, which aimed to develop students' analytical reading and writing skills through a wide range of types of passages and articles. Therefore, all selected learning materials were the online reading passages or articles that featured the subject matters in order to meet the course characteristics and the selected method, content-based instruction.

For the data selection in collocation competence tests, the targeted collocations were based on, firstly, the online reading materials used in research and, secondly, were the entries in three standardized dictionaries which were Longman Dictionary of Contemporary English Online, Cambridge Dictionary, and Oxford Learner's Dictionaries.

3.2. Participants and sample

Sixty students from Sciences-Math programs volunteered to participate in the study. All of the students received the same treatment, content-based instruction, and were required to have enrolled in Analytical Reading and Writing 2 course.

3.3. Research instruments

3.3.1. Collocation competence tests
As knowledge of collocations is academically assumed to help improve students' English performances, the test was consequently designed to evaluate the students' English collocation competence. The test types included multiple choices and gap fillings. The test consisted of two parts following the test types mentioned. The first part had 25 items, while the second had 15 items, meaning 40 items. Apart from that, the validity of the test was assessed by the experts using IOC, and the reliability was carried out by using a test and retest in the pilot group.

3.3.2. Lesson plans
Lesson plans were written based on the theoretical framework of content-based Instruction in order to teach subject matter and collocation at the same time. In terms of content validity, IOC was conducted to help shape the lesson plans follow the aforementioned framework. For the reading material selection, all the reading materials had to be online accessible. In addition, as the theme-based model, one of the most applicable models for EFL settings and the learning contexts, was deployed, the reading materials were themed variously following the themes of Unit 6 -10 in the Aim High 5 Student's book. One more theme was also added for the sixth material considering from the students' need and interest. For the target collocation, in the reading materials, there had to be at least 8 grammatical collocations appearing.

3.3.3. Interview questions
Seven questions were invented prior to the research conduction. The questions were asked in the semi-structured interview after the six-week instruction. In terms of content validity, IOC was conducted to help focus on the research objectives.

3.4. Data collection

The researcher asked students to complete the collocation competence pretest in the first period in terms of data collection. Students received the treatment, content-based instruction, for six weeks. Each lesson had classwork, reflecting the content and language comprehension. After 6-week instructions, they were asked to complete the 40-item collocation competence post-test. Also, the semi-structured interview was conducted with the 10-student focus group, who were randomly selected.

3.5. Data analysis

In terms of the scores from collocation competence test, the researcher used a T-test dependent analysis to determine whether there was a significant difference between the students' pretest and post-test scores. In terms of the interview, the data was transcribed, and the content analysis was deployed to review the students' satisfaction with content-based instruction.

4. FINDINGS

4.1. The collocation competence development

In order to analyze the collocation competence development, it is crucial to collect the students' prior knowledge and the scores after the six-week experiment. Therefore, the average pretest and posttest scores of the participants were shown in Table 1. The total number of participants is sixty, and all of the participants were in Sciences-Mathematics programs. In addition, the participants received content-based instructions and were asked to complete both pre-test and pre-test.

Table 1. The average pre-test and post-test scores of the participants (n = 60)

	Mean	Std. Deviation
Pre-test	31.73	5.29
Post-test	34.52	4.11

According to Table 1, the average pre-test collocation competence score is 31.73 (SD = 5.29). On the other hand, the average post-test score is 34.52 (SD = 4.11). It showed that the research participants scored higher on the collocation competence posttest (M = 34.52, SD = 4.11) than the collocation competence pretest (M =31.73, SD = 5.29). The study of collocation competence development, considered from the participants' pre-test and post-test scores, is hence showed and analyzed in Table 2.

Table 2. The study of collocation competence development

Group	*Mean*	Std. Deviation	*t(59)*	*p*
Pre-test and Post-test	31.73	5.29	6.65	.00

As seen in Table 2, with a help of the dependent T-test analysis, the findings indicated that the students' collocation competence was significantly developed when content-based instruction was used in collocation instruction regarding the first research objective (M = 31.73, SD = 5.29), (t(59) = 6.67, p =.00).

4.2. The students' satisfaction with content-based instruction

4.2.1. Content-based Instruction

During the interview, students mentioned many positive comments that addressed the strengths of content-based instruction. For instance, students A and B satisfactorily said, "*I feel like I have learned two things simultaneously. I know collocation much better and the content like the MBTI test. It was a cool class*". This comment reflected one of the most vital points of content-based instruction where the class with it can provide academic knowledge and language knowledge simultaneously". In the study, students had chances to learn some specific knowledge such as digital literacies, being gifted children or else while learning a set of collocations.

Student B also raised another excellent point by saying, "*I think I become more well-prepared. I often read the content before the class. It is very useful when you provide those passages in advance through our Google Classroom*". Then many students nodded their agreement. This is because of content-based instruction's characteristics. At times, it allowed self-autonomy by letting the teacher provide the materials in advance. "*It worked better when all materials could be accessible online*," said Student C.

Student C and I added, "*I love being in this class. I feel like I have great chances of reading things that can be useful for me in the future.*". When the researcher asked what he meant by saying the class was helpful in his future, he quickly responded, "*It is challenging and full of new content and vocabulary. The content is academic and specific, and it often appears in ONET*". The abbreviation 'ONET' in Student C's answer stands for Ordinary National Educational Test. "*English ONET often deals with long reading passages*", said Student B while nodding his agreement.

In addition, many students agreed that they learnt many technical terms through content-based instruction. Student D eagerly elaborated, "*I think I learnt so many new words and they were grouped following the themes. I felt these words were linked to each other. I somehow think it is much easier to learn.*" Also, Student E said, "*I totally agree with my friend. Learning vocabulary following the themes is a good idea. Six weeks, six themes and a bunch of vocabulary learnt*". When asked what they did after seeing unknown words, they simply answered that they would look out for the meaning using dictionaries or ask friends.

The strengths can be grouped into four points based on the sayings above. Firstly, content-based instruction can provide academic knowledge and language knowledge simultaneously. Next, the CBI allows self-autonomy to happen. Thirdly, the CBI can answer their needs because most standardized national tests often feature academic reading passages. Last but not least, learning new vocabulary in contexts and themes enhances the understanding of the passages, and longer contextual texts help improve their reading durability. Therefore, students were considerably delighted with content-based instruction.

Despite the strengths, there were a few limitations. Student E raised the issue, "*I feel that I cannot keep up with the pace of teaching at times. Some of the reading passages were too hard for me. I needed more time to read because I barely knew about certain contents before like cross-cultural communication stuff*". Student F agreed and added, "*It made me worried. I was afraid of being left.*" Based on this, at least two of the students thought that they had no previous knowledge, resulting in great anxiety.

Student E also mentioned another potential limitation, "*I don't know what I should focus on – vocabulary or text comprehension. So many things happened. It was truly overwhelming*". When hearing that, Student G proposed the idea that "*This approach can make students struggle with their learning, especially for those low-achieving students or those without sufficient background knowledge. I felt that way too in the last period when we learned about gifted children*".

Therefore, the limitations can be, firstly, that materials can negatively affect the class if carelessly selected. Secondly, the students may not recognize that they are expected to learn English vocabulary and text comprehension at the same time. Lastly, content-based instruction may not be suitable for all students due to the prior knowledge of particular content themes.

As the materials could significantly influence the class atmosphere, the researcher added follow-up questions about the content materials in the content-based instruction class. Students A, C and I said, "*I think the texts were interesting. They were not too complicated or too dull. I understood most of the contents provided.*" Also, Student D added, "*I used the context clues to help me understand the texts when I saw unknown words. Each vocabulary in the text had the strong connection to each other, so it was easier to guess*". However, student E said that he preferred asking classmates during the interactive activities and stated that the exercise after reading the passage partly helped, and he disliked it when the class lasted too long.

"*The selected reading materials were just right to us,*" said Student G. When asked to elaborate, Student G said, "*the content like MBTI personality helped me know myself better and so did other themes*". Other students like H and I added, "*The texts were full of challenging and practical vocabulary. I think that is a key factor too*". Most of the students in the interview nodded their agreement as they thought that they had no trouble with the level of difficulty of the texts. However, students E and F disagreed. They shared their different thoughts by adding, "*Some texts were too difficult, and some texts were already seen earlier. It could be boring at times when you knew nothing or you completely knew about things*". As a result, three elements had significant impacts on content-based instruction classes: the difficulty level of the materials, the content materials' appropriateness, and the attractiveness of the texts.

In terms of the difficulty level of the materials, the level of difficulty of the texts should not be radically high or low. The readers should not be too complex or too long in academic and language matters. Although new extents of academics are there, students should be able to use their prior language expertise to understand them. Reading strategies like context clues can be encouraged to guess the meaning of the unknown words. Ask friends during the class activities, or looking for the definitions in the online or hard-copy dictionary can be another solution. In addition, the exercise in the worksheet is crucial for students to help them summarize the core content.

However, the students with insufficient background knowledge can find it hard to follow, which potentially fosters learning anxiety. Students can be afraid of not understanding anything, either academic or language proficiency. As a result, more time and help should be provided to some students to relieve their anxiety.

In terms of the content materials' appropriateness, many students agreed that selecting the materials could be a vital part of content-based instruction. Five students in the interview found the online reading materials highly appropriate and felt blissfully happy with the materials provided. According to student G, "*the materials simply met our ages, interests and expectations. Moreover, the themes in class followed the themes in the book used at school. It was just right*". Consequently, the contents should be familiar and connected with their life. When asked which theme was the most favourite, Student H and I said, "*they approved of many themes, namely, the MBTI Personality Test, Digital Literacy and Gifted Children*". The appropriateness has excellent roles in fostering students' engagement. Therefore, the materials should be full of new challenging vocabulary and stories.

In terms of the attractiveness of the texts, this is highly difficult to manage as it could be hard to answer all students' voices. Although most of the students felt that the texts were intriguing and readable, a few weren't that happy in class. While Student A said, "*The online reading materials were attractive and stimulating such as the texts about the personality, environments, high ability children, food chemicals, cross-cultural communications, and digital literacies*", Student F frankly disagreed by saying, "*Attractiveness is subjective. Sometimes, I did feel that the texts were too difficult*".

To sum up, most of the students were greatly satisfied with the pedagogical approach used in the study, the content-based instruction. Students claimed that this way of teaching and learning helped enrich their extent of academic and language pieces of knowledge. In addition, the CBI allowed teachers to select the materials or contents that met the students' age, interests and expectations. Although some of the students thought that this way of teaching also possibly discouraged the students' determination because of the fear of the complex academic content, they nevertheless stated that the activities helped lessen the anxiety by providing materials in advance, encouraging students to have the classroom discussions, and prompting the students to complete the focus questions in worksheets. Therefore, the interplay between the CBI and online reading materials enhanced the dynamic environment in the class and the chances of exposure to contextual sentences.

4.2.2. Other opinions

After conducting the research, the focus group also addressed the importance of collocation competence. Most of the students stated that collocation was always one of their weakest points. For instance, student E said, "*I didn't know much about collocation. I became blank when I faced them*". Similarly, student A stated, "*I know what collocation is, but I always forget them. I need a proper class like this*". In addition, many students believed that they could not use English fluently and naturally because of a lack of collocation mastery. For example, student B said, "*My essay is not well-written, and I think it is partly because of my collocation misusing*". Likewise, Student H said, "*I feel that I cannot speak fluently. It is like I connect a word with another word. Sometimes, the meanings are not what I expect*". Student J also added, "*At times, listeners are confused when conversing with me*".

This indicated that students felt collocation was highly crucial and needed the official collocation class at school, not just a glance at it. Collocation is one of the knowledge areas that students expect to help them improve their English application.

In addition, after the six-week research conduction, most of the students were aware of the betterment of their collocation competence, apart from academic knowledge and other lexical items. "*My collocation test posttest was higher, and I felt more confident*", said student B. In the same way, Student H added, "*I think I get better and better, especially during class activities*". Student E who disliked complicated content agreed, though. He said, "*such as the class discussions, focus-question answering or paper-tasked mission did help me enhance my collocation knowledge. Without them, the texts alone may be a real pain*".

Therefore, the content-based instruction class and the materials helped develop their collocation competence. They scored better and were more confident using English in productive skills, namely, speaking and writing. They were also sure that the collocation learnt would appear in their life again in the future. Therefore, collocation competence development may be a promising tool to help them achieve their short-term and long-term goals.

5. CONCLUSION

5.1. Summary

This part deals with the summary of the findings. In terms of the collocation competence development, students significantly gained higher scores on the post-test than the pre-test after the six-week content-based instruction to enrich the collocations with the help of online reading materials that had significant impacts on content-based instruction classes. Students become better at selecting collocation choices following the contexts provided in the

collocation competence test. In addition, collocation competence immensely helped students use the appropriate words to convey the messages. On the other hand, although they scored incredible scores on the pre-test, there was room for improvement seen in their post-test achievement.

In terms of the students' satisfaction with the content-based instruction class, the content analysis of the qualitative data indicated that the majority of the students had high satisfaction with the content-based instructions. Many factors took part in students' pleasure, including the characteristics of content-based instruction, the teaching procedures, the material selection, the student's background knowledge and the awareness of collocation competency development. Yet, a few were not satisfied with content-based instruction due to its challenging content learning integrated with an English language class.

5.2. The limitation of the study

Firstly, the level of the students' excellent background knowledge played significant roles in learning success. That is to say, it could result in collocation competence development. Those with excellent background knowledge scored better than those with poor ones. Secondly, the collocation competence test did not cover the test items that were aimed to investigate students' collocation application in active skills. The collocation development only indicated the improvement of collocation selection in contexts. It could not state that students could use collocation fluently and naturally. Finally, the course in which research was conducted was Analytical Reading and Writing 2. The selected online materials were all reading passages, which could bore students as they had to read them in every single class. The length of the materials also had noticeable effects on the students' performance and fostered the anxiety of learning. However, this factor, anxiety, was not investigated due to the limitation of research time and scope.

5.3. Research recommendations

There are as many as six suggestions of the study. Firstly, Researchers or teachers may use content-based instruction with online reading materials to teach other aspects of language learning such as writing or speaking. Also, researchers or teachers may integrate content-based instruction with other types of materials to teach collocation. As this present study dealt with high-achieving students. It would be a great idea to deploy content-based instruction with average or low-achieving students to compare the outcomes and investigate the pedagogy effectiveness. Fourthly, in order to maintain and foster the students' engagement, the survey should be conducted prior to teaching due to the fact that students' interest and expectations play vital parts. Fifthly, the evaluation and assessment can be adjusted by adding more open-ended questions to explore the students' productive skills. Last but not least, the CBI is not limited to reading classes. It can be adapted to teach in another course. In the same way, the materials could be various types so that it won't bore students.

Acknowledgements

References

[1] Sadiq, D. M. (2018). *A Study of Kurdish University Students' Collocational Competence*. Alliant International University, Ann Arbor. (Ed.D.). https://www.proquest.com/dissertations-theses/study-kurdish-university-students-collocational/docview/2021743079/se-2?accountid=44800 ProQuest Dissertations & Theses Global database. (10747948)

[2] El-Dakhs, D. (2015). Collocational Competence in English Language Teaching: An Overview. *Arab World English Journal*, 6, 68-82.

[3] Mueller, C. M. (2011). English learners' knowledge of prepositions: Collocational knowledge or knowledge based on meaning? *System*, 39(4), 480-490.

[4] Skrzypek, A. (2009). Phonological Short-term Memory and L2 collocational development in adult learners. *Eurosla Yearbook*, 9, 160-184.

[5] Hyunsook, Y. (2008). More than a linguistic reference: The influence of corpus technology on L2 academic writing. *Language Learning and Technology*, 12.

[6] Uchihara, T., Eguchi, M., Clenton, J., Kyle, K., & Saito, K. (2021). To What Extent is Collocation Knowledge Associated with Oral Proficiency? A Corpus-Based Approach to Word Association. *Language and Speech*, 00238309211013865.

[7] Abdi, B., & Ariffin, A. (2020). *The relationship between collocation competence and writing skills of EFL learners*. 41-52.

[8] Wasuntarasophit, S. (2015). Explicit Instruction of Collocations: An Impact on Learners' Use and Perceptions. *Journal of Humanities and Social Sciences*, 11(2), 37-71.

[9]   Jeddi, A. (2020). *Learning Collocations Through Interaction : the Effects of the Quality and Quantity of Encounters*. University of the West of England, Bristol (United Kingdom), Ann Arbor. (Ph.D.). https://www.proquest.com/dissertations-theses/learning-collocations-through-interaction-effects/docview/2440392441/se-2?accountid=44800 ProQuest Dissertations & Theses Global database. (28198261)

[10] Maguire, C. (2017). *When Language Teachers Don't Teach Language: A Narrative Inquiry of Language-Focused ESL Instruction in Content-Based Settings*. University of Minnesota, Ann Arbor. (Ph.D.). https://www.proquest.com/dissertations-theses/when-language-teachers-dont-teach-narrative/docview/2026266357/se-2?accountid=44800 ProQuest

[11] Petchprasert, A. (2021). Utilizing an automated tool analysis to evaluate EFL students' writing performances. *Asian-Pacific Journal of Second and Foreign Language Education*, 6(1), 1.

[12] Shin, D., Kwon, S. K., & Lee, Y. (2021). The effect of using online language-support resources on L2 writing performance. *Language Testing in Asia*, 11(1), 4.

[13] Choi, H. L., Chun Hyun. (2020). Learner Autonomy in EFL Reading with Digital Technology at Secondary School Level. *THE JOURNAL OF ASIA TEFL*, 17(4), 1323-1345.

[14] Francisco Javier, P.-H., Cristina, A. H.-A., & María Elena, G.-P. (2020). EFL Teachers' Perceptions on the Potential of MOOCs for Lifelong Learning. *International Journal of Web-Based Learning and Teaching Technologies (IJWLTT)*, 15(4), 1-17.

[15] Alazemi, A., Sadi, I., & Al-Jamal, D. (2019). Effects of Digital Citizenship on EFL Students' Success in Writing. *International Journal of Learning, Teaching and Educational Research*, 18(4), 120-140.

[16] Leon, J. (2007). "Meaning by collocation. *The Firthian filiation of Corpus Linguistics*. Paper presented at the 10th International Conference on the History of Language Sciences.

[17] Maneewan, W. (2017). *A Study of English Collocation Competence of Thai EFL Learners*. THAMMASAT UNIVERSITY.

[18] Shamsudin, S., Sadoughvanini, S., & Zaid, Y. H. (2013). Iranian EFL Learners' Collocational Errors in Speaking Skill. *Procedia - Social and Behavioral Sciences*, 70, 1295-1302.

[19] Parkinson, J. (2015). Noun–noun collocations in learner writing. *Journal of English for Academic Purposes*, 20, 103-113.

[20] Rahimi, M., Momeni, G., & Nejati, R. (2012). The impact of lexically-based language teaching on students' achievement in learning English as a foreign language. *Procedia - Social and Behavioral Sciences*, 31, 31-36.

[21] Benson, M. (1985). Collocations and Idioms Dictionaries, *Lexicography and Language Learning*. Oxford: Pergamon Press.

[22] Lewis, M. (2000). Learning in a lexical approach. In M. Lewis (Ed.), *Teaching collocation: Further development in the lexical approach*. Oxford: Oxford University Press.

[23] Hill, J. (2000). Revising priorities: From grammatical failure to collocational success. In M. Lewis (Ed.), *Teaching collocation: Further development in the lexical approach*. Oxford: Oxford University Press.

[24] Saifurahman, & Zahid, A. L. (2019). Content-Based Instruction. *International Journal of Science and Research (IJSR)*, 8(6), 1372-1375.

[25] Stoller, F., & Grabe, W. (2008). Content-Based Instruction: Research Foundations. In M. A. Snow & D. M. Brinton (Eds.) *The content-based classroom: Perspectives on integrating language and content* (pp. 5-21). Newyork: Longman.

[26] Brinton, D. M., & Snow, M. A. (2017). *The Evolving Architecture of Content-Based Instruction*. https://www.press.umich.edu/pdf/9780472036455-chp1.pdf

[27] Stryker, S. B. (1997). *Content-based instruction in foreign language education: Models and methods*. Washington, DC: Georgetown University Press.

[28] Genesee, F., & Lindholm-Leary, K. (2013). Two case studies of content-based language education. *Journal of Immersion and Content-Based Language Education*, 1(1), 3-33.

[29] Coiro, J. (2011). Predicting Reading Comprehension on the Internet: Contributions of Offline Reading Skills, Online Reading Skills, and Prior Knowledge. *Journal of Literacy Research*, 43(4), 352-392.

[30] Chen, F., Sakyi, A., & Cui, Y. (2022). Identifying Key Contextual Factors of Digital Reading Literacy Through a Machine Learning Approach. *Journal of Educational Computing Research*. https://doi.org/10.1177/07356331221083215

Thai Learners' Attitudes toward the Use of YouTube Videos in English Listening Classroom

Panisa SUPHOPHAK[a]*, Usaporn SUCAROMANA [b]

[a] Master of Arts (English), Faculty of Humanities, Srinakharinwirot University, Bangkok, Thailand
[b] Assistant Professor, Faculty of Humanities, Srinakharinwirot University

Abstract

The purpose of this study was to investigate Thai learners' attitudes toward the use of YouTube videos in English listening classroom. The researcher employed mix method including both quantitative and qualitative approaches. Questionnaires and open-ended questions were used to collect the data. The study comprised of 92 undergraduate learners who enrolled in English listening course at the university in the South of Thailand. The quantitative data were analysed using frequency, mean, S.D. while the qualitative were analysed using content analysis. The findings of the study indicated that learners had positive attitudes toward using YouTube videos in English listening classroom. The results showed that learners thought YouTube videos were beneficial for developing their listening skill and they participated more when teacher used YouTube Videos in the classroom.

Keywords: Thai learners, Attitude, YouTube, Videos, Listening Skill

1. INTRODUCTION

Listening is important for language learning since it is one of the four major skills required for language acquisition. According to Jalongo [12], listening was the most crucial of all the language skills that humans acquired. He discovered that the sense of hearing existed before birth and that listening became the major mode of communication throughout one's lifetime. According to Gilakjani and Sabouri [8], the teaching of listening skill was still neglected in English language teaching. Hamouda [10] discovered that the majority of EFL students struggled with listening comprehension because their institutions or universities placed more emphasis on other abilities. This was supported by Goh and Taib [9] who claimed that "students can easily be passive during the listening process, which causes them to be bored with and reluctant for listening". For example, in Thailand, the causes of the problem in learning listening skill of Thai students came from their Thai teachers' English skill and their teaching methods that mainly focused on structure, which somehow created students' negative attitude toward English classes [22]. Supported by Punthumasen [18], who found that the teaching and learning methods of Thai teachers in English lessons were not interactive and engaging. The students found that the subject matter was boring, and finally, they lost both interest and motivation in learning English.

From what mentioned above, it appears that not only teaching and learning methods, but also the teaching instruments utilized by teachers in the classroom are crucial parts of the learning process. In the twenty-first century, digital technologies have been increasingly used as instructional tools in the classroom [15]. YouTube is a well-

---

* Corresponding author.

known video sharing website that provides free access and contains a huge volume of videos in various fields, including education. Moreover, Liu [17] stated that YouTube had been considered a perfect match for the characteristics of the Net Generation, which referred to learners who grew up during the beginning of the World Wide Web Era and were exposed to digital technology from an early age. There are many research studies that explore the development of listening skills with the use of YouTube. For example, the research study by Alimemaj [4] found that YouTube has improved learners' English proficiency, especially their listening and speaking skills. As YouTube videos are frequently used as teaching instruments for the listening skill in English lessons, it is important that the teaching instruments are examined to ensure their effectiveness and the learners' attitude towards them. According to Gardner [7], attitude was part of language motivation, whereby a desire to learn led to a positive learning experience. This suggests that those learners who enjoy learning a second language end up developing their language skills successfully. Karahan [13] stated that a positive attitude translates to positive language learning. Because of this, it is possible to say that the impact of attitude plays a significant role in language learning.

Considering from what mentioned above, YouTube videos have recently been receiving a lot of attention from teachers as an educational instrument in the language classroom. And now that we're in the era of student-centered learning, which means students get to choose the material they want to learn and how they learn it. For this reason, researchers see an opportunity to investigate and study Thai learners' attitudes toward the use of YouTube videos in English listening classroom to find out whether they have positive or negative attitudes toward the instrument. The result of this study can be used by teachers to adjust their lesson plans by integrating YouTube videos as an instrument in the classroom as they gain a better understanding on how learners feel about it. Thus, the research question of this study is as follows: "What are Thai learners' attitudes toward the use of YouTube videos in English Listening Classroom?

2. LITERATURE REVIEW

2.1. Definition of Attitude

Attitude was referred to as "an individual's favorable and unfavorable attitudes toward an object, institution, or event that can be inferred from verbal or nonverbal behavior toward the object, institution, or event in question" [2]. Similar to Vaughan and Hogg [24], they defined attitude as "the relatively enduring organization of beliefs, feelings, and behavioral tendencies toward socially significant objects, groups, events, or symbols". According to Al-Musnad [3], language attitude referred to people who had a strong liking for the language or the speaker who used the language. As attitudes were developed by human experiences, they influenced people's behavior in terms of linguistics [1]. An attitude was, therefore, aimed at portraying the direction of human behavior [5], and an individual's language attitude was to respond positively or negatively to a language and its users.

2.2. ABC Model of Attitude

The ABC model comprised three components, which were affective, behavioral, and cognitive [6]; [19]. The affective component was "the emotional response towards an attitude object" [11]. It involved one's liking or disliking attitude. However, Jain [11] noted that the affective component was beyond the emotional responses as it involved other complex processes such as cognitive processes. According to Liu [16], affective factors affected language learning. This became a key indicator of successful learning as inner feelings and emotions could hamper the development of language skills. The behavior component concerned on how one reacted to certain situations. It was "the individual's intention towards an attitude object" [11]. It was evidence of one's attitude towards certain objects, as this component explicitly expressed its evaluation. Hence, it was the attitudinal response, whether favorable or unfavorable. The cognitive component involved an individual's opinion about the object [11]. It was the thoughts and belief/disbelief of a person. These components were central to attitude studies as they provided insights into understanding an individual's attitudes towards an attitude object.

2.3. Listening Skill

Listening was considered as a complex and active interpretation process that the listener related to what they heard from the previous background they had experienced [23]. In other words, Sharma [20] emphasized that listening was defined as a communication procedure where the listener was required to understand and interpret the

meaning of the messages they had heard. When the listener's listening ability was enhanced, they actively listened to improve the interaction between people, reduce the misunderstanding of the message, and increase the possibility of cooperation. People might be unfocused as they were not usually careful about what they were listening to. They were just listening while thinking of anything else that was not related to the message being sent to them [20].

2.4. YouTube Videos

YouTube was one of the well-known platforms that various research studies in the field of education used it as an instrument for language teaching. It provided free access to a huge volume of educational video materials. Woottipong [25] stated that video materials could be used as an optional instrument for teaching listening because they contained a great source of conversation and dialogue by native English speakers. It was greatly facilitated for students to enhance their language skills, including listening, speaking, reading, and writing. Snyder and Burke [21] explained that YouTube videos helped students to deeply understand the subject topic and retain the information they had learned. Supported by Khalid and Muhammad [14], students gained a better understanding of the lesson by applying YouTube in the classroom.

3. METHODOLOGY

3.1. Participants

The participants were 92 freshman students who enrolled in the Academic English: Listening and Speaking course in the first semester of 2021 at the university in the south of Thailand. They were selected by simple random sampling. The participants were informed that their personal data and records were kept confidential.

3.2. Instrument

The survey was divided into two parts, which were questionnaires and open-ended questions. The questionnaires and open-ended questions were developed by the researcher under the ABC Model. The first section included 15 items, with questions 1–5 focusing on affective, which was concerned with the emotional response, questions 6–10 focusing on behavioral, which was concerned with the reaction to certain situations, and questions 11–15 focusing on cognitive, which was concerned with the opinion towards objects. The second part contained with three open-ended questions, which were: participants' feelings toward the use of YouTube videos in English listening classroom; the changes in participants' behavior when YouTube videos were applied in English listening classroom; and participants' opinions toward the use of YouTube videos in English listening classroom. Ratings in each questionnaire were based on a five-point Likert scale ranging from strongly agree to strongly disagree, and open-ended questions were analyzed using content analysis. The reliability was calculated by using Cronbach's alpha, which was about 0.91, and the content validity was validated by three experts in the field.

3.3. Data Analysis

After the data were collected, quantitative data were calculated and analyzed by frequency, mean and standard deviations (S.D.), and qualitative data were described by content analysis (CA).

4. FINDINGS

4.1. Part 1: Questionnaires

This part of the questionnaires investigated Thai learners' attitudes toward the use of YouTube videos in English listening classroom. The results were as follows:

Table 4.1.1. Attitudes toward the use of YouTube video in English listening classroom

Attitudes toward the use of YouTube video in English listening classroom	Mean	S.D.	Level
Overall	4.20	0.02	Positive
- Affective Component	4.12	0.02	positive
- Behavior Component	4.28	0.02	positive
- Cognitive Component	4.19	0.03	positive

According to table 4.1.1, Thai learners had positive attitudes toward the use of YouTube videos in English listening classroom. the average mean score was 4.20, with a standard deviation of 0.02. The behavior component had the highest mean score at 4.28 with a standard deviation of 0.02, followed by the cognitive component at 4.28 with a standard deviation of 0.02 and the affective component had the lowest mean score at 4.12 with a standard deviation of 0.03.

4.2. Part 2: Open-ended Questions

This part contained with three open-ended questions. The first question was, "How do you feel when learning listening skill through YouTube videos in English classroom and why?" The second question was, "How does your learning routine or learning behavior change after integrating YouTube videos into the lesson or classroom?" And the last question was, "What are the benefits of using YouTube videos in English listening classroom, and is it different from other instruments for teaching listening? And why?"

The answers to the first question were divided into five categories based on their emotional similarities, which were usefulness, liking, support, enjoyment, and dislike. Learners thought that YouTube videos were useful. For example, student no.32 stated that "*I think that YouTube videos are useful for teaching listening skill because they provide a clear picture of the story that is being told, making it easier for me to understand the lesson*," and student no.40 mentioned that "*I think that YouTube videos are useful for developing listening skill as they can provide me with various accents from native speakers around the world.*" Learners liked to watch YouTube videos in the English listening classroom. For example, student no.1 said that "*I like to watch YouTube videos in the English listening classroom because it makes learning more fun and easier,*" while student no.2 said that "*I like to watch YouTube videos in the English listening classroom because there are many types of videos to watch.*" Learners wanted to encourage their teacher to use YouTube videos in the classroom. For example, student no.17 stated that "*I want to support my teacher and assure them to use YouTube videos in every English class because it creates a relaxed environment in the classroom,*" and student no.25 said that "*I want to encourage my teacher to use YouTube videos more in the classroom because it is way more entertaining than learning from the textbook.*" Learners enjoyed it when a teacher used YouTube videos in English listening classroom. For example, student no.85 mentioned that "*I enjoy it when the teacher uses YouTube videos in English listening classroom because most of the chosen videos are interesting*" and student no.92 stated that "*I am excited every time my teacher uses YouTube videos in English listening classroom because I like to listen to native speakers.*" On the other hand, some learners did not like watching YouTube videos in the classroom. For example, student no.8 mentioned that "*I don't' like watching YouTube videos in the classroom because sometimes people in those videos speak too fast and there is no subtitle,*" and student no.75 said that "*I don't' like watching YouTube videos in the classroom because some of those videos are too long and boring.*"

The answers to the second question were divided into five categories that were considered from the similarity of their behaviors, which were concentration, participation, understanding, creativity, and unlike. Learners concentrated better on the lesson. For example, student no.58 stated that "*I focus more when listening to those videos because I want to improve my listening skill*" and student no.20 said that "*I concentrate more on the lesson when listening to YouTube videos.*" Learners participated more in the classroom. For example, student no.12 mentioned that "*I participate more in activities when the teacher uses YouTube videos in the English listening classroom*" and student no.47 stated that "*I gain more confidence in exchanging opinions with classmates when the teacher uses YouTube videos in English listening classroom.*" Learners understood the lesson more in the classroom. For example, student no.77 mentioned that "*I understand the lesson more easily when the teacher uses YouTube videos in English listening classroom*" and student no.19 stated that "*I submit my homework earlier as learning from*

YouTube videos is a lot easier to understand the lesson than learning from a textbook." Learners showed more creativity in the classroom. For example, student no.27 said that "*learning from YouTube videos not only improves my listening skill, but also my creativity as it gives me an idea to create a story when I have to present in front of the classroom*," and student no.13 stated that "*I feel more creative when listening to YouTube videos in the classroom because I can image the picture more clearly when it relates to the lesson*." On the other hand, some learners did not like learning from YouTube videos. For example, student no.38 mentioned that "*I don't like to learn from YouTube videos because it requires a lot of concentration to listen to and understand the lesson*," and student no.63 stated that "*the lessons are still boring even when teaching with YouTube videos*."

The answers to the last question were divided into five categories according to the similarity of their opinions, which were: development skills, convenience, variety, easy to understand, and negative. Learners thought that using YouTube videos in English listening classroom helped them to develop skill. For example, student no.10 stated that "*Using YouTube videos in English listening classroom helps me develop not only listening skill, but also another skill such as speaking*," and student no.14 said that "*I develop many other skills apart from listening skill when the teacher uses YouTube videos, and one of them is critical thinking skill*". Learners recognized that using YouTube videos in English listening classroom was convenient. For example, student no.30 mentioned that "*I think that the benefits of using YouTube videos in English listening classroom are that those videos are free and easy to access*," while student no.82 stated that "*the benefit of using YouTube videos in English classroom is that we can access those videos even when we are outside the classroom.*" Learners accepted that YouTube videos were different from other media. For example, student no.41 said that "*I think that YouTube videos contain lots of content that is beneficial for teaching listening skill*" and student no.16 stated that "*I think that YouTube videos are different from other media because they have various topics to be searched.*" Learners thought that learning from YouTube videos was easy to understand. For example, student no.76 mentioned that "*using YouTube videos in English listening classroom makes me understand the lesson more quickly,*" and student no.51 said that "*I think that being taught by YouTube videos in English listening classroom helps me comprehend the lesson more easily*." On the other hand, some learners mentioned that using YouTube videos in English listening classroom was unappropriated. For example, student no.33 stated that "*Using YouTube videos in English listening classroom is only good for students who are at a middle or higher level of English. But for the students who are at a lower level, it is hard for them to catch up with the lesson.*" And student no.15 said that "*I think that using YouTube videos in English listening classroom has a lot of benefits for general students, but personally, I don't think it fits with my way of learning.*"

5. CONCLUSION

The study was conducted to investigate Thai learners' attitudes toward the use of YouTube videos in English listening classroom. The overall results showed that Thai learners had positive attitudes toward the use of YouTube videos in English listening classroom. The first component was the affective component: learners liked it when their teacher used YouTube videos in the classroom, and they discovered that YouTube videos could help them to practice their listening skills. The second component was the behavior component: learners accepted that they participated more with their teacher and classmates when YouTube videos were used in the classroom, and they gained more concentration on the lesson when the teacher used YouTube videos in the classroom. The last component was the cognitive component: learners thought that YouTube videos were beneficial for developing their listening skill, and they also thought that YouTube videos were convenient for them to access at any time and any place. However, YouTube videos have been widely accepted as a very useful teaching tool for language teaching in various research studies, but teachers must carefully choose videos to find the appropriate ones before applying those videos into their lesson as an additional tool in teaching.

6. RECOMMENDATION FOR FURTHER STUDIES

A study examining learners' attitudes toward other instruments such as Podcast or TED talks for teaching listening skills in the English classroom should be conducted to determine whether learners have a positive attitude toward those instruments. In addition, the research should use a different framework to look at learners' attitudes in other areas.

Acknowledgements

References

[1] Agheyisi, R., & Fishman, J. A. (1970). Language attitude studies: A brief survey of methodological approaches. Anthropological linguistics, 137-157.

[2] Ajzen, I., & Fishbein, M. (2005). The Influence of Attitudes on Behavior. In The handbook of attitudes. (pp. 173-221). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

[3] Al-Musnad, B. I. (2018). The role of motivation and attitude in second language learning: A study of Arabic language learning among foreign female nurses in Riyadh, Saudi Arabia. Journal of Applied Linguistics and Language Research, 5(1), 157-183.

[4] Alimemaj, Z. (2010). YouTube, language learning and teaching techniques. The Magazine of Global English Speaking Higher Education, 2(3), 10-12.

[5] Baker, C. (1992). Attitudes and Language (Vol. 83): Multilingual Matters.

[6] Fishbein, M., & Ajzen, I. (1977). Belief, attitude, intention, and behavior: An introduction to theory and research. Philosophy and Rhetoric, 10(2).

[7] Gardner, R. C. (1985). Social psychology and second language learning: The role of attitudes and motivation: Arnold.

[8] Gilakjani, A. P., & Sabouri, N. B. (2016). Learners' Listening Comprehension Difficulties in English Language Learning: A Literature Review. English language teaching, 9(6), 123-133.

[9] Goh, C., & Taib, Y. (2006). Metacognitive instruction in listening for young learners. ELT journal, 60(3), 222-232.

[10] Hamouda, A. (2013). An investigation of listening comprehension problems encountered by Saudi students in the EL listening classroom. International journal of academic research in progressive education and development, 2(2), 113-155.

[11] Jain, V. (2014). 3D model of attitude. International Journal of Advanced Research in Management and Social Sciences, 3(3), 1-12.

[12] Jalongo, M. R. (1991). Strategies for Developing Children's Listening Skills. Fastback 314. Phi Delta Kappa, PO Box 789, Bloomington, IN 47402-0789.

[13] Karahan, F. (2007). Language attitudes of Turkish students towards the English language and its use in Turkish context. Çankaya University Journal of arts and sciences, 1(7), 73-87.

[14] Khalid, A.-z., & Muhammad, K. (2012). The use of YouTube in teaching English literature: the case of Al-Majma'ah Community College, Al-Majma'ah University (case study). International Journal of Linguistics, 4(4), 525.

[15] Lazar, S. (2015). The importance of educational technology in teaching. International Journal of Cognitive Research in Science, Engineering and Education, 3(1).

[16] Liu, M. (2016). Interrelations between foreign language listening anxiety and strategy use and their predicting effects on test performance of high-and low-proficient Chinese university EFL learners. The Asia-Pacific Education Researcher, 25(4), 647-655.

[17] Liu, Y. (2010). Social media tools as a learning resource. Journal of Educational Technology Development and Exchange (JETDE), 3(1), 8.

[18] Punthumasen, P. (2007, 12-14 Dec 2007). International program for teacher education: Anapproach to tackling problems of English education in Thailand. Paper presented at the The 11th UNESCO-APEID International Conference Reinventing Higher Education: Toward Participatory and Sustainable Development, Bangkok, Thailand.

[19] Rosenberg, M. J., Hovland, C. I., McGuire, W. J., Abelson, R. P., & Brehm, J. W. (1960). Attitude organization and change: An analysis of consistency among attitude components. (Yales studies in attitude and communication.), Vol. III.

[20] Sharma, N. (2011). Strategies for developing listening skills. ELT Voices, 6, 12-18.

[21] Snyder, S. L., & Burke, S. (2008). Using YouTube in the classroom: a how-to guide. Int J Instruct Technol Distance Learn, 5(4), 45-52.

[22] The Nation. (2018). New approach to teaching English already shows results. Retrieved from http://www.nationmultimedia.com/detail/national/30355408

[23] Vandergrift, L. (1999). Facilitating second language listening comprehension: acquiring successful strategies. ELT journal, 53(3), 168-176. doi:10.1093/elt/53.3.168

[24] Vaughan, G., & Hogg, M. A. (2005). Introduction to social psychology (4th ed.). Frenchs Forest, Sydney, Australia: Pearson Education Australia.

[25] Woottipong, K. (2014). Effect of using video materials in the teaching of listening skills for university students. International Journal of Linguistics, 6(4), 200.

Foreign Language Anxiety in English Online Learning of Secondary School Students in Thailand

Apinya SOMCHOB[a*], Usaporn SUCAROMANA[b]

[a]*Master of Art (English) program, Faculty of Humanities, Srinakharinwirot University, Bangkok, Thailand*
[b]*Assistant Professor, Faculty of Humanities, Srinakharinwirot University, Bangkok, Thailand*

Abstract

The purpose of this study was to determine the level of Foreign Language Anxiety among Thai secondary school students who participated in English online learning and to compare the levels of Foreign Language Anxiety between the students with low and high English proficiency. The questionnaire, consisting of 33 items, was modified from Horwitz and Cope's [7] Foreign Language Classroom Anxiety Scale (FLCAS) and translated into Thai to facilitate data collection. The study consisted of 183 students who enrolled in the English Fundamentals subject during the second semester of the academic year 2021. The mean, standard deviation, and independent-sample t-test were statistically analysed. The findings indicated that the level of Foreign Language Anxiety among students was moderate. Additionally, the overall results showed that there was a significant difference among students with high and low English proficiency.

Keywords: Foreign Language Anxiety (FLA), English Proficiency, English Online Learning, English, Classroom

1. INTRODUCTION

Due to the spread of COVID-19 pandemic, English language has been taken as an online learning across the country. Students are needed to transition from on-site to online study. Teachers and students are likely to be impacted by this sudden adaptation of online learning. For English teachers, it is the fact that some are unfamiliar with technology advancements and online classroom management. The teachers, therefore, concern about their effective teaching strategies to motivate students acquiring the language. When teachers and students struggle with online teaching adoption, it might have a long-term effect on students' language learning processes. With different circumstances, a small number of students are unable to adjust to their new way of learning. As a result, this may increase students' anxiety about learning [22].

As mentioned previously, it is likely that online education is promoted to all students in the current situation. Hence, both teachers and students need to adjust their teaching and learning styles. Based on the situation, Foreign Language Anxiety (FLA) is regarded as a significant impact on EFL learners [4]. Several FLA studies have been conducted in recent years, but there are few studies directly relating to the high and low language proficiency of secondary school students. Therefore, the researcher is interested in studying Foreign Language Anxiety (FLA) in English online learning of secondary school students.

---

* Corresponding author.

2. RESEARCH PURPOSES

1) To investigate the level of Foreign Language Anxiety in English online learning of secondary school students in Thailand.

2) To compare the differences of Foreign Language Anxiety Level in English online learning between secondary school students with low and high English proficiency.

3. LITERATURE REVIEW

3.1 Anxiety

In Spielberger [25], the term 'anxiety' was defined as tense and nervous situations. This was connected to Blau's [3], Leary's [12], and Hilgard et al. [6]'s definitions of anxiety as an unpleasant emotion experienced when confronted with difficulties. This was also supported by Lamendella [11], who defined 'anxiety' as an unstable feeling governed by the limbic system - a region of the brain connected with behavioural and emotional reactions; a survival mechanism for reacting to adversity. Additionally, Yang [32] stated that anxiety is a delicate feeling that cannot be handled in stressful settings. Similarly, Alrabai [1] defined anxiety as an uncontrollable nervous emotion. Apart from this, anxiety was defined as a fearful or stressed mood induced by a terrible experience in life [18].

3.2 Types of Anxiety

According to MacIntyre and Gardner [13], anxiety can be classified into three types: trait, state, and situation-specific anxieties. First, Trait Anxiety was a stable proclivity to become nervous in any situation [26]. It is a characteristic of the individual, not a nervous state that can occur in a variety of conditions [16]. Second, State Anxiety was another sort of anxiety in which an individual feels anxious at a specific point [26]. It may occur as a result of certain experiences, such as public speaking, taking a test, or learning a new language [16]. Third, Situation-Specific Anxiety was a term that referred to unpleasant feelings that can emerge when an individual is unfamiliar with communicating in a second language [14].

3.3 Foreign Language Anxiety (FLA)

Horwitz and Cope [7] stated that Foreign Language Anxiety (FLA) was connected with complex self-concepts, personal views, and classroom language learning performance. This may occur when students are evaluated through the language learning process. Foreign Language Anxiety is a critical component of the language learning process. Several previous studies providing the definitions of Foreign Language Anxiety. When students indicated anxiety about language acquisition, they also expressed negative opinions toward foreign language perception [8]. In other words, stress, or concern, resulting from activities associated with second or foreign language learning was one of the key indicators of language learning anxiety [15].

3.4 Types of Foreign Language Anxiety

According to Horwitz and Cope [7], Foreign Language Anxiety can be classified into three types: Test Anxiety, Fear of Negative Evaluation, and Communication Apprehension.

Firstly, Test Anxiety referred to a type of performance anxiety brought on by fear of failure, most frequently when completing tests. When students take examinations or quizzes, they may encounter difficulties and afterwards experience unpleasant emotions. This may result in pupils' indecision owing to fear of failure. This was corroborated by Sarason's study [23], who stated that Test Anxiety might emerge when students are habituated to having a negative test-taking experience and earning low grades. As can be seen, language evaluation has a direct effect on Test Anxiety.

Secondly, Fear of Negative Evaluation was a term used to describe the fear of being assessed or anticipating being judged by others. This type of person was prone to avoid being placed in any evaluative situation [30]. In comparison to Test Anxiety, Fear of Negative Evaluation can occur in any social situation, including job interviews, interactions with foreigners, and test-taking [7].

Lastly, Communication Apprehension was associated with an unwillingness to communicate or talk in public, which were referred to as social shyness symptoms. For example, those with communication phobias were more likely to feel uneasy when speaking in front of people who were staring at them. As a result, students who struggled with communication anxiety frequently felt uncomfortable speaking in front of the class. This feature also affects

the acquisition of a second language. Individuals concerned with communication were more prone to struggle with comprehension during conversations. This was in reference to McCroskey's study [17], which indicated that anxious behaviours could have an effect on communicative avoidance. On the other hand, Foreign Language Anxiety (FLA) plays a significant influence in classroom language acquisition because students' judgments of foreign language might be either positive or negative based on prior personal experience [7].

3.5 Online Learning

Online learning referred to education conducted via the internet, which enabled individuals to acquire knowledge through technical advancements [19]. This was validated by Bates [4], who described it as "any type of internet-based study." Apart from that, Sener [27] invented the term 'online learning' to refer to education conducted via the internet, which facilitates interaction between teachers, students, and peers. In general, any type of online learning may enable students to get additional new learning experiences through the process of exchanging ideas and connecting with teachers and peers.

3.6 Advantages and Disadvantages of Online Learning

There were numerous advantages to online education. First, it enabled pupils to learn whenever and wherever they pleased [28]. Second, it may foster a learner-centered approach, which promotes the facilitator role of teachers [5]. Thirdly, online education may influence learners' perceptions. Fourthly, it has the potential to foster engagement and cooperative learning [14]. Finally, self-learning was emphasized via internet resources [26].

However, there were some weaknesses that students may encounter. First, online education may weaken friendships [9]. Second, some students were unable to focus on their studies, and as a result, they felt burned out and unwilling to learn this type of study [29]. Finally, some students and teachers may be unfamiliar with electronic tools, which may result in difficulties throughout the teaching and learning process [9].

4. METHODOLOGY

4.1 Participants

The research participants consisted secondary school students who enrolled in the English Fundamentals subject during the second semester of the academic year 2021. Purposive sampling was used to select 183 students with high and low level of English proficiency. One hundred and fifteen students obtained high level of English proficiency (grade 3.5-4) while 68 students obtained low level of English proficiency (grade 1-1.5).

4.2 Instruments

The questionnaire was used in this study to evaluate the level of Foreign Language Anxiety (FLA). Additionally, it was modified using Horwitz and Cope's [10] measure - the Foreign Language Classroom Anxiety Scale (FLCAS). This study also adapted Thai version of questionnaire from Sae-tia [30]. Three experts in English education examined the instrument for content validity. Cronbach's Alpha coefficient was used to determine reliability in terms of internal consistency which was .90. According to the study, the questionnaire, which contained 33 items, was divided into 4 parts: (a) Foreign Language Classroom Anxiety (11 items), (b) Test Anxiety (4 items), (c) Fear of Negative Evaluation (6 items), and (d) Communication Apprehension (12 items). The questionnaire included: strongly agree (5), agree (4), neither, agree nor disagree (3), disagree (2), and strongly disagree (1).

Additionally, this study categorized the average questionnaire score as follows: 1.00-1.50 indicates no anxiety or very little anxiety level, 1.51-2.50 indicates little anxiety level, 2.51-3.50 indicates moderate anxiety level, 3.51-4.50 indicates high anxiety level, and 4.51-5.00 indicates strongly high anxiety level.

4.3 Data Analysis

After the data collection, the questionnaire findings for Foreign Language Anxiety were compared and analyzed using Means and Standard Deviation to evaluate the levels of English online learning among secondary school students. Additionally, the t-test (independent sample t-test) was used to compare the differences in Foreign Language Anxiety Level between secondary school students with low and high English proficiency in online English learning.

5. FINDINGS

Table 1 presented the level of Foreign Language Anxiety in English Online Learning among secondary school students in Thailand.

Table 1 Levels of Foreign Language Anxiety in English Online Learning

FLA Components	M	SD	Level
1.Foreign Language Classroom Anxiety	3.16	0.53	Moderate
2. Test Anxiety	3.46	0.67	Moderate
3. Fear of Negative Evaluation	3.44	0.71	Moderate
4. Communication Apprehension	3.32	0.56	Moderate
Total	3.31	0.53	Moderate

As shown in Table 1, the level of Foreign Language Anxiety among secondary school students was moderate (*M*= 3.31, *SD*= 0.53). The highest mean score was most likely Test Anxiety at a moderate level, with *M* = 3.46 and *SD* = 0.67. Fear of Negative Evaluation had the second highest mean score at a moderate level, with *M* = 3.44 and *SD* = 0.71. Communication Apprehension had the third highest mean score at a moderate anxiety level, with *M*= 3.32 and *SD*= 0.56. Finally, Foreign Language Classroom Anxiety was ranked as the lowest anxiety level, with *M*= 3.16, *SD*= 0.53 indicating a moderate level of anxiety.

Table 2 showed the differences of Foreign Language Anxiety Level in English Online Learning between Secondary School Students with Low and High English Proficiency.

Table 2 Foreign Language Anxiety of students with Low and High English Proficiency

Anxiety components	High English proficiency (n = 115)		low English proficiency (n = 68)		*t*	*df*	*p (1-tailed)*
	M	*SD*	*M*	*SD*			
1. Foreign Language Classroom Anxiety	3.06	0.55	3.32	0.46	3.29	181	*.00
2. Test Anxiety	3.45	0.68	3.48	0.66	0.29	181	.39
3. Fear of Negative Evaluation	3.37	0.73	3.57	0.66	1.90	181	*.03
4. Communication Apprehension	3.25	0.56	3.45	0.55	2.40	181	*.01
Total	3.23	0.53	3.43	0.49	2.55	181	*.01

According to Table 2, there was a significant difference in overall English proficiency between high and low English proficiency, with *t* = 2.55, *p* =*.01. , the result for each variable was as follows: There was a significant difference in Foreign Language Classroom Anxiety, Fear of Negative Evaluation and Communication Apprehension while there was no significant difference in Test Anxiety.

6. CONCLUSION

The objectives of this study were to examine the levels of Foreign Language Anxiety in English online learning and to compare differences in the level of Foreign Language Anxiety gained by students with low and high English proficiency during online learning. Overall, students with high and low English proficiency had moderate levels of Foreign Language Anxiety. Due to the differences, the overall results showed that there was a significant difference among students with high and low English proficiency. Considering each Foreign Language Anxiety component, there was no significant difference in Test Anxiety whereas there was a significant difference in Foreign Language Classroom Anxiety, Fear of Negative Evaluation and Communication Apprehension.

7. RECOMMODATION FOR FURTHER STUDIES

Interview and observation regarding Foreign Language Anxiety are recommended for further study to investigate the insight and in-depth information behind the answer. Greater heterogeneity is also suggested to reach much understanding related to the study.

ACKNOWLEDGEMENTS

References

[1] Alrabai, F. (2014). A Model of Foreign Language Anxiety in the Saudi EFL Context. English Language Teaching, 7(7), 82-101.

[2] Bates, T. (2016, July 15). Online learning for beginners. 1. What is online learning? https://www.tonybates.ca/2016/07/15/online-learning-for-beginners-1-what-is-online-learning/

[3] Blau, A. (1955). A unitary hypothesis of emotion: Anxiety, emotions of displeasure and affective disorders. Psychology Quarterly, 24, 75-103.

[4] Choi, N., Sheo, J., & Kang, S. (2020). Individual and parental factors associated with preschool children's foreign Language Anxiety in an EFL setting. Ilkogretim Online, 19(3).

[5] Chizmar, J.F. & Walbert, M.S. (1999). Web-based learning environments guided by principles of good teaching practice. *Journal of Economic Education*, 248-264.

[6] Hilgard, E. R., Atkinson, R. C. & Atkinson, R. L. (1971). Introduction to psychology. New York: Harcourt, Brace, and World.

[7] Horwitz, E. K. (1986). Preliminary Evidence for the Reliability and Validity of a Foreign Language Anxiety Scale. TESOL Quarterly, 20(3), 559. doi:10.2307/3586302

[8] Horwitz, E. K. (2001). Language anxiety and achievement. Annual Review of Applied Linguistics, 21(1), 112-126.

[9] Howland, J.L. & Moore, J.L. (2002). Student perception as distance learners in Internet-based distance educational course. *Distance Education*,23(2), 183-196. Abstract retrieved November 18,2003 from EBSCOHost Database.

[10] Kearsly, G. (2000). Online education: Learning and teaching in cyberspace.Belmount, CA: Wassworth.

[11] Lamendella, J. (1977). The limbic system in human communication. In H. Whitaker&H. Whitaker, (Eds.), Studies in neurolinguistics (pp. 157-222). New York: Academic Press.

[12] Leary, M. R. (1983). Understanding social anxiety. Beverly Hills: Sage.

[13] MacIntyre, P.D. & Gardner, R.C. (1989). Anxiety and second language reading and listening comprehension. Modern Language Journal, 73, 32-40.

[14] MacIntyre, P. D. & Gardner, R. C. (1991). Language anxiety: Its relation to other anxieties and top-processing in native and second languages. Language Learning, 41, 513-534.

[15] MacIntyre, P. D. & Gardner, R. C. (1994). The subtle effects of language anxiety on cognitive processing in the second language. Language Learning, 44, 283-305.

[16] MacIntyre, P. D. (1999). Language anxiety: A review of research for language teachers. In D. J. Young (Ed.), Affect in foreign language and second language learning (pp. 24-46). New York: McGraw Hill.

[17] McCroskey,J. C. (1984). The communication apprehension perspective. In J. A. Daly & J. C. McCroskey (Eds.), Avoiding communication: Shyness, reticence, and communication apprehension (pp. 13-38). Beverly Hills, CA: Sage.

[18] Mussen Paul, Canger Kohn and Kagan Jerome, (1956) Child development and personality. Harper and Row, publishers, inc.

[19] Paulsen, M.F. (2002). Online Education Systems: Discussion and Definition of Terms.

[20] Petrides, L.A. (2002). Web-based technologies for distributed (or distance) learning:　　　　Creating learner-centered educational experiences in higher education classroom. International Journal of Instructional Media, 29(1), 69-77.

[21] Vonderwell, S. (2003). An examination of asynchronous communication experiences and perspectives of students in online course: A case study. Internet and Higher Education, 6, 77-90.

[22] Russell, V. (2020). Language anxiety and the online learner. Foreign Language Annals, 53(2), 338–352. https://doi.org/10.1111/flan.12461

[23] Sarason, I. G. (1984). Stress, Anxiety and Cognitive Interferences: Reactions to Tests. Journal of Abnormal and Social Psychology, 46, 929-938. http://dx.doi.org/10.1037/0022-3514.46.4.929

[24] Sae-tia, C. (2017), A Study of Foreign Language Learning Anxiety of Vocational Certificate Students in Thailand (Master's Thesis Srinakharinwirot University).

[25] Spielberger, C. D. Conceptual and methodological issues in research on anxiety. Anxiety: Current Trends in Theory and Research on Anxiety (1972).

[26] Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R. & Jacobs, G. A. Manual for the state-trait anxiety inventory (Consulting Psychologists Press, Palo Alto, 1983).

[27] Sener, J. (2015, July 7). Updated e-learning definitions. https://onlinelearningconsortium.org/updated-e-learning-definitions-2/

[28] Volery, T. and Lord, D. (2000), "Critical success factors in online education", *International Journal of Educational Management*, Vol. 14 No. 5, pp. 216-223. https://doi.org/10.1108/09513540010344731

[29] Vonderwell, S. (2003). An examination of asynchronous communication experiences and perspectives of students in online course: A case study. Internet and Higher Education, 6, 77-90.

[30] Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. Journal of Consulting and Clinical Psychology, 33(4), 448-457. doi: 10.1037/h0027806

[31] Wolman, B.B. (1989). Dictionary of Behavioral Science. New York: Van Nostrand Reinhold co.

[32] Yang Y., Cornelius F.L. (2006). Students' Perception towards the Quality of Online Education: A Qualitative Approach. Mississippi State University.

Seamless Learning in Language Education: Work of Recent Pandemic

Fethi KAYALAR*

Assoc. Prof. Dr., (Erzincan B. Y. University), Faculty of Education,, Erzincan, TURKEY
fkayalar@erzincan.edu.tr

Abstract

The world of the twenty-first century has been intensely exposed to technological developments and has undergone a transformation in the field of education, as in many other fields, depending on technological developments. These developments in the field of informatics have resulted in the frequent use of e-learning systems in traditional and distance learning environments. The use of mobile devices in educational applications after computers has made it possible to design lessons in which real world and digital world resources are used together, and mobile learning (m-learning) applications have taken their place in today's education understanding. The recent pandemic COVID-19 has forced educational world to implement new teaching and learning models such as Blended Learning, Hybrid Learning, Flexible Learning, Ubiquitous Learning, and Seamless Learning through technological devices. This study aims to give some important aspects of Seamless Learning, as it is profound in Language Education. Upon reviewing the literature on Seamless Learning and its application in campus and out of campus environments, we have found out that Seamless Learning model is of great importance in second language teaching and learning, and that it should be applied in all level of education from Primary Education to Tertiary Education.

Keywords: Seamless Learning, Language Education, Blended Learning, Educational Management

1. INTRODUCTION

The proliferation of mobile and ubiquitous technologies over the past two decades has created new opportunities to develop new technology-enhanced learning approaches that truly address the needs of a globalized society, digital lifestyles and a new generation of knowledge-based citizens. Since then, there has been a flurry of subsequent related discussions within the mobile and ubiquitous learning research community. A significant number of academic papers produced by scholars from Asia, Australia, Europe, and North and Latin America have explained this concept with various emphases and adopted the seamless learning framework to inform real research work. However, despite the promising research findings, the nature and potential of seamless learning has yet to be fully explored or holistically defined. Thus, the concept of seamless learning remained a loosely defined concept without any established learning model or theory until the end of the last decade, when the characterizing or ecological framework was developed and gradually adopted by researchers around the world to inform the design or analysis of new seamless learning environments (Lung-Hsiang, Ching Sing & guat Poh 2017).

---

* Corresponding author.

Recent modelling efforts have perhaps played a key role in renewing interest in seamless learning in the mobile learning space. In the Innovative Pedagogy Report series published by The Open University in England, Continuous Learning is identified as one of ten promising pedagogies that can transform education two years in a row.

Although it is still an evolving field of research and practice, many questions remain unanswered and a critical assessment of continuous learning is needed. For example, how can uninterrupted learning be theorized from psychological and cognitive development and sociocultural perspectives? Should interruptions in learning always be fuzzy or transitive? How can mobile devices and ubiquitous/cloud computing platforms be combined to support truly anytime, anywhere seamless learning? How can advanced technological possibilities inform researchers, teachers, and students to facilitate or conduct uninterrupted learning processes? How can we change students' (and teachers') epistemological beliefs to create favourable conditions for nurturing habits and skills of mind for seamless learning practice? What are the critical success factors and challenges in teaching and disseminating seamless learning practice in various formal or informal educational contexts?

In the light of these questions, the aim of this study is to produce a conclusion by combining interpretations, visions and past research and practices on Seamless Learning from different perspectives, rather than repeating the current state of continuous learning or mobile learning arts.

2. SEAMLESS LEARNING

In order to better understand Seamless Learning in the context of open and distance learning, the definitions of open and distance learning, mobile learning, accessible learning and Seamless Learning can be started. Open and distance learning is a learning process and science where learners are distant from each other and learning resources in the context of time and/or space, and their interactions with each other and learning resources are carried out based on distance communication systems (Aydın, 2011; Özdamar Keskin & Kuzu, 2015). While there are those who define mobile learning as a sub-field of open and distance learning in the related field, there are also studies that define mobile learning as a paradigm shift and an interdisciplinary field of study. Mobile learning is defined as learning that takes place through mobile technologies that allow accessing educational content without being tied to a specific location, benefiting from dynamically produced services and communicating with others, increasing productivity and work performance efficiency by responding to the individual needs of the user instantly (Özdamar Keskin, Yetik, 2016). According to another definition, mobile learning is learning that takes place through content and social interactions using personal electronic devices. Accessible learning is defined as learning that occurs when learners can access learning environments anywhere and at any time. The feature that distinguishes accessible learning from mobile learning is that it provides instant feedback and guidance to learners by identifying their identities and locations. Seamless Learning, on the other hand, is a student-centered uninterrupted learning approach that takes place at any time and/or place, including mobile devices, in formal or informal environments, intertwined with technology and social environments. The most important differences that distinguish seamless learning from others are that the transitions between platforms are smooth, include multiple device types, cover real and virtual environments, and include multiple pedagogies (Dilger, Gommers & Rapp 2019).

The definition of Seamless Learning has been expressed in different ways by researchers in this field, but it has come together at a single point.
• A type of mobile learning that emphasizes the removal of junctions and gaps within and between contexts, locations, devices, systems, learning tasks and learning settings.
• It is the seamless integration of formal and informal learning contexts, individual and social learning, and learning experiences in various dimensions, including the physical world and cyberspace.
• It is a new learning app approach that allows seamless transition between different learning tasks.
• Continuity of learning in multiple contexts through networked personal computing devices.
• It is the integration of learning experiences in various dimensions, including formal and informal learning contexts, individual and social learning, and the physical world and cyberspace.
• It is an approach that proposes to combine the private and personal lives of students in order to continue learning outside the classroom.

Seamless Learning is that a user gets the information they need at the exact time they need it. In other words, learning is built right into existing workflows without the need for a password or login, making for a truly seamless learning experience.

Seamless learning occurs when individuals or groups experience a learning continuum and consciously bridge multi-faceted learning efforts across locations, times, technologies, or social environments. As more progress has been made in research on seamless learning, new and different visions, research, and applications of seamless learning have emerged, stemming from a variety of different perspectives.

This is achieved by creating personalized seamless links that take students directly to relevant educational content that they can access anywhere and anytime. These links can be shared via email, app notification, or text message as part of a larger continuing learning initiative, and can also be followed by tutorials to analyze performance.

2.1. History of Seamless Learning

Digital technology has experienced two revolutions: the network revolution in the 1990s and the mobile revolution in the 2000s. Due to the network revolution, an online learning community has been created. Due to the mobile revolution, physically separated classrooms will become interconnected 1:1 classrooms. As time passes, the connection between the virtual world of the online learning society and the real world of the classroom, and that between school and home will eventually disappear. Now, what are the next technological revolutions?

Obviously, in these two decades we are going through the gaming revolution that encompasses digital games, smart toys, smart tangibles with fun elements and more. Considered together with previous revolutions, the implication of the gaming revolution is that learning, playing and working will be blurred. For our ancestors, life in the history of human development consisted mainly of play and work, and learning was naturally intertwined with play and work. Indeed, if you search for the essence of the processes of learning, playing and working, you will not find much difference between them. It was we modern humans who separated these three processes and thus we created the seam between learning and playing, and between learning and working. If we respect our innate ability to play and work, inherited from our ancestors, learning should be conceived as a naturally built-in component of play and work. Only in this way will learning be natural and engaging, effective and successful, leveraging our inherited ability to play and work.

There are two phases of Seamless Learning – one in the field of higher education studies and the other in technology enhanced learning (TEL), specifically mobile and ubiquitous learning. These two phases were born more than a decade apart and developed through seminal research in the early 1990s and mid-2000s. However, despite having the same name, the two "phases" hardly "interacted" with each other until 2011, i.e. hardly any cross-quotes. The first phase of continuous learning began with higher education scholars and leaders questioning the gap between the roles of faculty and student affairs professionals and reflected the perceived parts of student life both inside and outside the classroom. This functional and organizational dichotomy continues to conflict with holistic visions of how students learn and develop. As a result, academics in the aforementioned field began to re-examine the need to integrate these roles and advocated the transition from an discontinuous learning culture to a continuous learning culture. This new concept is integral to Dewey's philosophy of continuity, which is "based on the belief that human beings as holistic beings learn best by interacting with mind, body, spirit, experience and knowledge".

The early literature on Seamless Learning focused on system-level reforms in the US higher education sector and received little attention from other sectors or in the context of other national systems. Also, the technological support of learning did not play a significant role in this debate. On the second point, however, this does not mean that there is absolutely no literature on PBL in continuous learning environments. For example, Bonner et al. (1995) characterized the "distributed multimedia university" model as a seamless learning environment in which university students can extract relevant multimedia learning resources anytime, anywhere to meet their learning or problem-solving needs.

With the coming of the twenty-first century, scholars in the emerging field of mobile learning have begun to grasp the concept of Seamless Learning and have started using the term in the relevant literature, with a greater focus on technological innovations to provide tailored personalized learning activities across venues.

3. SEAMLESS LEARNING IN LANGUAGE EDUCATION

One of the critical problems in traditional second language (L2) classroom practices is the excessive amount of decontextualized information, indirect and abstract grammar, and limited 'second-hand' experiences in the classroom context. Therefore, language learning theorists have advocated the integration of formal and informal language learning since the 1960s. Integration means greater learner autonomy in language learning in both formal and informal learning environments; this is again a notable trend in both modern language learning research and its practice. Recent textbooks for language teacher education have included chapters or units on student autonomy. In summary, learner autonomy means that learners take responsibility for their own learning. In the context of language learning, three interactive principles for classroom pedagogy are outlined: student engagement, student reflection, and target language use (Wong, Milrad and Specht, 2015)

Personalized mobile devices can become a student learning hub that facilitates and supports student engagement, student reflection and target language use in different learning spaces. This 1:1 Technology Enhanced Learning model has great potential to facilitate significant reform in language learning. However, the potential has not yet been fully explored or exploited by Mobile Assisted Language Learning researchers (Wong, Chai, Aw and King, 2015). To date, almost all Mobile Assisted Language Learning studies have focused heavily on either formal or non-formal learning. Integration of both seems difficult, perhaps because of the relatively demanding time and resource requirements in conducting research on multiple learning contexts in a single study. Moreover, while language learning theorists stress the importance of autonomous, continuous, and progressive exposure of learners to comprehension and productive activities such as speaking and writing, in order to achieve effective language acquisition, current Mobile Assisted Language Learning designs and arrangements tend to be periodic or short-term.

4. CONCLUSION

We examined the state of modern language learning theories and found that they fit well with the general philosophy of 21st century learning, such as Seamless Learning, which advocates nurturing students who can positively direct their learning and collaborate with others. We found that ubiquitous and cloud computing technologies can mediate and support the assimilation of learning into students' daily life. However, we have come to the conclusion that it is equally important to incorporate subject-specific learning theories into developing learning models that will provide concrete methodology to ensure in-depth learning of relevant knowledge and skills, rather than just using general, subject-independent learning concepts to guide the Second Language Learning design. A common limitation of previous word-focused Mobile Assisted Language Learning studies is that they rarely go beyond behavioral or contextual learning. The Second Language Learning framework proposed within the scope of Seamless Learning aims to overcome this limitation. Informed by psycholinguistics, we are of course aware of the importance of making it easier for students to create their mental dictionaries, especially for second language learning. Therefore, we propose to consider mental lexicon-related learning activities to help students synthesize their vocabulary learning, while limiting the similar prior learning design that ignores the contextualized stage by taking advantage of the possibilities of ubiquitous technology.

Indeed, Second Language Learning with a Seamless Learning Model emphasizes closing loops in both the seamless learning dimension to develop 21st century knowledge and skills through the ubiquitous technology-mediated continuous learning process, and the domain-specific language learning dimension to nurture holistic language competences.

References

[1] Aydın, C. H. (2011). *Açık ve Uzaktan Öğrenme: Öğrenci Adaylarının Bakış Açısı*. Pegem: Ankara.

[2] Lung-Hsiang W., Ching Sing, C. & guat Poh A. (2017). Seamless Language Learning: Second Language Learning with Social Media. *Media Education Research Journal,* Comunicar, n. 50, v. XXV, 2017

[3] Özdamar-Keskin, N. & Kuzu, A. (2015). Development and testing of a m-learning system for the professional development of academics through design-based action research. *The International Review of Research in Open and Distributed Learning* [Online], 16(1), 193-220.).

[4] Wong, L.-H. (2012). A learner-centric view of mobile seamless learning. *British Journal of Educational Technology,* 43(1), E19–E23.

[5] Wong, L. H., Milrad, M. and Specht, M. (Eds.). (2015). *Seamless learning in the age of mobile connectivity.* Singapore: Springer.

[6] Wong, L. H., Chai, C. S., Aw, G. P. and King, R. B. (2015). Enculturating seamless language learning through artifact creation and social interaction process, *Interactive LearningEnvironments,* 23 (2), 130-157.

[7] Wong, L. H.,&Looi, C.K. (2011).What seams dowe remove in mobile-assisted seamless learning?

[8] A critical review of the literature. *Computers & Education, 57*(4), 2364–2381.

[9] Yetik, E. & Özdamar Keskin, N. (2016). Açık ve Uzaktan Eğitimde Kesintisiz Öğrenme Yaklaşımının Kullanımı. *Eğitim ve Öğretim Araştırmaları Dergisi,* Cilt:5 Sayı:1

[10] Dilger B., Gommers L & Rapp C. (2019) Seamless Learning: Perspectives, Challenges and Opportunities, Eds: Chee-Kit Looi & Christian Glahn, Lecture Notes in Educational Technology. Springer

**Transport, Logistics, Tourism and Sport Science
(IAC-TLTS 2022)**

Movement Resistances of Rail Vehicles on Continuous Welded Rail Curves

Katarzyna DYBEŁ[a]*, Arkadiusz KAMPCZYK[b]

[a]M.Eng; AGH University of Science and Technology, Faculty of Geo-data Science, Geodesy and Environmental Engineering,
Department of Engineering Surveying and Civil Engineering,
al. A. Mickiewicza 30, 30-059 Krakow, Poland;
Email: kdybel@agh.edu.pl, katarzynadybel@gmail.com
ORCID: 0000-0003-2213-0562

[b] Ph.D. Eng.; AGH University of Science and Technology, Faculty of Geo-data Science, Geodesy and Environmental Engineering,
Department of Engineering Surveying and Civil Engineering,
al. A. Mickiewicza 30, 30-059 Krakow, Poland;
Email: kampczyk@agh.edu.pl, arkadiusz.kampczyk@gmail.com
ORCID: 0000-0001-9210-9668

Abstract

Ensuring a high level of traffic and safety in civil engineering and rail transport requires the permanent maintenance of Continuous Welded Rails (CWRs). Temperature fluctuations, railway geometry, centrifugal forces and traffic engineering are essential elements reflected in the safety of this type of construction. Thus constituting openness for further scientific and research work and requiring particularly fortifications in surveying and diagnostic work. Transport routes, which integrate both straight and curvilinear segment (circular curves, transition curves), are an integral part of developing civil engineering and transport. The purpose of this study is to demonstrate the value of the movement resistances of rail vehicles on CWRs curves. The movement resistances are the forces that counteract the movement of the vehicle. There are principle resistances and local resistances (additional resistances). The topics of the research carried out concerns the movement resistances of rail vehicles on CWRs defined as local resistances. Present only on certain sections of the route. Research was conducted on three real objects – railway lines, including five research objects – railway tracks characterized by different geometric features in plan and profile as well as operational elements of transportation engineering. Results at all research objects include one measurement period.

Based on actual measurement data, especially of the geometrical parameter of cant (superelevation, the position of the track in the cross-section) – obtained during actual operation (exploitation) – the traffic movement resistances occurring on curvilinear segments, especially curves, was specified, taking into account their existing condition. The cant parameter was monitored using the direct measurement method in measuring cycles every 0.5 m. The tests were carried out separately for each research object, taking into account: maximum speeds, curve radii, construction standards of the railway track (railway superstructure, permanent way) and the actual state of the cant parameter. Many research-scientific works propose different approaches for determining resistance in curves (curve resintance), but they do not directly take into account the actual cant parameter. This parameter was included in the Астахова equation, on the basis of which the research in the present study continued.

Based on the results of the tests, the resistance in the curve was found to be greater the smaller the radius of the curve. The values for local resistances are particularly correspond in curves that are compound curves. It should be stressed that the presented relative values of movement resistances forces during curved driving were defined on the basis of data obtained in real exploitation conditions. Thus, the value of local resistance in a curve depends on a number of factors, notably curve radius, train speed, actual railway track cant, structural standards of the railway superstructure – which have been taken into account in this

---

* Corresponding author.

research. A new indicator $Max_{diff\ jump}\ f_{rad}-$ has also been defined the maximum jump of the difference in the relative value of the movement resistances forces during curve driving. This indicator complements the monitoring movement resistances of rail vehicles on Continuous Welded Rail curves.

The movement resistances of rail vehicles on CWR_s curves especially during exploitation are an integral part of the movement resistances. The results of the study prove that the movement resistances of rail vehicles on CWR_s curves is an integral element of the application of synergy effects in optimizing the monitoring of CWR geometry shaped by operational processes. The article was prepared under the research subvention of AGH University of Science and Technology No. 16.16.150.545 in 2022.

1. INTRODUCTION

The geometry of transport routes including rail transport with particular emphasis on railway, streetcar and metro lines consists of straight and curvilinear segments. Curvilinear segments can include circular curves, transition curves, combinations of circular curves, and other types of curves. Particularly important applications are circular curves ($C_{irc}C$) and compound curves ($C_{omp}C$). On a rail vehicle running on curvilinear segments acts a resistance force, which significantly reduces the speed of travel and affects the energy consumption [1]. Movement resistances are forces that counteract the movement of the vehicle. Reducing the amount of fuel and electricity consumed by a rail is a major task when it comes to increasing its competitiveness and further development perspectives [2]. This problem is particularly important for reducing operating (exploatation) costs. Research topics on movement resistance are the subject of study for many researchers around the world [3-5].

Nowadays there is a growing need to ensure interoperability, automation and safety of rail transport in order to really exploit its greatest advantages, e.g. the economic transport of large quantities of material over long distances. [6]. Continuous Welded Rails (CWR_s) are widely used in rail transportation and have the advantage of reducing maintenance costs and improving transportation. However, this construction is very sensitive to temperature fluctuations [2, 7]. In addition, for CWR_s on curves having a small radius, the probability of rail track buckling (railway buckling, track buckling) increases significantly as a result of the large radial temperature force on the rail [8, 9]. It is widely accepted that CWR_s on small-radius curves are a critical weakness for railways in cold areas. To prevent CWR_s from buckling, attention should be paid to the stability of CWR_s on small-radius curves during daily track maintenance [9]. It is also worth mentioning about mechanical properties CWR, so Németh and Fischer in [10] make investigation of glued insulated rail joints applied to CWR tracks, which is important for daily railway practice. Sysyn et al. [11] executed laboratory tests with the ballast interlocking which is a significant area that is related to the geometrical deterioration of the railway tracks. In turn, Atapin et al. in [12] deal with monitoring and evaluation of the lateral stability of CWR track. they dealt with a method of the CWR track lateral stability estimation during its lifecycle using the track geometry monitoring information from the track measurement cars. The methods proposes a systematic approach of track stability evaluation based on multiple criteria of track stability evaluation. It takes into account the lateral resistance of the track, actual temperatures, and the lateral geometry condition of the track [12].

To the factors threats to the stability of the CWR include, among others:

- Temperature spikes

- Longitudinal displacements of the rails (creeping of the rails, pl. pełzanie toków szynowych)

- Incorrect technical condition

- Operational impacts (exploitation impacts)

An important role in the safe operation of a CWR is performed by conducting surveying and diagnostic monitoring. Geodetic monitoring includes measurements and interpretation of horizontal and vertical displacements of engineering facilities [13]. Finding direct application in civil engineering and transportation, contributing to the development of science, technology and engineering. Thus, surveying and diagnostic work not only makes knowledge available to the scientific world, but also to industry units, and consequently their results have

a reflection for the entire socio-economic environment. Providing a high level of operational and safety performance in civil engineering and rail transport requires the permanent maintenance of Continuous Welded Rails. Temperature fluctuations, track geometry, centrifugal forces, and traffic engineering are essential elements reflected in the safety of this type of construction. Thus providing an opening for further scientific and research work and requiring special grounding in surveying and diagnostic work.

The main objective of this research is to prove the values of the state of resistance to movement of rail vehicles on curves CWR_s. Movement resistances are forces that counteract the movement of the vehicle. There are principal resistances and local resistances (additional resistances). The topics of the completed research include movement resistances of rail vehicles on curves CWR_s defined as local resistance. Occurring only on some segments of trails. Research was conducted on three real objects – railway lines, including five research objects – railway tracks characterized by different geometric features in plan and profile as well as operational elements of transportation engineering. Research results at all objects include one measurement period − 2021.

Based on real measurement data, especially of the geometric parameter of cant h (superelevation, position of the track in the cross-section) obtained during real exploitation, movement resistances on curvilinear segments have been specified f_{rad}, especially curves taking into account their existing condition. Research was conducted separately for each research object, taking into account: maximum speeds V_{max}, radii of curves R, construction standards of the railroad superstructure and the actual state of the cant parameter h. Many research studies propose different approaches for determining resistance in curves, but they do not directly take into account the real cant parameter. This parameter is included in the equation Астахова, on the basis of which the research in this study was continued. In general, literature reviews aim to map, consolidate, and analyse a particular research area and find gaps to fill in to expand further the current information base [14, 15]. This study further the current information base and gives the answer that the resistance in a curve (curve resintance) is greater the smaller the radius of the curve. The values of local resistance particularly correspond in curves that are componaud curves. In addition, the value of local resistance in a curve depends on the curve radius, train speed, real cant of the track, construction standards of the railway superstructure, among other factors – which were taken into account in this research. The realized research proves that the resistance of rail vehicle movement on CWR_s curves is an integral element in the application of synergy effects in the optimization of CWR geometry monitoring shaped by operational processes. A new indicator is also defined *Max $_{diff\ jump}$ f_{rad}* – the maximum jump of the difference in the relative value of the movement resistance forces during a curve. This indicator complements the monitoring of rail vehicle resistance to movement on CWR_s curves.

The conducted research on real objects has been implemented in practical life, bringing an additional component used in the analysis and evaluation of stability state prediction of CWR_s on curvilinear segments. Extensive research results allow to complete CWR_s monitoring procedures, with results that complement existing procedures. The article was prepared under the research subvention of AGH University of Science and Technology No. 16.16.150.545 in 2022.

2. METHODS AND APPLIED MATERIALS

In order to conduct the research movement resistances of rail vehicles on Continuous Welded Rail curves scientific research was conducted on three real objects – railway lines, including five research objects – railway tracks characterized by different geometric features in plan and profile as well as operational elements of transportation engineering (Table 1):

- Railway track no. 1 and 2 – Object no. $R_{143\_1\_1\ and\ R143\_1\_2}$, Object no. R_{143_2}

- Railway track no. 1 – Object no. R_{144_1}

- Railway track no. 1 and 2 – Object no. R_{161_1}, Object no. R_{161_2}

All research objects are conventional rail system – standard gauge (normal railway track), whose CWR_s construction standard includes type rails:

- 60E1 – Object no. $R_{143\_1\_1\ and\ R143\_1\_2}$, Object no. R_{143_2}

- UIC60 – Object no. R_{144_1}

- 60E1 – Object no. R_{161_1}, Object no. R_{161_2}

In this research a direct method was used − mobile measuring equipment using electronic self-recording track gauge TEC-1435 N2 (Fig. 1). The measurements made it possible to obtain the cant parameter h in 0.5 m measurement cycles. This parameter is the position of the track in the cross-section, which is determined by measuring the difference in height of rail tracks in one track section in the vertical plane [16]. Electronic track gauge TEC-1435 N2 also provided a record of the results of the visual inspection of the condition of the monitored railway tracks. In terms of track geometric measurements, the following were also monitored: track gauge, vertical irregularities, horizontal irregularities and road in railway kilometers (address of geometrical parameters) recorded in real time. The track gauge parameter was also used to obtain the gradient of track gauge, in turn the cant parameter was also used to obtain the twist parameter. Research results at all objects include one measurement period – spring 2021. A key parameter in the conducted scientific and research studies on movement resistances of rail vehicles on Continuous Welded Rail curves is the real cant parameter occurring on each monitored research object.

Fig. 1. Electronic self-recording track gauge TEC-1435 N2

Research was conducted separately for each research object, taking into account: maximum speeds V_{max}, curve radii R, construction standards of the railway superstructure and the real state of the cant parameter h. This parameter is included in the equation Астахова, based on which the research in this study continued. Curve resistance taking into consideration the cant parameter of the track based on Астахова is defined by equation (1) [1]:

(1)

$$f_{rad} = \frac{200}{R} + 1{,}5 \cdot \left| \frac{v^2}{R} - \frac{h}{s_{toru}} \cdot g \right|$$

where:

f_{rad}	–	relative value of the movement resistance force during driving on a curve [kG/t]
R	–	curve radius [m]
v	–	speed [m/s]
h	–	cant [mm]
s_{toru}	–	spacing/span the circles of rotation of the wheels [mm]
g	–	acceleration due to gravity $g = 9{,}80665$ [m/s^2]

The speed v in equation (1) was replaced in this study by an individual maximum speed V_{max} (speed of passenger trains) applicable to each research object. Having measurement data of each object, especially the geometric parameter of the cant h, analyses and evaluations were carried out, with the ultimate goal of specifying relative values of movement resistance forces during curved driving f_{rad} – for each research object. Thus gaining access in a broad database (of diverse research objects) to findings in movement resistances of rail vehicles on Continuous Welded Rail curves.

Table 1. Characteristics of actual and research objects

Characteristics of a curvilinear and straight segment	Kilometer [km]	Geometry of the curvilinear segment [m]	Characteristics of the research object		
			Speed [km/h]	Category of railway line	Type of railway line / movement
Research object: Object no. $R_{143\_1\_1 \text{ and } R143\_1\_2}$					
Curvilinear segment					
Transition curve	1,006.22 – 1,036.22	$L_1 = 30.00$	$V_{max} = 120$	prime	double-track, single direction
Compound curve	1,036.22 – 1,357.02	$D_1 = 282.80$ $R_1 = 1720.00$ $D_2 = 38.00$	$V_{ft} = 100$		
Transition curve	1,357.02 – 1,417.02	$R_2 = 2050.00$ $L_2 = 60.00$			
Straight segment					
Straight	1,417.02 – 2,517.02	$D_3 = 1100.00$			
Research object: Object no. R_{143_2}					
Curvilinear segment					
Transition curve	0,986.04 – 1,056.04	$L_1 = 70.00$	$V_{max} = 120$	prime	double-track, single direction
Circular curve	1,056.04 – 1,304.44	$D_1 = 248.40$ $R_1 = 1740.00$	$V_{ft} = 100$		
Transition curve	1,304.44 – 1,454.44	$L_2 = 150.00$			
Straight segment					
Straight	1,454.44 – 2,554.44	$D_2 = 1100.00$			
Research object: Object no. R_{144_1}					
Curvilinear segment					
Transition curve	14,860.00 –14,980.00	$L_1 = 120.00$	$V_{max} = 70$	prime	single-track, double direction
Circular curve	14,980.00 – 15,640.00	$D_1 = 660.00$ $R_1 = 1090.00$	$V_{ft} = 70$		
Transition curve	15,640.00 – 15,760.00	$L_2 = 120.00$			
Straight segment					
Straight	15,760.00 – 16,860.00	$D_2 = 1100.00$			
Research object: Object no. R_{161_1}					
Straight segment					
Straight	4,411.24 – 4,611.24	$D_1 = 200.00$			
Curvilinear segment					
Transition curve	4,611.24 – 4,651.24	$L_1 = 40.00$	$V_{max} = 70$	prime	double-track, single direction
Circular curve	4,651.24 – 4,707.02	$D_1 = 55.78$ $R_1 = 3300.00$	$V_{ft} = 70$		
Transition curve	4,707.02 – 4,747.02	$L_2 = 40.00$			
Straight segment					
Straight	4,747.02 – 4,847.02	$D_2 = 100.00$			
Straight	9,200.00 – 10,000.00	$D_3 = 800.00$			
Research object: Object no. R_{161_2}					
Straight segment					
Straight	4,408.69 – 4,608.69	$D_1 = 200.00$			
Curvilinear segment					
Transition curve	4,608.69 – 4,648.69	$L_1 = 40.00$	$V_{max} = 70$	prime	double-track, single direction
Circular curve	4,648.69 – 4,706.38	$D_1 = 57.69$ $R_1 = 3300.00$	$V_{ft} = 70$		
Transition curve	4,706.38 – 4,746.38	$L_2 = 40.00$			
Straight segment					
Straight	4,746.38 – 4,846.38	$D_2 = 100.00$			
Straight	9,200.00 – 10,000.00	$D_3 = 800.00$			

L_i – length of the transition curve, D_i – straight or curve length, R_i – radius, V_{max} – speed of passenger trains, V_{ft} – speed of freight trains

3. RESULT AND DISCUSSION

Continuously Welded Rails are sensitive to thermal and train loads which could destabilize the track and cause buckling [17]. There are also resistance to movement of railway vehicles on curves CWR_s defined as local resistances, that occur only on certain segments of the railway tracks. Basing on real measurement data, especially geometric parameter of cant obtained in real operation, then individual radii of curves of each research object, speed of trains, construction standards of railway track – a graphic form has been worked out movement resistances of rail vehicles on Continuous Welded Rail curves (curve resintances). The relative values of movement resistance forces during curvilinear travel are illustrated in Figure 2, including curves (Circular Curve – $C_{irc}C$, Compound Curve – $C_{omp}C$) and transition curves (TC). Each research object is characterized by:

- Compound curve   –   object no. $R_{143\_1\_1}$ and $R143\_1\_2$

- Circular curve   –   object no. R_{143_2}

- Circular curve   –   object no. R_{144_1}

- Circular curve   –   object no. R_{161_1}

- Circular curve   –   object no. R_{161_2}

The research indicates that the values of local resistance especially correspond in curves that are compound curves. In relation to which there is a more intensive course of the relative values of the movement resistances forces during the movement of the rail vehicles f_{rad} (Fig. 2a) than in the circular curves (Fig. 2b-e).

a)
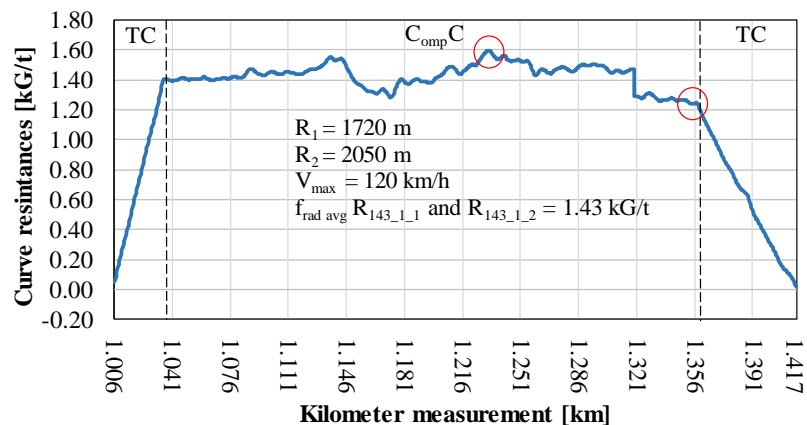
b)
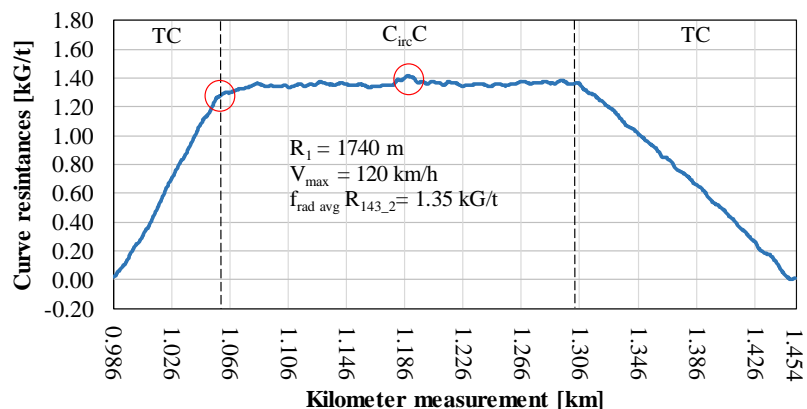
c)
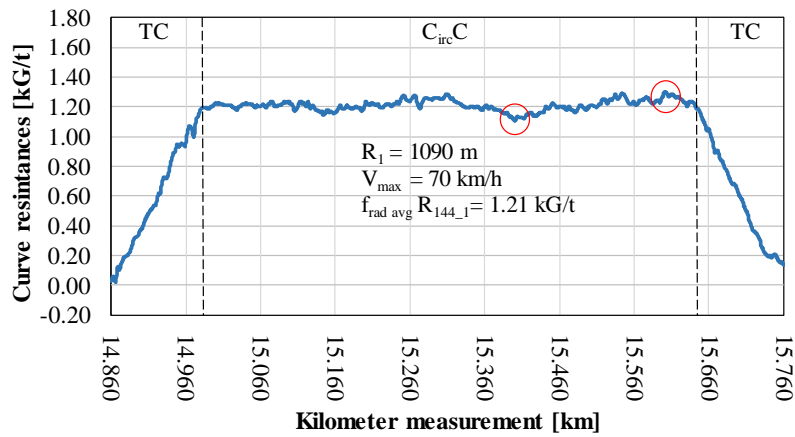
d)
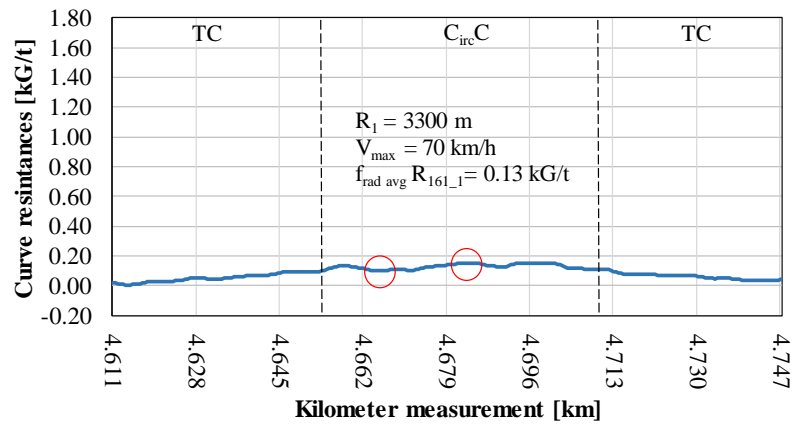
e)
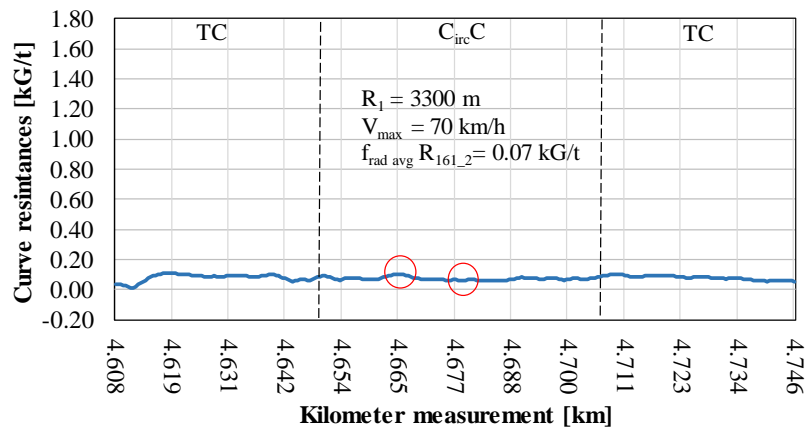
Fig. 2. Relative values of the movement resistances forces during driving on a curve f_{rad} (curve resintances): (a) Object no. $R_{143\_1\_1 \text{ and } R143\_1\_2}$; (b) Object no. R_{143_2}; (c) Object no. R_{144_1}; (d) Object no. R_{161_1}; (e) Object no. R_{161_2}, where:

$C_{irc}C$	− Circular Curve
$C_{omp}C$	− Compound Curve
TC	− Transition Curve
R_i	− curve radius
V_{max}	− speed of passenger trains, maximum speed
$f_{rad\ avg}\ R_{XXX\_X}$	− average value of the relative movement resistance force during driving on a curve [kG/t]
▬▬	− relative values of the movement resistance forces during driving on a curvilinear segment [kG/t]
◯	− minimum ($_{min}f_{rad}$) / maximum ($_{max}f_{rad}$) relative value of the movement resistance force during driving on a curve [kG/t]

Movement resistances of rail vehicles on Continuous Welded Rail curves represented by the five research objects also made it possible to define indicator **maximum jump of the difference in the relative value of the movement resistances forces during curve driving** stated in [kG/t]. This indicator is labeled as ***Max $_{diff\ jump}$ f$_{rad}$***. *Max $_{diff\ jump}$ f$_{rad}$* represents: the difference between the value of the maximum f_{rad} ($_{max}f_{rad}$) and a minimum f_{rad} ($_{min}f_{rad}$) on a monitored curve (2):

(2)

$$Max\ _{diff\ jump}f_{rad} = {}_{max}f_{rad} - {}_{min}f_{rad}$$

Especially intended in the monitoring of the resistance of the movement of rail vehicles on CWR$_s$ curves being an integral element in the application of synergy effects in the optimization of monitoring of CWR geometry shaped by operational processes as part of a new approach. Research results representing the values of *Max $_{diff\ jump}$ f$_{rad}$* of individual objects are included in Table 2. At the same time providing information on its length (*Max $_{diff\ jump}$ f$_{rad}$ length*).

Table 2. Indicator maximum jump of the difference in the relative value of the movement resistances forces during curve driving *Max $_{diff\ jump}$ f$_{rad}$*

Research objects	Type of curve	$_{max}$ f$_{rad}$ [kG/t]	$_{min}$ f$_{rad}$ [kG/t]	Max $_{diff\ jump}$ f$_{rad}$ [kG/t]	Max $_{diff\ jump}$ f$_{rad}$ length [km]
Object no. R$_{143\_1\_1}$ and R143_1_2	C$_{omp}$C	1.60	1.24	0.36	0.126
Object no. R$_{143\_2}$	C$_{irc}$C	1.42	1.26	0.16	0.131
Object no. R$_{144\_1}$	C$_{irc}$C	1.30	1.11	0.19	0.205
Object no. R$_{161\_1}$	C$_{irc}$C	0.15	0.11	0.04	0.024
Object no. R$_{161\_2}$	C$_{irc}$C	0.10	0.06	0.04	0.023

where:
C$_{irc}$C   − Circular Curve
C$_{omp}$C   − Compound Curve

Culminating value of the indicator maximum jump of the difference in the relative value of the movement resistances forces during curve driving *Max $_{diff\ jump}$ f$_{rad}$* first of all exist in Object no. R$_{143\_1\_1\ and\ R143\_1\_2}$, and its value is 0.36 [kG/t].

The direction of the research also proves that the resistance in a curve is higher the smaller the radius of the curve (Fig. 3) – taking into consideration the type of curves. This tendency is particularly illustrated by objects with radii of 3300 m relative to radii of 1090 and 1740 m. Figure 3 performs a graphical interpretation of the distribution of average movement resistance values at each curve (Fig. 3a), and on a full curvilinear segment (Fig. 3b).

a)   b)
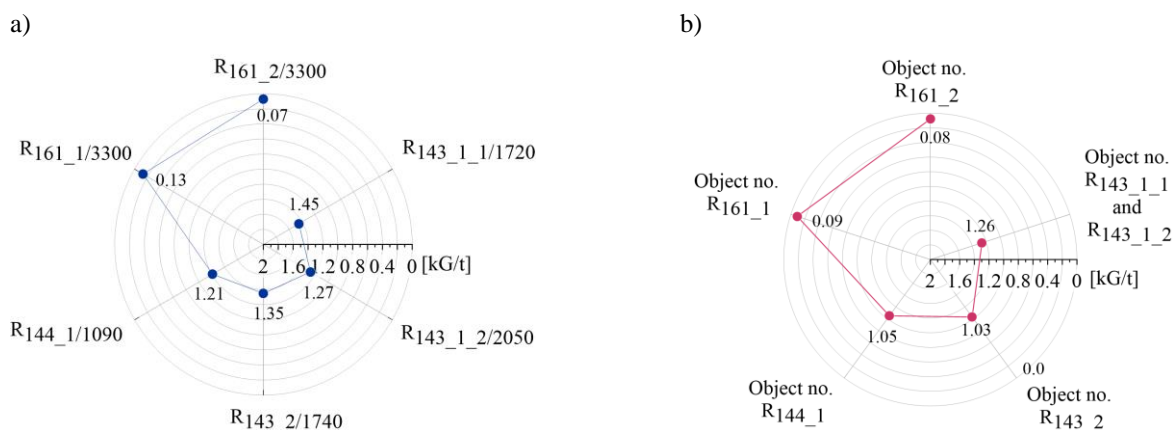
Fig. 3. Average curve resinstances: (a) on curve; (b) on curvilinear segments, where:

R$_{xxx\_x\_x/xxxx}$ – indication of the research object with information about the value of the curve radius (example: R$_{143\_1\_1/1720}$ – Radius of research object of railway line 143 in railway track no. 1, first curve, value 1720 m),

Object no. R$_{xxx\_x\_x}$ – indication of research object (example: Object no. R$_{143\_1\_1}$ – Research object of railway line 143 in railway track no. 1, first curve

          – average curve resinstances on curve [kG/t]
          – average curve resinstances on curvilinear objects [kG/t]

Many research studies propose different approaches for determining resistance in curves, but they do not directly take into account the real cant parameter. Koczorowski and Krepski in [18] conclude that "the resistance caused by centrifugal force is removed or greatly reduced by the use of so-called track cant in curves, so it can be ignored". This claim is significantly questionable, especially in terms of the research conducted. Also reflected in the quality of CWR_s maintenance. Consilvio et all. in [19] note that Continuous Welded Rail maintenance plays a significant role in ensuring high levels of rail traffic and safety. Temperature variations, excessive alignment defects, decreased fastening system resistance and train braking (always in the same stretches and in the same direction) may result in rail buckling or rail breaks. Tym samym Ahmad et al. in [20] note that it is necessary to incorporate the improved understanding of different parameters on the track stability management tool.

In conclusion, the conducted scientific-research work included in this paper has indicated, the tendency of movement resistances in the curve to increase with respect to smaller curve radius. The values of local resistance particularly correspond in curves that are compound curves. Defined new indicator maximum jump of the difference in the relative value of the movement resistances forces during curve driving $Max \ _{diff \ jump} \ f_{rad}$ is supplementary to monitoring the movement resistances of rail vehicle movement on CWR_s curves. While being integral in the application of synergy effects in optimizing the monitoring of CWR geometry shaped by operational processes as part of a new approach. The scientific and research work conducted on real research objects focused mainly on curvilinear segments, these objects also have straight segments accompanied by different issues.

4. CONCLUSIONS

The development of civil engineering and rail transportation, especially railway, tramways, and subway lines in recent decades is contributing to the increase in the use of CWR_s. Surveying and diagnostic monitoring is important to the safety of CWR exploitation. At the same time supporting industrial owners, managers and customers, reflecting the entire socio-economic environment.

Surveying and diagnostics work brings together both - from a local and global perspective - academics, researchers, end users, industry, policy makers from many countries and professional backgrounds to expand knowledge and discuss key issues. In the present research they were grounded in the themes of movement resistances of rail vehicles on Continuous Welded Rail curves.

Research has shown that:

- The movement resistances in an curve is greater the smaller the radius of the curve

- The values of local resistance correspond particularly in curves that are compound curves

- The value of local resistance in a curve depends, among others, on curve radius, speed, real cant of the track, construction standards of the railway superstructure

- Movement resistance of rail vehicle traffic on CWR_s curves is an integral element in the application of synergy effects in the optimization of CWR geometry monitoring shaped by operational processes

- Defined new indicator maximum jump of the difference in the relative value of the movement resistances forces during curve driving $Max \ _{diff \ jump} \ f_{rad}$ supplements the monitoring of the movement resistance of rail vehicles on CWR_s curves

The research results were implemented as a component in the analysis and evaluation of CWR_s stability condition prediction, contributing to the quality and safety improvement in civil engineering and rail transportation for the permanent maintenance of Continuous Welded Rails.

References

[1] Biliński, J., Błażejewski, M., Malczewska, M., Szczepiórkowska, M. (2020). Opory ruchu pojazdów szynowych na łukach. Resistance on Curve of Traction Vehicle – Empirical Equations. *TTS Technika Transportu Szynowego, 10,* 39-41.

[2] Savin, A., Suslov, O., Korolev, V., Loktev, A., Shishkina, I. (2019). Stability of the Continuous Welded Rail on Transition Sections. In Popovic, Z., Manakov, A., Breskich, V. (Eds.), *VIII International Scientific Siberian Transport Forum. TransSiberia 2019. Advances in Intelligent Systems and Computing*, vol 1115, (pp. 648-654). Cham: Springer.
DOI: https://doi.org/10.1007/978-3-030-37916-2_62

[3] Semenov, S., Mikhailov, E., Dižo, J., Blatnický, M. (2022). The Research of Running Resistance of a Railway Wagon with Various Wheel Designs. In Prentkovskis, O., Yatskiv (Jackiva), I., Skačkauskas, P., Junevičius, R., Maruschak, P. (Eds.), *TRANSBALTICA XII: Transportation Science and Technology. TRANSBALTICA 2019. Lecture Notes in Intelligent Transportation and Infrastructure,* (pp. 110-119). Cham: *Springer.*
DOI: https://doi.org/10.1007/978-3-030-94774-3_11

[4] Wu, Q., Wang, B., Spiryagin, M., Cole, C. (2020). Curving Resistance from Wheel-Rail Interface. *Vehicle System Dynamics, 60 (3),* 1018-1036.
DOI: https://doi.org/10.1080/00423114.2020.1843689

[5] Mikhailov, E., Semenov, S., Tkachenko, V., Sapronova, S. (2018). Reduction of Kinematic Resistance to Movement of the Railway Vehicles. *MATEC Web of Conferences, EDP Sciences, 235,* 00033.
DOI: https://doi.org/10.1051/matecconf/201823500033

[6] Kukulski, J., Gołębiowski, P., Pyza, D., Jachimowski, R., Wychowański, W. (2019). Selected Aspects of the Selection of Data Sent to the Vehicle in Automatic Rail Vehicle Driving Systems. *Scientific Journal of Silesian University of Technology. Series Transport*, *103,* 43-52.
DOI: https://doi.org/10.20858/sjsutst.2019.103.4

[7] Kish, A., Samavedam, G., Al-Nazer, L. (2013). Track Buckling Prevention: Theory, Safety Concepts, and Applications. U.S. Department of Transportation Federal Railroad Administration. DOT/FRA/ORD-13/16. Available online: https://railroads.dot.gov/elibrary/track-buckling-prevention-theory-safety-concepts-and-applications (accessed on 12 May 2022).

[8] Rybkin, V. V., Nastechik, N. P., Marcul, R. V. (2013). Stability Issues of the Continuous Welded Rail Tack on the Concrete Sleepers on the Curves with Radius R$\leq$ 300 m. *Sciences in Cold and Arid Regions, 5 (5)*, 654-658.
DOI: https://doi.org/10.3724/SP.J.1226.-2013.00654

[9] Cui, R., Gao, L., Ye, J., Zhang, X. (2021). Long-Term Diagnostic Technology for the Monitoring of Continuous Welded Rail on Curves in a Cold Area. *AIP Advances, 11 (7),* 075026.
DOI: https://doi.org/10.1063/5.0057460

[10] Németh, A., Fischer, S. (2021). Investigation of the Glued Insulated Rail Joints Applied to CWR Tracks. *Facta Universitatis, Series: Mechanical Engineering, 19 (4),* 681-704.
DOI: https://doi.org/10.22190/FUME210331040N

[11] Sysyn, M., Nabochenko, O., Kovalchuk, V., Przybyłowicz, M., Fischer, S. (2021). Investigation of Interlocking Effect of Crushed Stone Ballast During Dynamic Loading. *Reports in Mechanical Engineering*, *2 (1)*, 65-76.
DOI: https://doi.org/10.31181/rme200102065s

[12] Atapin, V., Bondarenko, A., Sysyn, M., Grün, D. (2022). Monitoring and Evaluation of the Lateral Stability of CWR Track. *Journal of Failure Analysis and Prevention, 22,* 319-332.
DOI: https://doi.org/10.1007/s11668-021-01307-3

[13] Mrówczyńska, M., Sztubecki, J. (2021). The Network Structure Evolutionary Optimization to Geodetic Monitoring in the Aspect of Information Entropy. *Measurement, 179,* 109369.
DOI: https://doi.org/10.1016/j.measurement.2021.109369

[14] Tranfield, D., Denyer, D., Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. *British Journal of Management, 14 (3),* 207-222.
DOI: https://doi.org/10.1111/1467-8551.00375

[15] Neila, S. B., Rejeb, A., Németh, P. (2022). The Interplay Between the Physical Internet and Logistics: A Literature Review and Future Research Directions. *Acta Technica Jaurinensis, 15 (1),* 22-35.
DOI: https://doi.org/10.14513/actatechjaur.00638

[16] Instruction for Measuring, Researching and Assessing Track Condition Id-14 (D-75). 2010. Available online: https://www.plk-sa.pl/files/public/user_upload/pdf/Akty_prawne_i_przepisy/Instrukcje/Podglad/Id-14.pdf (accessed on 6 May 2022).

[17] Miri, A., Dhanasekar, M., Thambiratnam, D., Weston, B., Chan, T. H. T. (2021). Analysis of Buckling Failure in Continuously Welded Railway Tracks. *Engineering Failure Analysis, 119,* 104989.
DOI: https://doi.org/10.1016/j.engfailanal.2020.104989

[18] Koczorowski, A., Krepski, A.: *Drogi Kolejowe*. Wydawnictwo Komunikacyjne, 1956, Warszawa.

[19] Consilvio, A., Iorani, M., Iovane, V., Sciutto, M., Sciutto, G. (2020). Real-Time Mnitoring of the Longitudinal Strain of Continuous Welded Rail for Safety Improvement. *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, 234 (10),* 1238-1252.
DOI: https://doi.org/10.1177/0954409719890166

[20] Ahmad, S. S. N., Mandal, N. K., Chattopadhyay, G. (2009). A Comparative Study of Track Buckling Parameters of Continuous Welded Rail. *Proceedings of the International Conference on Mechanical Engineering 2009 (ICME2009)* 26-28 December 2009, Dhaka, Banglades, 1-6.

Accessibility of Tourism Services for People with Reduced Mobility: Lithuanian Situation

Zita BAUŽIENĖ[a*], Aldona VOSYLIŪTĖ[b]

[a] *Kauno kolegija/University of Applied Sciences, Business Faculty, Tourism and Leisure Management Department, Pramonės pr. 20, Kaunas, Lithuania, zita.bauziene@go.kauko.lt*
[b] *Kauno kolegija/University of Applied Sciences, Business Faculty, Tourism and Leisure Management Department, Pramonės pr. 20, Kaunas, Lithuania, aldona.vosyliute@go.kauko.lt*

Abstract

This article is a theoretical overview of tourism issues in the context of reduced mobility. The concept of disability is analyzed by providing characteristics of the life of individuals with movement disorders in Lithuania. Trying to explain how the state helps the disabled to live in dignity, participate in the public sector activities and use various measures provided by it including tourism services, the Lithuanian legal framework is discussed.

Keywords: travel motivations, accessible tourism, reduced mobility

1. INTRODUCTION

The reasons why we travel are as varied as travellers themselves. Travelling plays an important part in making us feel relaxed and contented. It provides us with the possibilities to experience new things, ideas, relationships that encourage positive changes in our life and keep us alive, active and positive.

For a long time, tourists' travel motivation has been an important research topic, but researchers have not reached consensus with respect to the dimensions of tourists' travel motivations as these are very diverse and depend on different variables. As defined by Pereira et. al. (2019), travel motivation is tourists' belief about fulfilment of internal desires of travel and experience of certain attributes, which they value and culminates with them visiting a particular destination. These scientists have identified eight empirically validated factors or dimensions of travel motivation that are escape, knowledge and places, religion, economic, self-realization, safety, and physical and natural beauty. From a psychology and travel behavior research perspective, studies have shown that travel can be worthwhile for multiple reasons such as transitioning between locations, multitasking, killing time, experiencing flow states or gaining longer-term benefits such as personal growth and self-realization (Cornet et.al., 2021). The journey is future, but it is also memory, indelible trace, emotion and because of that we all indiscriminately feel the need for it and for that unexpected experience, the impact with the beauty of a place, with the sensations of an exhibition, a masterpiece, a sporting event, or a planned show (Cerutti et. al., 2020).

---

* Corresponding author.

Ng and Ho (2018) note that changes in health status may affect one's travel motivation as he or she may perceive higher travel risk and uncertainty as well as face up certain travel constraints that limit or inhibit individuals from travelling to the chosen destination.

Research problem. How are international and national documents that describe the adaptation of the physical environment and the accessibility of tourism services for persons with reduced mobility being implemented? What forms and methods are used to ensure access to available tourism services for people with reduced mobility?

The aim of the research is to identify the barriers to the accessibility of tourism services for people with reduced mobility.

Objectives:

- Based on analysis of both scientific literature and the documents of the Lithuanian legal framework, to highlight the obstacles to the accessibility of tourism services for persons with reduced mobility;

- To discuss the concept of universal design, which creates preconditions for ensuring the availability of tourism services in Lithuania for everyone.

Research methodology and methods. The study is based on the provisions of humanistic and pragmatic philosophies. The analysis of scientific literature and legal documents regulating the accessibility of the environment for the disabled was used for the research.

2. ACCESSIBLE TOURISM

"Direct and personal access by each human being to the discovery of our planet's wealth is an essential prerequisite for all citizens to be able to exercise their right to tourism" (World Tourism Organization, 2016). But what stops people from getting involved into this discovery? Ng and Ho (2018) discuss the reasons that limit or inhibit individuals from travelling and identify intrapersonal, interpersonal and structural factors associated with travel constraints: intrapersonal constraints, according to authors, include personal attributes such as health, personal ability, interest and perceived travel risk; interpersonal constraints refer to attributes such as the willingness of others to travel with the individual; structural constraints refer to external and situational factors that inhibit tourists from visiting a particular destination. The rationale for dealing with these constrains is provided in the concept of accessible tourism that has been evolving through the years and at the same time embracing more and more elements. The most recent definition of the concept providing a whole-of-life approach to tourism and explicitly illustrating the benefits of accessibility in tourism for every single person states that "accessible tourism is a form of tourism that entails strategically planned collaboration processes between stakeholders that "enable people with access requirements, including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed tourism products, services and environments." (Darcy, S. and Dickson, T., 2009 as cited in WTO, 2016).

Gondos and Nárai (2019) identify four basic elements in the requirements for accessible tourism that are information, service, mobility and experience. Information is needed to plan and implement one's vacation or trip. In the case of service, it should be recognized that people with disabilities are an equal tourist target group, but they may need individual assistance depending on the degree of their disability. Mobility is described by accessible public spaces, infrastructure and public transport, as well as accessibility to tourist attractions. Experience, according to the authors, in each destination means the livelihood of tourist services, accessible hotel and gastronomic facilities, access to tourist and leisure facilities. What is more, for accessible holidays, openness and the knowledge of guests' problems, access to basic information, and access to the entire tourist service chain are essential.

Accessibility is a pre-condition for participation in society and in the economy, and those, who contribute to facilitating travel for people with disabilities, have an exceptional cultural and business opportunity. Even though, accessible tourism is an important challenge for all European countries, due to the fact that destinations and service providers in tourism nowadays still have insufficient awareness of the importance of accessible tourism. (Cerutti et. al., 2020).

3. POPULATION CHARACTERISTICS OF PERSONS WITH REDUCED MOBILITY

According to the statistics of the Ministry of Social Security and Labour of the Republic of Lithuania, at the end of 2021, about 221 thousand persons with disabilities lived in country. Compared to 2020 (about 229 thousand people), this number decreased. The majority of people with disabilities are of working age. In 2021, there were 147 thousand people with disabilities registered in this group. Retired inhabitants constitute a significantly smaller group of 58 thousand, and the smallest part, the number of which is relatively similar in the period from 2016 to 2021 and ranges in between 14 to 15 thousand, are children. According to the data of the Department of Statistics of Lithuania, during 2017–2021 (see Table 1), the limited work capability was detected for the first time in almost a thousand cases higher for men than for women. However, in 2021, the number of cases of reduced working capacity both of men and women was lower than in 2017 (1555 cases, of which 764 cases for women and 791 cases for men).

Table 1. Number of persons of working age with limited working capability detected for the first time (Lithuanian Department of Statistics, 2022)

Year	Male and female	Male	Female
2021	10045	5613	4432
2020	9096	5124	3972
2019	10609	5941	4668
2018	11241	6224	5017
2017	11600	6404	5196

People of working age are most often considered to be disabled due to malignancies, circulatory system, connective tissue and musculoskeletal system diseases. The most severe disability is usually caused by tumours, diseases of the circulatory system, mental and behavioural disorders (Ministry of Social Security and Labour of the Republic of Lithuania, 2022).

The analysis of the number of patients registered in health care institutions by disease groups in 2016-2020 per 1 thousand population (see Table 2) revealed that diseases in the blood and hematopoietic organs and certain disorders related to immune mechanisms were more frequent among adults (from 18 years old). The highest incidence of this disease was recorded in 2020 and amounted to 34, 3 persons per 1 thousand population. In the age group up to 17 years, the cases of diseases of the blood and blood-forming organs and certain disorders related to the immune mechanism increased minimally each year.

Analysing the rates of nervous system diseases (see Table 2), it was observed that the majority of patients with these disorders are adults. The lowest number of cases was recorded in 2016 and amounted to 125.3 persons per 1 thousand population, and the highest in 2020 and amounted to 155.8 persons per 1 thousand population. In the group of children, the incidence of diseases of the nervous system decreased since 2016 and reached 23.7 persons per 1 thousand population in 2020.

The analysis of circulatory disease indicators (see Table 2) revealed that the majority of patients with these disorders are adults. The highest morbidity was recorded in 2020 and amounted to 374.6 persons per 1 thousand population. In the group of children, from 2016 to 2017, there was a minimal increase in the incidence of circulatory diseases, and from 2017 to 2020, a decrease in sickness rates was observed.

The analysis of the indicators of skin and subcutaneous diseases (see Table 2) revealed that these diseases mainly affect children; the highest number of cases was fixed in 2017 and amounted to 139.0 persons per 1 thousand population, and the lowest was recorded in 2020 and was 109.9 persons per 1 thousand population. In the group of adults, the highest incidence of skin and subcutaneous diseases was recorded in 2018 and amounted to 86.2 persons per 1 thousand population, and the lowest in 2020 and totalled 80.7 persons per 1 thousand population.

Analysing the indicators of connective tissue and musculoskeletal diseases (see Table 2), it became clear that these health disorders affect adults more often than children, but in both groups in 2016–2020 the indicators are quite high.

Analysis of the rates of congenital malformations, deformities, and chromosomal abnormalities (see Table 2) showed that the highest rates of morbidity are found in the pediatric population. The number of cases of these disorders had been decreasing since 2016, but the increase was observed in 2019 and the highest incidence of these diseases in children was recorded in 2020 and amounted to 91.6 persons per 1 thousand population. In 2016 - 2019, in the group

of adults, minimal changes in the number of cases were observed, and in 2020, 5.4 persons per 1 thousand population were registered.

Analysing the rates of injuries, poisonings and the effects of certain externalities (see Table 2), the rates were found to be quite high in both the pediatric and adult groups. The highest incidence of these health problems in children was recorded in 2019 (175.7 persons per 1 thousand population), and the lowest number (132.3 persons per 1 thousand population) in 2020. The highest incidence of these diseases in adults was also recorded in 2019 (145.2 persons per 1 thousand population), and the lowest in 2020 (130.6 persons per 1 thousand inhabitants).

It is likely that people with such health problems may also have movement disorders resulting in reduced mobility. According to the Social Report of the Ministry of Social Security and Labour 2016-2017 (2017), disability in persons of working age is most often diagnosed due to malignancies, diseases of the circulatory system, connective tissue and musculoskeletal system; in children, disability is most often recognized due to mental and behavioural disorders, congenital malformations, deformities and chromosomal abnormalities, and diseases of the nervous system.

Table 2. Number of sick persons by disease in 2016-2020 per 1 thousand population (Lithuanian Health Statistics, 2020)

		2016	2017	2018	2019	2020
Diseases of the blood and haematopoietic organs and certain disorders related to the immune mechanism	Children (under17 years)	19,8	21,0	22,0	21,1	18,7
	Adults (from 18 years old)	25,3	27,3	30,4	31,6	34,3
Diseases of the nervous system	Children (under17 years)	31,1	29,9	28,2	26,8	23,7
	Adults (from 18 years old)	125,3	129,7	128,5	131,2	155,8
Diseases of the circulatory system	Children (under17 years)	32,1	32,6	31,6	30,6	26,8
	Adults (from 18 years old)	293,1	302,3	295,8	298,1	374,6
Skin and subcutaneous tissue disorders	Children (under17 years)	137,0	139,0	138,5	131,8	109,9
	Adults (from 18 years old)	83,4	84,9	86,2	85,8	80,7
Connective tissue and musculoskeletal disorders	Children (under17 years)	103,5	101,5	98,1	97,7	90,9
	Adults (from 18 years old)	201,9	209,9	221,2	230,4	253,0
Congenital malformations, deformities and chromosomal abnormalities	Children (under17 years)	87,1	86,6	85,5	84,5	91,6
	Adults (from 18 years old)	4,5	4,3	4,5	4,8	5,4
Injuries, poisonings and certain consequences of external influences	Children (under17 years)	168,3	169,0	171,6	175,7	132,3
	Adults (from 18 years old)	138,9	137,8	140,4	145,2	130,6

The analysis of data from the Lithuanian Department of Statistics revealed that not all persons with a reduced level of working capacity (see Table 3) can go on trips for at least a week due to health, financial or other reasons. However, the data presented in the table do not describe the reasons for the reduced working capacity of persons with disabilities. They are likely to be quite varied: financial, special support measures needed due to health problems and adaptation of the environment; reliable assistants; not all routes meet the needs of people with physical disabilities; personal reasons. The data revealed that the percentage change in people unable to travel and have at least a week vacation varied between age groups, with the lowest in the 45-54 age group and the highest in the 16-29 age group.

Table 3. Percentage of persons who cannot have at least one-week vacation away from home (Lithuanian Department of Statistics, 2022)

Age/Year	2016	2017	2018	2019	2020
16–29	70.3	56.8	50.6	36.9	36.9
16–64	60.5	60	56.1	54	65.4
16 and older	63.6	62.6	60.6	58.9	54.2
25–34	58.7	59.9	37.9	28.5	24.4
35–44	62	61.4	57.5	61.6	44
45–54	59.6	58.7	61.2	61	57.7
55–64	58.6	59.2	56.2	56.6	46.9
65 and older	66.6	64.8	64.7	63.8	61.5

The data provided by the Lithuanian Department of Statistics reveal low standard of living of the disabled people, as in the 45-54 age group about 10 percent of them cannot pay utility bills due to lack of money, in the 45-64 age group about 20 percent cannot choose food they would like to consume (fish, meat or vegetarian foods), in the 45-64 age group 20 percent cannot heat their homes enough, and so on. A separate study is needed to find out the reasons, as the specifics of each disability and the needs of those with it need to be assessed.

However, it has not been possible to determine the number of people with movement disorders in Lithuania, and that it is why certain diseases and injuries that can cause mobility impairments are discussed in the article. Movement disorders can occur in individuals due to diseases of the blood and blood-forming organs and certain disorders related to the immune mechanism; diseases of the circulatory system; skin and subcutaneous diseases; connective tissue and musculoskeletal disorders; congenital malformations, deformities and chromosomal abnormalities; injuries, poisonings and certain effects of external influences, etc. Analysis of the data revealed that people with any disability do not have the opportunity to spend at least a week away from home due to reasons such as the difficult financial situation, the specifics and complexity of the disorder, etc.

4. DISCUSSION OF THE LEGAL FRAMEWORK FOR PERSONS WITH DISABILITIES IN LITHUANIA

The complexity of the concept of disability as a phenomenon lies in the fact that "... the mix of different components of the term 'disability' forms a concept itself that is shaped by a particular culture and is constantly changing", because "<…> the boundary between capability and disability is entirely contractual" (Jonutytė, Šmitienė, (2021, p. 18); the revelation of the concept of disability itself enables to know the relationship of a disabled person with his/her body and the integrity of his/her social environment. It should be emphasized that people with disabilities are forced to fight against the differences according to which they are classified. Mačiukevičius' ideas argue and contradict in a sense "<…> by abusing science, create norms according to which certain physical and mental disabilities are assessed? After all, many people, living with severe and even the most serious ailments, have a wonderfully meaningful life." (1995, pp. 62-63).

The Constitution of the Republic of Lithuania regulates the fundamental aspects of the life of the society of Lithuania. It is important to note that the most important state law legally guarantees equality for all citizens, protects their private rights and guarantees access to social security instruments and various benefits as well as other services in cases foreseen by law.

In 1991, the Law on the Social Integration of the Disabled of the Republic of Lithuania was adopted, which obliged the Lithuanian government to implement state level and local municipalities territorial medical, vocational and social rehabilitation programs for the disabled. In 2004, a new version of the law came into force, replacing the offensive concept 'invalid' and validating the term 'disabled'.

After Lithuania became a member of the United Nations (1991), the UN Convention on the Rights of Persons with Disabilities and its Optional Protocol (2006) came into force. The purpose of the UN Convention is to advocate, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by persons with disabilities, and to promote respect for their inherent dignity.

The Law on Social Services of the Republic of Lithuania (2006) states that a person with a disability may receive two main cash benefits - a social assistance disability pension and a social insurance pension for work incapacity. Targeted reimbursement of nursing or care (assistance) costs may also be applied after specialists have assessed the special needs of an adult or a child with a disability. Various benefits and compensations are also provided for the disabled. The measures described in the following documents are relevant to this study: the organization of transport, which is regulated by the Order No. A1-234 of 8 July 2008 of the Minister of Social Security and Labour of the

Republic of Lithuania "On Approval of the Description of the Procedure for Payment of Compensation for Transport Expenses" and Order No. A1-338 of 19 December 2006 of the Director of the Department of Disability Affairs under the Ministry of Social Security and Labour "On Approval of the Description of the Procedure for Compensation of Expenses" stating, that persons with disabilities who are in need of technical aids, such as wheelchairs, crutches, walkers and the like, are reimbursed for the purchase of these aids and that the aid is transferred to the disabled person for management and use on a temporary and gratuitous basis.

Order No. A1-83 of the Minister of Social Security and Labour of the Republic of Lithuania of 2 March 2018 "On Approval of the Guidelines for the Organization and Provision of Personal Assistant Services and Personal Assistant Activities" states, that a personal assistant service is assistance provided to a person that enables him or her to become independent and ensures the most important functions of the person's vital activities, such as hygiene, nutrition, movement and the like. The principle of the personal assistant's service is cooperation and the empowerment of the disabled person to act in his or her personal as well as public space.

The discussed legal framework of the country allows to state that the laws of the Republic of Lithuania provide for the full expression of the disabled by satisfying their special needs, enabling them to be equal residents through social services, various means and / or financial benefits.

5. UNIVERSAL DESIGN AS A PREMISE OF ACCESSIBILITY FOR ALL

The concept of accessibility in a broad sense allows to mark fair and equal opportunities for all people to access various places, and, regardless of their physical condition, disability, gender, orientation, age or race to use provided services independently without the help of other people. In other words, it is a set of circumstances that enables to create situations in which all people can use infrastructure, services, facilities, engage in activities independently, safely and comfortably, without experiencing any discrimination (Perkumienė et. al., 2021).

Therefore, one of the measures, which reduces or enables the removal of barriers faced by people with disabilities and plays an important role in ensuring the participation of them in society is universal design (physical environment, information and services, etc.); it is an instrument and an essential condition for guaranteeing fundamental human rights and freedoms. For the development of universal design, the importance of general principles of accessibility of services and suitability of products for all consumers, regardless of their functional abilities is emphasized; information, regarding them, is provided on the website of the Department of Disability Affairs under the Ministry of Social Security and Labour of Lithuania (2022):

- *equality for all*; i.e., that all persons, regardless of their functional abilities, have access to and are able to use the same environment and products;

- *flexibility*; possibility to adapt various environmental objects according to the individual needs (e.g., height adjustment);

- *simplicity*; i.e., certain tools that are easy, clear and simple to use; an environment that is simple to navigate in;

- *informativeness*; the information is provided in a clear, simple and appropriate form;

- *tolerance for errors*; various means and methods are used to prevent humiliation of the person;

- *the lowest consumption of physical efforts;* the aim is to make objects and various devices in the environment accessible to people with reduced physical strength;

- *optimal size and space*; the aim is to make the width, height and size of the various spaces, buildings, products, appliances suitable for all environments.

These principles are the premise of universal design. Its implementation does not focus on the individual needs of the members of society, but on the whole spectrum of unique needs; this makes it possible to ensure the comfort and accessibility of the environment for each individual, regardless of his or her physical condition, functional abilities or other characteristics.

6. CONCLUSIONS

Reduced mobility can be the result of various reasons, such as congenital defects, illnesses, or health problems caused by accidents. Disability affects a person's entire life in physical, emotional and psychological terms and significantly impacts his or her lifestyle. In Lithuania, people with disabilities experience financial difficulties due to limited opportunities for them and their relatives to enter the labour market. This results in their reduced access to tourism services. The discussed Lithuanian legal framework allows to state, that the position of the state with regard to the disabled in order to ensure their full participation in public life, access to various services, meeting the needs of self-expression and using leisure opportunities provided by tourism sector, is favourable. The financial incentives, various compensations and technical measures provided by the state are very important. One of the most important tools to empower a person with a disability is the service of a personal assistant. The basis of this service is cooperation with the disabled in order to engage them into the public life.

The concept of universal design is one of the significant means in the set of the state activities. It enables the creation of appropriate and comfortable conditions for all individuals, considering the unique needs of everybody by creating a whole spectrum of services, facilities and spaces suitable for absolutely everyone.

References

[1] Cerutti, S., Falco, S., Trono, A. (2020). Europe without barriers: accessible tourism between places and projects. *J – READING Journal of Research and Didactics in Geography,* 115 – 127. DOI: 10.4458/3099-11.

[2] Cornet, Y., Lugano, G., Georgouli, C., Milakis, D. (2021). Worthwhile travel time: a conceptual framework of the perceived value of enjoyment, productivity and fitness while travelling. *Transport Reviews.* DOI: 10.1080/01441647.2021.1983067.

[3] Dėl asmeninio asistento paslaugų organizavimo ir teikimo bei asmeninio asistento veiklos gairių patvirtinimo: Lietuvos Respublikos socialinės apsaugos ir darbo ministras. 2018 m. kovo 2 d. Nr. A1-83. *TAR,* 2018-03-05, Nr. 3526. https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/0a88667220b911e88a05839ea3846d8e?jfwid=q8i88lp51

[4] Dėl transporto išlaidų kompensacijų mokėjimo tvarkos aprašo patvirtinimo: Lietuvos Respublikos socialinės apsaugos ir darbo ministro įsakymas. 2008 m. liepos 8 d. Nr. A1-234. (2019). Suvestinė redakcija nuo 2019-01-01. https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.324439/asr

[5] Dėl neįgaliųjų aprūpinimo techninės pagalbos priemonėmis ir šių priemonių įsigijimo išlaidų kompensavimo tvarkos aprašo patvirtinimo Lietuvos Respublikos socialinės apsaugos ir darbo ministras. 2006 m. gruodžio 19 d. Nr. A1-338. (2022). Suvestinė redakcija nuo 2022-02-01. https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.289658/asr

[6] Gondos, B. and Nárai, M. (2019). The opportunities in accessible tourism. *The USV Annals of Economic and Public Administration.* Volume 19, Issue 1 (29), 48 – 57.

[7] Jungtinių Tautų neįgaliųjų teisių konvencija ir jos Fakultatyvus protokolas. 2006 m. gruodžio 13 d. *Valstybės žinios,* 2010-06-19, Nr. 71-3561. https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.335882

[8] Jonutytė, J., Šmitienė, G. (2021). Gyvatės kojos. Negalios pasakojimai gyvenimo pasakojimuose. Negalios samprata gyvenimo pasakojimuose. Lietuvų literatūros institutas.

[9] Lietuvos Respublikos invalidų socialinės integracijos įstatymo pakeitimo įstatymas. 2004 m. gegužės 11 d. Nr. IX-2228. *Valstybinės žinios,* 2004-05-22, Nr. 83-2983. https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.233791

[10] Lietuvos Respublikos paslaugų įstatymas: 2009 m. gruodžio 15 d. Nr. XI-570. (2017). Suvestinė redakcija nuo 2007-07-01. https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.361342/asr

[11] Lietuvos Respublikos Konstitucija. 1992 m. spalio 25 d. piliečių referendumas. *Lietuvos aidas*, 1992-11-10, Nr. 220-0. (2019). Suvestinė redakcija nuo 2019-09-01. https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.1890

[12] Lietuvos statistikos departamentas. (2022). Prieiga per internetą: https://osp.stat.gov.lt/statistiniu-rodikliu-analize#/ (žiūrėta: 2022-04-12).

[13] Lietuvos sveikatos apsaugos ministerija ir Higienos instituto Sveikatos informacijos centras. (2021). *Lietuvos sveikatos statistika/Health Statistics of Lithuania.* https://hi.lt/uploads/pdf/leidiniai/Statistikos/LT_sveik_stat_health/la_2020.pdf

[14] Mačiukevičius J. (1995). Laiškai mirusiai motinai. Vilnius: Vaiva.

[15] Ng, B., Ho, G. (2018). An integrated cognitive perspective of travel motivation and repeated travel behaviour. *Ann Cogn Sci,* 2(1), 60-68. DOI: 10.36959/447/341.

[16[Neįgaliųjų reikalų departamento prie Lietuvos socialinės apsaugos ir darbo ministerijos internetinė svetainė. (2022). https://www.ndt.lt/universalus-dizainas/

[17] Pereira, V., Gupta, J. J., Husain, S. (2019). Impact of travel motivation on tourist's attitude toward destination: evidence of mediating effect of destination image. *Journal of Hospitality & Tourism Research,* Vol. XX, No. X, 1–26. DOI: 10.1177/1096348019887528.

[18] Švagždienė, B., Perkumienė, D., Dagytė, R. (2021). Prieinamo turismo neįgaliesiems su judėjimo negalia vertinimas: patirtis ir galimos kliūtys. *Viešoji politika ir administravimas*, Vol. 20, Nr. 3, p. 382-396. file:///C:/Users/User/Downloads/27510-Article%20Text-102436-1-10-20210928%20(2).pdf

[19] World Tourism Organization (2016), *Manual on Accessible Tourism for All: Principles, Tools and Best Practices – Module I: Accessible Tourism – Definition and Context,* UNWTO, Madrid.

Characteristics of Leadership in Sport and Sports Organizations

Ivan ANASTASOVSKI[a*]

[a] University St. Cyril and Methodius Faculty of Physical Education, Sport and Health, Dimche Mircev 3, Skopje, Macedonia, email:prof.anastasovski@gmail.com

Abstract

In recent years, we have witnessed that the world is experiencing a serious global economic and health crisis (Covid19) which quite understandably actively reflects on sports, especially in the functioning of sports organizations and that it has led to a crisis in leadership in sport and sports organizations from taking risk aspect. For years, we have been actively working on the development of sports management as a segment that will clearly and precisely direct the competent institutions to focus on sport and sports organizations by building leaders through their level of education in sports, as well as continuous training and education of potential leaders in sports. The analysis of the importance of leadership in sports and sports organizations in these conditions will enable the study of ways to improve the organization with the resources available to them. Leadership in sport and sports organizations means taking responsibility for changing the cooperative relationship in the institution as evidenced by the closer relationship between employees' personal trust in important decisions made by the leader, and customer loyalty. As a conclusion in this exert work it can be that leadership is a very important thing from the aspect of sport and sports organizations, because not everyone can be a leader, guide and responsible in managing a sports organization. Finally, the skill of the sports leader is an important factor that brings sports organizations on the path to the top and success.

Keywords: Leadership, Sport, Sports organisation, Sports mangement

1. INTRODUCTION

In recent years, we have been witnessed that the world is experiencing a serious global economic and health crisis (Covid19) which quite understandably actively reflects on sport, especially in the functioning part of sports organizations and that it has led to a crisis in leadership in sport and sports organizations from taking risk aspect.

Additionally, the current crisis the Pandemic Covid19 is a new reality in our lives, but this is not only a health crisis, but also an economic crisis one with a serious social character that is difficult to reflect on the sports sector, where management faces the challenge of optimizing scarce resources. The aim of this study was to determine the characteristics and values of leadership in sport and sports organizations.

The success in sport or sports organization largely depends on the quality of leadership and sports management. The ability to lead people and processes in sport is a kind of guarantee that any challenges and situations that the sports organization will go through will be overcome in the wisest and most efficient way.

The importance of a sports leader is seen in knowing how to motivate and encourage his co-workers in the sports organization in order to influence the contribution of people in the sports (company) organization.

---

* Corresponding author.

2. LEADERSHIP IN SPORT AND SPORTS ORGANIZATIONS

1.1.   General definition and purpose

The word leadership in the literal sense of the word means management, but in the most general sense leadership means a process in which individuals lead a group of people, directing and motivating them to perform certain tasks. The purpose of leadership is to give meaning to what people do, ie. their directions as well as setting priorities and assigning responsibility for performing tasks. Motivation means giving individuals opportunities to do everything within their knowledge and abilities.

Leadership is associated with change because it acts as an activity when changes in the environment occur and when there is a need to respond quickly and adapt to those changes, and for that purpose a leader who has a vision and is able to take risks to realize his vision.

Leadership is a process that takes place between the leader and the employees, which means that leadership involves collective activities because a person appears as a leader who has his followers (in business it is the employees).

Author (Celma, 2008) confirms that the generation of change witnessed in the past few years in the public administration and more specifically in the sports sector, arises from the various forms of management and models they adopted in response to the essential need to adapt the organization and its services to quality required by citizens in terms of physical activity and sport[1]. The author also points out three important elements in the management of sport and sports organizations. They are:

1. **Active (A)** they are: participants, users, entities & associations,
2. **Structural (S)** that is: sports equipment & space for activity,
3. **Organizational (O)** that is: sports administration & management.
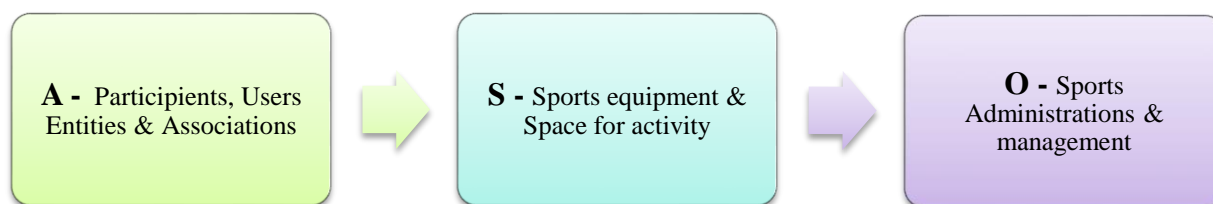
Fig. 1. Illustration three important elements in the management of sport and sports organizations

Applied sports management[2] becomes a process that requires a coordinated and interdependent effort (Mestre, 2013) on the part of the manager of some basic elements, namely:

1. The sports needs and objectives of the population (socio-demographic profile)
2. Legislation regarding sports
3. The sports manager
4. Sports organizations and their directors
5. Planning as a work method
6. Economic resources (budget)
7. Sports programs
8. The sports installation
9. The trainers
10. Ethics and values of sports
11. The environment and its protection
12. Quality

---

[1] Celma, J. (2008). La gestión deportiva local: claves de futuro en la gestión y práctica deportiva. Barcelona. Inde

[2] Mestre, J. A. (2013). Componentes de la gestión deportiva. Una aproximación. Revista de Educación Física, 2(2), 1-8.

The need to meet new challenges in a globalized world requires leaders in sports and sports organizations to embrace a complex role that involves combining continuity with innovation, based on a solid foundation of social values, ethical principles and the practice of integrating groups of professionals from different areas.

Unlike the typical traditional leadership, today new models of leadership have emerged that are much more dynamic and in step with reality. Thus, we see other types of leadership, for example, a transformational model that shows positive correlations not only between different individual variables of the leader (ethics, emotional management, knowledge building, etc.), but also with results at the organizational level (better performance, higher team satisfaction).

The theory implies two types of leadership in sport and sports organizations in today's modern global world, namely:
1. Leadership that possesses the following attributes: **abilities and behavior,** and the leader possesses: **charisma, integrity and dignity** which in turn have an impact on group processes and performance.
2. Leadership as a result of **group processes (group learning)** which facilitates the adaptation and work of the working team at different stages of development.

Leadership 1
- **abilities and behavior**
- **charisma, integrity & dignity**

Leadership 2
- **group processes (group learning)**

Fig. 2. Illustration on two types of leadership in sport and sports organization

2.2. Characteristics and values of the sports leader

In order to perform his job successfully, the sports leader should have appropriate characteristics and values that will enable him to cope with the obligations and tasks arising from his job.
1. Mental
2. Physical
3. Emotional
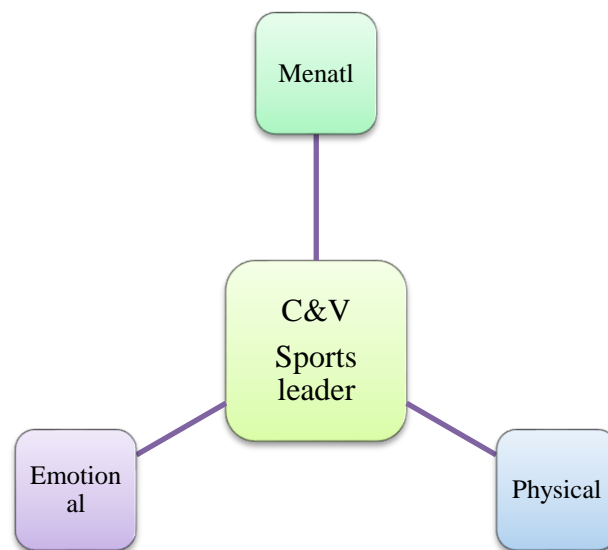
Fig. 3. Illustration of characteristics and values (C&V) on sports leader

1. Mental Characteristics (MC) of the sport leaders

a. **The will** is an inner motive that motivates sports leaders to keep working even when they are exhausted and tired.

b. **Self-discipline** in leaders comes as a result of the habit of doing the right things.

c. **Initiative** is an ability that encourages the leader to start working on his own without clear instructions.

d. **Sense of judgment** means having the ability to quickly perceive the situation, to determine what is important and to decide what should be done in sports.

e. **Self-confidence** is the belief that one is doing the right thing in every situation, even when the leader does not have all the necessary information.

f. **Intelligence** is the ability of a leader to make a good decision, as a result of a combination of professional skills learned during schooling and his own experience.

g. **Awareness of culture** means that the leader must be aware of the cultural factors possessed by the people, whose leader he is, ie to respect the culture of each person regardless of his nationality, habits, customs and tradition.
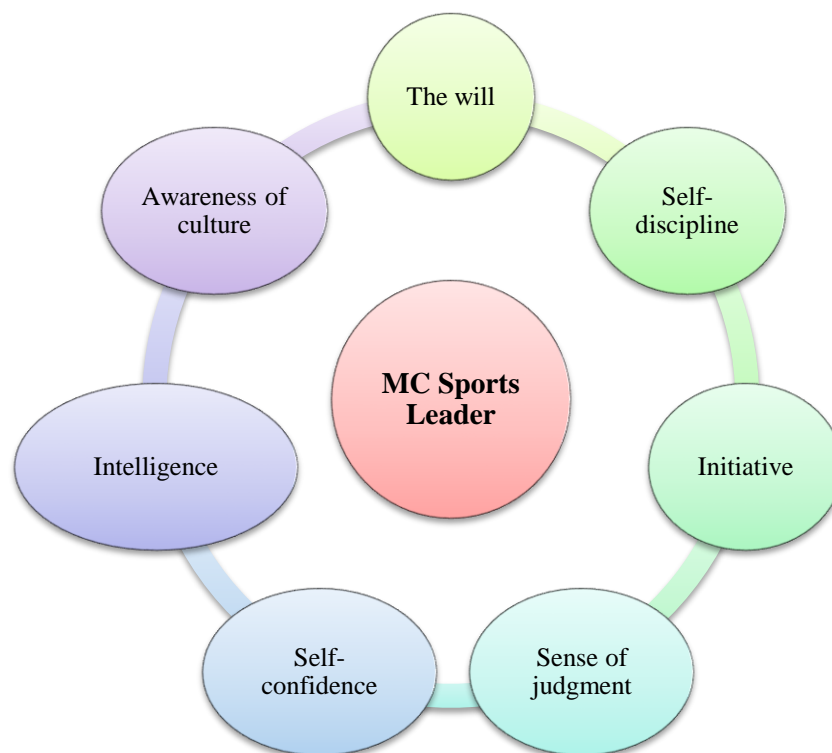
Fig. 4. Illustration on mental characteristics of the sports leader

2. Physical Characteristics (PC) of sport leaders

a. **The health condition** of a sports leader is the most important segment for maintaining good health. Things like: routine physical exercise, maintaining good hygiene, maintaining developmental standards, even personal adjustment and editing.

b. **The physical condition** of a sports leader manifests the through expressing the readiness to endure at work, both physically and mentally and emotionally.

c. **The professional behavior** of a sports leader refers to his attitude towards the job, further how he treats his work, how he experiences his duty, how he treats the employees and so on.
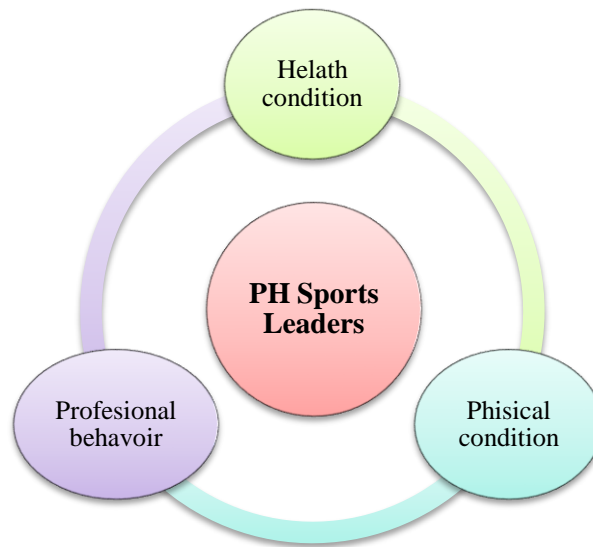
Fig. 5. Illustration on physical characteristics of sports leader

3. The Emotional Characteristics (EC) on sports leader

Emotional characteristics such as self-control, balance and stability of the person, help him to feel good and cooperate with others. The sports leader should understand that the will of others, as well as their endurance comes from their emotional energy and if he successfully uses the feedback energy from his employees he will be able to perform unexpected feats in difficult times. The sports leader should be under his own control at all times and must not allow him to be left to his own impulses.

      a.   **Self-control** inspires peace and trust in employees and inspires them to reciprocate.

      b.   **Balancing** means using one's own experience to provide subordinates with an appropriate perspective. This can be achieved by relaxing or intensifying the effort depending on the situation, without creating chaos in the organization.

      c.   **Stability** means that the sports leader is confident, calm and thinks calmly when under pressure and when facing dangers.
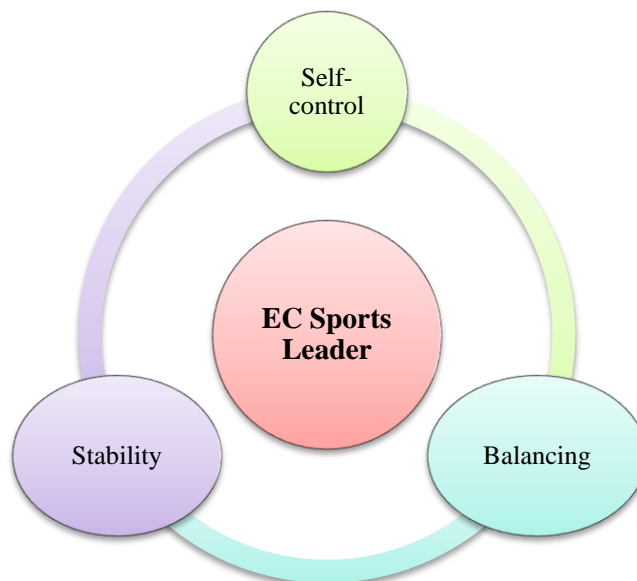
Fig. 6. Illustration on emotional characteristics on sports leader

3. CONCLUSION

As a conclusion from this professional paper it can be said that the basis of leadership in sport and sports organizations is that the sports leader knows how to use all the resources available in sport and sports organization.

1.   The sports leader is not the person who only administers and controls, on the contrary he is the person who develops and innovates in sports and sports organizations.

2.   In the midst of economic and health crisis, sports and sports organizations manage to open their own doors for successful sports management in order to generate better sports results.

3.   The fact is that the characteristics of the sports leader contribute to achieving the desired quality in sports and sports organizations and thus the daily reality is that there is greater cooperation and the meaning of the goal set by the sports leader.

4.   The sports leader from a sports point of view is a person who knows how to listen to all employees in a sports organization and who makes appropriate decisions and will better judge the future plans of the sports organization.

5.   The sports leader is the one who is in charge of making daily changes and increases the self-confidence of all employees in the sports organization.

Based on all the above, it can be concluded that leadership is a very important thing from the aspect of sport and sports organizations, because not everyone can be a leader, guide and responsible in managing a sports organization. Finally, the skill of the sports leader is an important factor that brings sports organizations on the path to the top and success.

References

[1]   Anastasovski Ivan et al. (2017). NEW CHALLENGE - GENDER STRUCTURE IN THE PROCESS OFMANAGEMENT IN SPORTS AND SPORTS ORGANIZATION IMPACT FROM LEGAL AND ECONOMIC ASPECTS, Skopje: Research in Physical Education, Sport & Health, 2017, Vol. 6 Issue 2, p9-13. 5p.

[2]   Anastasovski Ivan (2019). Commercial Sponsorship in Sports And Sports Management, Proceeding of IAC 2019 Vienna.

[3]   Celma, J. (2008). La gestión deportiva local: claves de futuro en la gestión y práctica deportiva. Barcelona. Inde

[4]   Chocar, J. S., Brodbeck, F. & House, R. J. (2007). Culture and leadership across the world. The globebook of in-depth studies of 25 societies. New Jersey: Lawrance Erlabaum Ass.

[5]   Javier Imbrola-Ortiz, Alfonso Castillo-Rodriguez & Jose Luis Chinchilla Minguet (2015). Sports Management, Leadership in the Organization, JOURNAL OF PHYSICAL EDUCATION AND SPORTS MANAGEMENT ISSN 2373-2156 (Print) 2373-2164 (Online) DOI: 10.15640/jpesm

[6]   Heames, J. T. & Harvey, M. (2006). The evolution of the executive from the 20th century manager to the 21st century global leader. Journal of Leadership and Organizational Studies, 13(2), 29-42.

[7]   Mestre, J. A. (2013). Componentes de la gestión deportiva. Una aproximación. Revista de Educación Física, 2(2), 1-8.

[8]   Morgeson, F. P., Scott, D. & Karem, E. P. (2010). Leadership in teams a functional approach to understanding leadership structures and processes. Journal of Management, 36(1), 5-39.

The Impact of Development of a Turnpike Road on Network Performance - Case Study of Mahmoudia Corridor in Alexandria

Mounir ABDEL-AAL[a], Mohamed ELNAGAR[b], Mohamed SALEH[c*]

[a] Alexandria University, Faculty of Engineering, Transportation Engineering Department, Alexandria, Egypt, Abdelaal@alexu.edu.eg.
[b] Alexandria University, Faculty of Engineering, Transportation Engineering Department, Alexandria, Egypt, naggarmo@alexu.edu.eg.
[c] Alexandria University, Faculty of Engineering, Transportation Engineering Department, Alexandria, Egypt, mohamed_saleh@alexu.edu.eg

Abstract

The redevelopment of corridor roads bring several benefits to the whole city as well as significant changes in local traffic volumes. Usually, the focus, in evaluating such projects, is on its impact on the overall network performance. The evaluation process tends to overlook the impact on the local network. The main objective of this paper is to develop a planning procedure that can be used as a tool for more effectively evaluating the impact of corridor upgrading. The proposed procedure is based on the deterministic user-optimal equilibrium assignment model. The model implementation is carried out by a computer program developed on the PYTHON program platform. The network performance is measured by mathematical statistics such as average speed and a visual representation of the expansion of the service area corresponding to a certain travel time after the execution of the proposed corridor upgrading. The model was calibrated by altering the parameters of volume delay function (VDF) with an overall %RMSE of 24%. The application of the proposed procedure to evaluate the impact of the upgrading of Mahmoudia Corridor in Alexandria proved effective through demonstrating an increase in the overall travel speed and a decrease in volume to capacity ratio (V/C). In spite of the less-than-great overall network improvement due to Mahmoudia upgrading, the major impact on the local network especially along the corridor centerline is evident. The evaluation process combines the magnitude of and the extent of local changes in terms of measuring both aggregate impact power and local propagation range of that changes**.**

Keywords: Deterministic user-optimal equilibrium assignment model; volume delay function; volume to capacity ratio

1. INTRODUCTION

During recent decades the travel demand has enormously increased. This is a consequence of several factors, the most significant of which is fast population growth as well as the development of industrial and economic activities. The transportation system is very complex and relies on decisions taken at several levels of society of which the aims and objectives may conflict. Indeed, the evaluation of proposed projects is considered a very critical transportation planning phase. Usually, conventional planning focuses on the impact of each project on the overall network performance in evaluating and selecting projects. The evaluation process tends to overlook the impact on the local network performance. A more comprehensive study including the evaluation of the effect on the local network performance increases the range of potential solutions to transportation problems and helps to prioritize and rank the suggested projects.

Construction and development of corridor roads bring several socioeconomic benefits to the people of the project surrounding area as well as a significant change in local traffic volumes and travel times, which are the most effective measures of performance (MOPs).

---

* Corresponding author.

[1] * Corresponding author : mohamed_saleh@alexu.edu.eg

Estimating average network travel time information is very important for measuring the performance of the network. However, local changes in traffic volumes can be used for evaluating any project. The purpose of this paper is to develop a planning procedure for evaluating the impact of turnpike development on both the overall network and local network performances. A trip assignment model is developed using the PYTHON programming platform. The model is based on the deterministic user-optimal equilibrium assignment technique. The developed program is to be applied on the Alexandria city (Egypt) network to evaluate the impact of the improvement of the Mahmoudia corridor.

2. LITERATURE REVIEW AND BACKGROUND

2.1 Equilibrium Trip Assignment Model.

The trip assignment model is the final step in the traditional four sequential steps of forecasting future travel demand, which determines how much traffic flow can be expected in addition to the corresponding travel costs or times on each link of the studied network. Traffic assignment methods can be split into two types. Static traffic assignment methods (STA) and dynamic traffic assignment methods (DTA). Although the focus of research in the trip assignment is shifting towards the dynamic assignment, static assignment is still the preferred tool for strategic transportation planning due to its simplicity and computation efficiency. In addition, it is capable of handling large networks, not only for estimating traffic demands on specific networks but also for transportation planning and demand management policies decisions including infrastructure investment.

Although system equilibrium seems to be an attractive principle to adopt, the user equilibrium principle, proposed by Wardrop in 1952 [1], is always accepted as a standard objective in a successful traffic assignment method. Being a deterministic method, the user equilibrium principle considers that all users make consistently perfect decisions assuming that motorists are identical and infallible individuals. This is undoubtedly not true but seems not to matter for heavily congested networks as in this case simple disturbances from the user equilibrium flow pattern result in such large route time differences that most of the users notice them. Consequently, flow patterns very different from the user equilibrium pattern cannot be stable in a congested network.

In traffic networks studies typically average travel times are modeled as positive, increasing flow functions called Volume Delay Function (VDF). Generally, the most common VDF is the Bureau of Public Roads (BPR) function [2], which is given as:

$$t_a = t^o_a \left[1 + \alpha \left(V_a/c_{p_a}\right)^\beta\right] \tag{1}$$

Where t^o_a : is the free-flow travel time of the link (a), V_a is traffic flow on the link (a), c_{p_a} is the practical capacity of the link (a), which is defined as the flow from which the free-flow travel time will increase by the percentage of the value α [3]. The parameters α and β are two parameters for which the BPR engineers suggested values of 0.15 and 4, respectively. The capacity variable used in planning travel demand model networks is not necessarily the same as the "capacity" sense in traffic engineering. In early travel models, the capacity variable used in such VDF such as the BPR function represented the volume at Level of Service (LOS) C, which is traditionally assumed to be 70% of the ultimate capacity, which corresponds to (LOS E); whereas, in traffic engineering, the term "capacity" traditionally referred to the volume at LOS E. The BPR's parameters should be estimated accurately for each facility type to bring accurate results of the network assignment. The capacity value for the BPR function is taken as a constant value in almost all studies in the literature, as defined by the mid-block capacity in the Highway Capacity Manual (HCM) [4].

2.2 Solution Algorithms.

Generally determining the shortest paths between some given origin-destination pairs in a certain network is a very important step in the trip assignment model, especially in large networks. Therefore, transportation planners need highly flexible and effective shortest path algorithms. Dijkstra algorithm [5], is adopted in the proposed model, which is considered the most widely used in transportation networks. The deterministic user optimal equilibrium is a nonlinear problem. It is carried out using Frank-Wolfe algorithm [6], which is a convex, quadratic optimization problem solution using an iterative procedure.

2.3 Previous Work

It is the most concern of the transportation planner to know how the road network will operate under traffic. The concept of levels of service (LOS) uses measures to describe the operational conditions along a traffic stream. Parameters are selected to define (LOS) such as travel times, speeds, total delay, comfort, and safety. There are two methods used for the performance evaluation of urban street networks. The first method is known as the average travel speed method which determines the LOS of urban streets based on the Average Travel Speed (ATS). On the other hand, the second method is known as the probability method [7]. This method uses cumulative probability that an individual link will has LOS "J" or worse, based on which the LOS model and the link LOS grade is determined

For objective evaluation of road network traffic performance, it is necessary to develop an effective performance evaluation index method. This is the impact of proposed traffic congestion-relieving projects that may be evaluated using an index system. The traffic performance evaluation index system could contain several indices, which could be mainly divided into the comprehensive and the characteristic indices. The comprehensive indices are designed to describe the extent, intensity, and duration of traffic congestion as well as recurrent road bottlenecks. The characteristic indices are set to describe both road traffic operation and intersection traffic operation [8].

The outcomes of a turnpike upgrading in a major urban area are difficult to predict. However, the impacts of such an improvement can be evaluated by comparing traffic and other parameters before and after the upgrade of the studied turnpike. Some recent studies tried to suggest several ways for performance evaluation. In 2008, Huimin et al used a set of congestion indices for performance analysis of the road network of Beijing during the Olympic Games [8]. In 2011, an empirical evaluation of the relationship between operational performance and platooning phenomenon in rural two-lane roads in Egypt was proposed [9]. In 2019, Brennan et al have been proposed that any increase in travel time characteristic in regional networks can be quantified temporally and spatially by establishing a base travel time for all roadway segments in a region and can be used to characterize and visualize the interdependence of congestion impacts across regions and roadway types [10].

The calibration of the traffic assignment model is a very important step and it is the final calibration of the complete travel demand model set. Calibration is an iterative process consisting of consecutive trials and errors. If the measures predicted by the model are not sufficiently close to the observed measures for the base year, one or more of the following elements must be modified: base-year OD matrix, network representation, assignment technique, and link-performance function. Two measures can be computed; the correlation coefficient and the Percent Root Mean Square of the Error(%RMSE). The Montana Department of Transportation (MDT) suggested that an appropriate aggregate %RMSE less than 30% is sufficient [11].

3. STUDY AREA

Alexandria is one of the largest cities located in North Egypt. It is a coastal city on the Meditteranean sea with a total area of almost 2818 km2, and the urban area is about 400 km2(14 % of the total area) with a population of about 5.46 million inhabitants according to the latest CAPMAS estimation 2021 [12]. Alexandria is characterized by its very high residential density with a maximum of about 68 thousand inhabitants per square kilometer in some areas in the city [13]. The densely-populated urban area is serviced with a limited number of narrow streets. According to World Population Review, Alexandria is expected to grow from 5.46 million to 6.41 million by 2030 (17.3% population growth rate) putting pressure on the transportation system of the city. The research study area is the entire city of Alexandria focusing on the city center surrounding the Mahmoudia corridor for results analysis.

4. DATA PREPARATION

In this research, Alexandria's network will be the case study. The O/D matrix of Alexandria will be assigned on a simplified network of the city and changes of the network link volumes will be evaluated. The use of research work involves five fundamental elements:

(1) Preparing the network.

(2) Preparing the O/D demand matrix.

(3) Identifying a traffic-assignment technique and the assignment tool that will be used.

(4) Calibrating and validating a model.

(5) Forecasting.

4.1 Network Preparation

A network transportation analysis, within the environment of Geographic Information Systems (GIS), has now become a common practice in many application areas. OpenStreetMaps (OSM) is one of the best crowd-sourced data of geographical data (road networks and public transportation systems) [14]. It makes road networks available in a suitable format to conduct proper graph studies. In order to prepare the network which is used in this study, a street network of the Alexandria region is downloaded from (OSM) in a shapefile format (.shp) format. Then, the network physical details were derived from satellite images, and site visits. The network is defined by links (roads) and nodes (intersections) in the macro link-node representation method, where a single node represents an intersection. This type of representation is usually used for system planning studies where it is considered sufficient in view of the study purpose and the size of network. The OSM network consists of 76,045 nodes and 54,482 links with a total length of 14,557 km. For the sake of simplicity, local residential streets with lower traffic volume are deleted. Coupled with the centroid connectors, which replace the residential streets, the remaining links are considered adequate for the purpose of the study. The simplification reduced the network of Alexandria to 4,850 nodes and 9,484 links with a total length of 3,144 km.

The (OSM) file can be used with the commercial software package ArcGIS. Two main problems appeared during preparing the network for the analysis. The first problem is the need to reclassify the network roads in an accurate classification based on the actual characteristics of the roads. The second is to complete the missing attributes for each link of the network such as length, free-flow speed, number of lanes, practical capacity c_p, and the VDF parameters, which are essential for trip assignment.

The road classification of the OSM network file is not suitable for the analysis. Therefore a new classification of the modified network roads was applied. The Link Role (Regional, District, and Local) and the Function criteria (Mobility, Accessibility, and Connectivity) used in the OSM network are replaced by the new classification of Freeway, Arterial, Collector, and Local (Residential). Freeway is the class assigned for the roads which provide uninterrupted flow and have high-speed limits with full control of access and two or more lanes in each direction [15]. Arterial streets are roads that primarily serve longer through trips. Collector streets provide both land access and traffic circulation within residential, commercial, and industrial areas. Their access function is more important than that of arterials, and unlike arterials, their operation is not always dominated by traffic signals. Local streets provide land access. In order to assign network links to these classes, the Highway Capacity Manual (HCM2000)[15] is used to determine the appropriate urban street class on the basis of a combination of functional category and design category. **Figure 1** shows the simplified and reclassified network of the city of Alexandria.
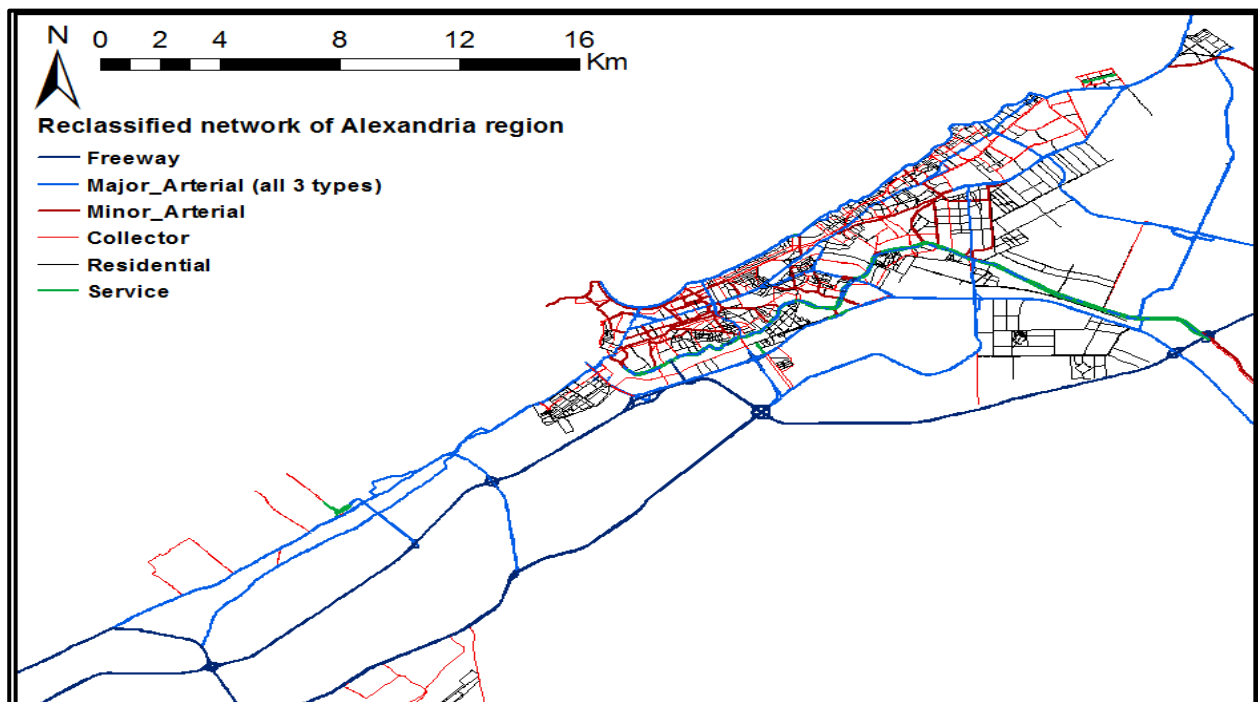

Fig. 1:The simplified reclassified network of the Alexandria region.

In addition to distance, speed, and capacity, the three fundamental items needed by the rip assignment model, link type, area type, and intersection control type indicator are also included to represent different speed and/ or capacity associated with the links. The HCM 2000 was used to determine the ultimate lane capacities that correspond to LOS E and the free flow speed for different road classes. The lane practical capacities are taken as 70% of the lane ultimate capacities.

Estimating the VDF parameters (α, β) for the BPR equation for each road class were estimated using required traffic count and travel time observation as a result reference. Therefore a 200-hour traffic count within the Alexandria region was conducted for 40 links of different network classes. The analysis of the data shows that α and β differ from one class to another. Based on the results from field data, the estimated values of α, β, and practical capacity (c_p) by road class, used in this study are illustrated in **Table 1**.

Table 1: The used values of α, β, and capacity ($\mathbf{c_p}$) for each class.

OID	Class	Free-flow speed(km/hr)	Alpha (α)	Beta (β)	Cp (pcu/hr/ lane)
1	Freeway	120	0.20	6.0	1150
2	Major_Arterial_1	90	0.23	5.9	730
3	Major_Arterial_2	60	0.20	5.3	720
4	Major_Arterial_3	50	0.26	3.8	550
5	Minor Arterial	40	0.29	3.1	440
6	Collector	30	0.40	3.8	340
7	Residential	20	0.40	2.0	150
8	Service	40	0.30	2.5	150

The total link practical capacity ($\mathbf{c_{p_a}}$) used in the BPR function for each class can be calculated as follows:

$$\mathbf{c_{p_a} = (c_p\ )_a * n_a * \gamma_a}$$

(2)

Where $(c_p)_a$ is the practical lane capacity of the link (a), n_a is the number of lanes of link (a), and γ_a is a reduction parameter that equals 1.0 for all links except the links of signalized intersection (approaches).The value of γ_a at signalized approaches are assumed to be 0.40 based on the assumption of two main phases with the consideration of the inter-phases lost time.

4.2 O-D Preparation.

Alexandria region is divided into 21 main administrative police districts. These 21 districts are in turn devided into 142 sections (Shiakha), which represent the internal TAZs (Traffic Analysis Zones), in addition to 4 external TAZs that represent the 4 main roads accessing the city of Alexandria. The afternoon peak hour O/D matrix that is used in this study was extracted from Alexandria Urban Transport Study 2016[16]. This O/D matrix consists of 146 Origin/Destination with total trips of 1,222,780 trip/hr and 175,325 pcu /hr by taking the PCU value of the collective taxi equal to 1.5 and the average occupancy of the private car, taxi, and collective taxi are 2, 2, and 13 respectively. For practical purposes, the number of traffic zones (Origin/Destination) is reduced. A new zoning system was set in this study which consists of a total of 78 zones as shown in **Figure 2**. Similarly, the O/D matrix is aggregated based on the 78 zone system. Using the geometric trend method, The base year O/D matrix was extrapolated to represent the target years in the years 2019 and 2020 based on the population growth rate, which is suitable for short-term analysis, according to the Central Agency for Public Mobilization and Statistics (CAPMAS)[12]. An additional percentage of 10% was added to all trips to represent the freight, emergency trips, and public transportation buses. The final design O/D matrix consists of 192,194 PCU/hr in the year 2019 and 198,138 PCU/hr in the year 2020. Centroid connectors were added to the network to connect each zone's centroid to the links of the network. Since a single centroid connector represents a set of local streets, no delay is considered for the centroid connector.
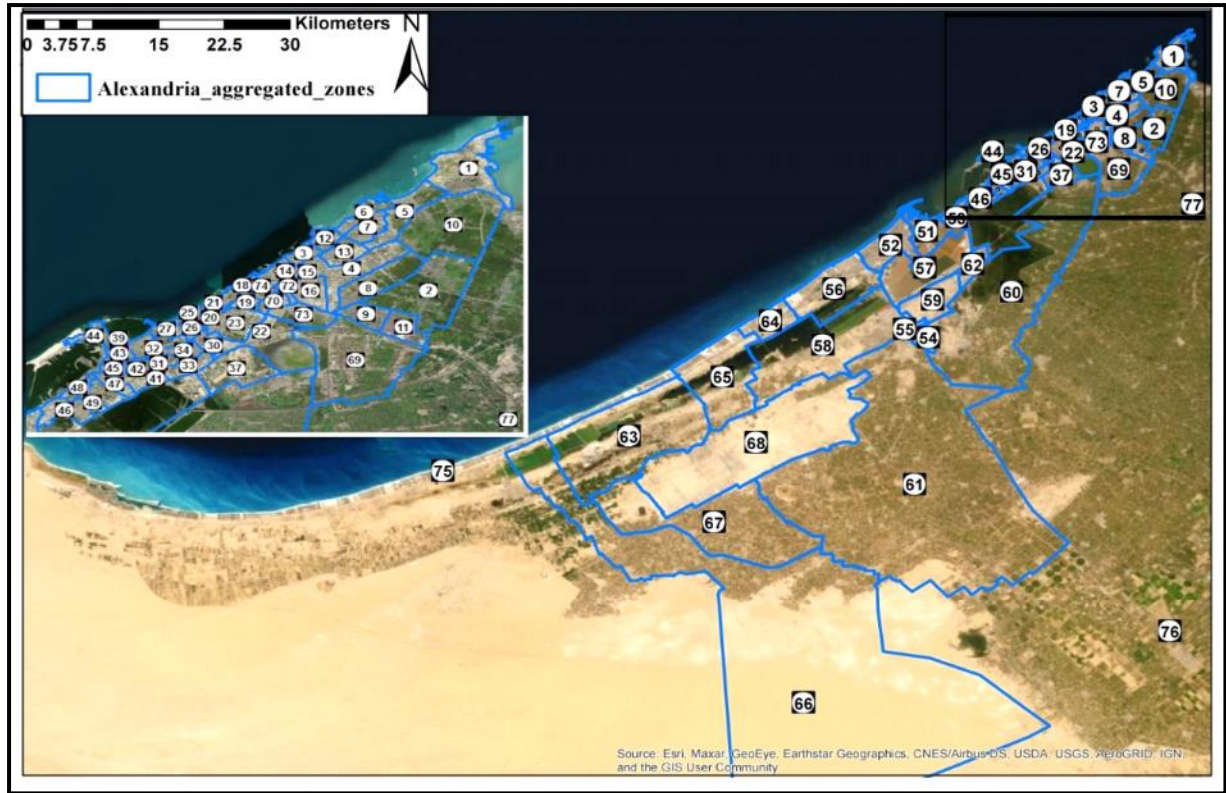
Fig. 2: Study area& zone system.

5. MODEL PREPARATION

5.1 Model Formulation.

In order to evaluate the effect of a proposed project, the travel demand has to be assigned to the network before and after the project execution. The static traffic assignment was used in this research and the deterministic user optimal equilibrium assignment technique is the most appropriate technique for this study. The equilibrium assignment problem is to find the link flows, V, that satisfy the user-equilibrium criteria when all the trips between each pair origin and destination have been allocated adequately. This link-flow pattern can be obtained by solving the following nonlinear mathematical program[17]:

$$\mathbf{Min\ z(V)} = \sum_a \int_0^{V_a} \mathbf{t_a(v)\ dv} \tag{3}$$

Subject to:

$$\sum_r \mathbf{T_{ij\,r}} = \mathbf{T_{ij}} \qquad \forall\,\mathbf{r} \in\ \mathbf{R_{ij}}\ ,\mathbf{i,j} \in \mathbf{N}$$

$$\sum_r \mathbf{T_{ij\,r}} \geq\ \mathbf{0} \qquad \forall\,\mathbf{r} \in\ \mathbf{R_{ij}}\ ,\mathbf{i,j} \in \mathbf{N}$$

$$\mathbf{V_a} = \sum_i \sum_j \sum_r \mathbf{T_{ijr}} \cdot \boldsymbol{\delta_{ij,r}^a} \qquad \forall\,\mathbf{a} \in \mathbf{A}$$

Where the network representation notation is:

V_a : flow on arc a, $\forall\,a \in A$

t_a : travel time on arc a, $\forall\,a \in A$

T_{ij} :trips between origin i and destination j , $\forall\,i, j \in N$

$T_{ij\,r}$: flow on path r connecting O-D pair i-j , $\forall\,i, j \in N$, $\forall\,r \in R_{ij}$

$\delta_{ij,r}^a$ $\begin{cases} 1,\ \text{if link a is on path r between O-D pair i-j} \\ \\ \mathbf{0,}\ \text{otherwise} \end{cases}$

The solution algorithm for solving traffic assignment problem is Frank- Wolfe's algorithm. Dijkstra's algorithm is used for finding the shortest paths for each iteration of the Frank- Wolfe's all-or-nothing traffic assignment.

5.2 Proposed Program for Trip Assignment

In this research, an Equilibrium Trip Assignment Program (ETAP) is designed to perform many operations and calculations needed through the trip assignment model. PYTHON is chosen as a programming language for this program as it contains many programming operations that can be applied to transportation models. The main outputs of the software are the at equilibrium link traffic volumes of the road network and a graphical presentation of the results that are represented in a shapefile format (.shp) file format which can be opened and presented with the commercial software package ArcGIS. Another output is the presentation of a service area (contour line) delineating the border reachable by a certain travel time for any selected point, which visually illustrates local performance improvements.

5.3 Model Calibration.

A common reasonable level of calibration of traffic assignment is the comparison of observed versus estimated traffic volumes on the network links. It is also useful to compute aggregate statistics on the validity of the traffic assignment. The percent of Root Mean Square Error (RMSE) is considered for the calibration process in this study, and can be calculated as follows:

$$\%RMSE = \frac{\sqrt{\left[\sum_j \left(Model_j - Count_j\right)^2 / (Number\ of\ Counts)\right]} * 100}{\left(\sum_j Count_j / Number\ of\ Counts\right)} \tag{4}$$

Where $Model_j$ is the traffic volumes resulting from the model on link j, $Count_j$ is the traffic volumes observed (counted) on link j. The %RMSE can be calculated for all links with counts or by facility type. The BPR's parameters (α,β) were considered the suitable calibration modifications for this study. Link traffic volumes for 130 directional links were counted from the field to be compared with the assigned volumes outputs at the calibration phase in this study. The overall %RMSE was found equal to 23.98%, and the %RMSE was calculated for all link types as shown in **Table 2.** In addition, the average observed and estimated traffic volumes for each facility type are illustrated in the same table.

Table 2: Percent Root Mean Square Error for each facility type.

Facility type	%RMSE	Observed(PCU/hr/lane)	Estimated(PCU/hr/lane)
Freeway	7.2%	369	363
Major_Arterial_1	9.8%	700	745
Major_Arterial_2	18.3%	1495	1466
Major_Arterial_3	29.1%	943	950
Minor Arterial	36.5%	823	685
Collector & Residential	39.2%	561	536

6. MAHMOUDIA ROAD PROJECT DESCRIPTION

The Mahmoudia corridor's original overall length of 21.6 km was extended by 2 km to the east to connect it with the international coastline route, increasing the whole length to about 23 km. It comprises 6 to 8 traffic lanes in each direction, versus 2 to 3 traffic lanes in each direction before the redevelopment project. In addition, a lane is allocated for buses, to serve 4 districts, namely (Al-Montazah First, East, Central, and West). In addition to the 2 km extension, the project of upgrading of Mahmoudia corridor consists of 3 parts, the first of which is the eastern section from the intersection with the International Road Bridge to the intersection with Al-Awayed Bridge, with a length of 7.4 km east of Al-Seyouf Station, and the second is the middle section from the intersection of Al-Awayed Bridge to the lake near the airport with a length of 6.4 km, while the third is the western section from the airport to the end with a length of more than 7.8 km. **Figure 3** illustrates the location of the Mahmoudia corridor on the network with two satellite images to the left of the study area before the redevelopment in 2019 and after finishing the project in 2020.
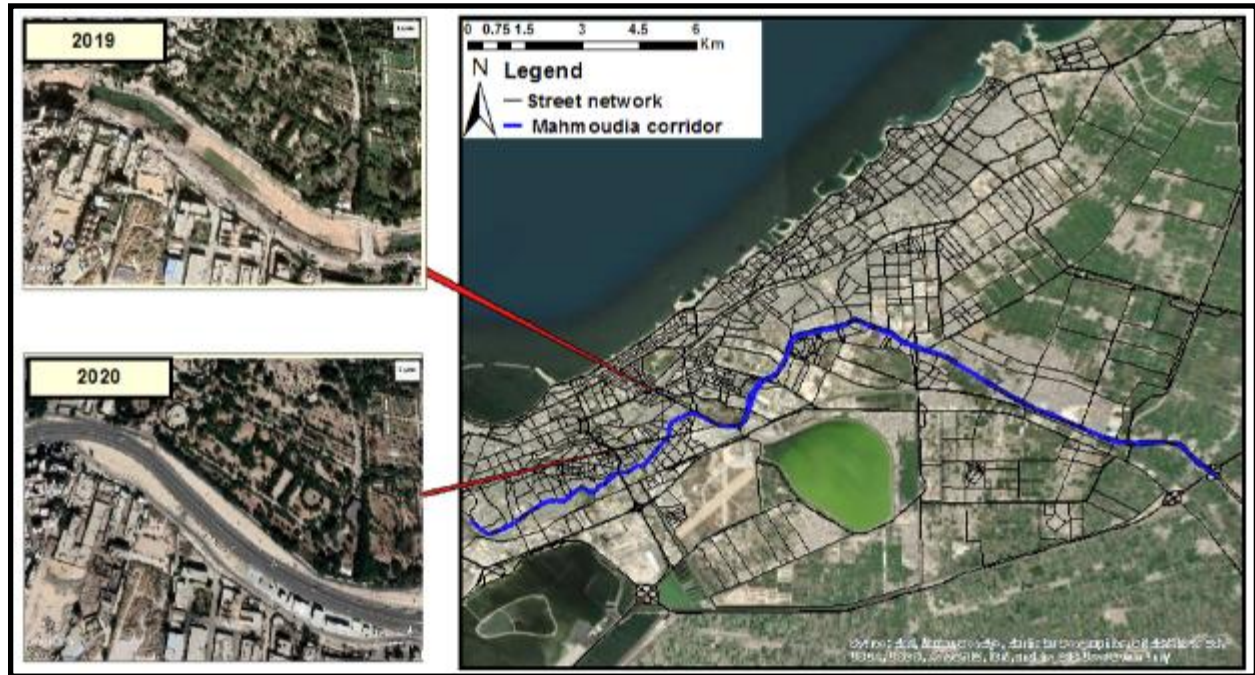
Fig. 3: Location of the Mahmoudia corridor & two satellite image of the study area in 2019 & 2020.

7. RESULTS ANALYSIS.

7.1 Overall Network Evaluation

After the calibration of the proposed model, the application of the program was carried out. This application has been performed before and after the Mahmoudia Corridor Redevelopment (MCR) using a road network of Alexandria before and after MCR by an estimated O D matrix in the years 2019 and 2020. The analysis of the model outputs shows that in the year 2020, compared with the year 2019 before the redevelopment, road network performance improved obviously. The overall average network speeds were 13.02 km/hr before MCR and became 14.82 after MCR. Consequently, the average trip time on the network decreased from 51.10 minutes before MCR to 44.90 minutes after MCR. **Figure 4** illustrates the estimated average speed for each facility type pre- redevelopment (before MCR) and after redevelopment (after MCR). The results show an increase in the average speed for all facility types of the road network after redevelopment with the highest of 25%-50% for Major Arterials. The lowest improvement of 5% is for Freeway. The only exception is a decrease in the average speed for service roads.

Figure 5 shows the volume difference on the network for before and after the redevelopment categorized by both color and width, where thicker network sections indicate higher volume differences. The blue color means a decrease in link volume and the red color means an increase in link volume after the execution of the project.

	Freeway	Major_1	Major_2	Major_3	Minor	Collector	Residential	service
Average speeds before MCR	61,64	21,35	12,90	16,63	13,81	8,82	7,76	17,33
Average speeds after MCR	64,36	31,85	18,01	20,50	16,70	9,82	8,16	16,03

Fig. 4: Average speed for each facility type before and after Mahmoudia corridor redevelopment.

It is easy to see, a part of the flow on El Geish Road, and Gamal Abd Al Naser Street, the main arterials connecting the East to the west of the city of Alexandria, transferred to the upgraded Mahmoudia corridor resulting in a decrease in travel time on these arterials. Although the traffic volume on the Mahmoudia corridor increased significantly, the corridor's speed was relatively high as a direct result of its capacity increase.

Regarding volume to capacity ratio (V/C), the analysis of the road network shows that the average (V/C) ratio on the road network in the year 2020 decreased from 0.84 before MCR to 0.80 after MCR. Moreover, the results show a decrease in the average (V/C) ratio for each 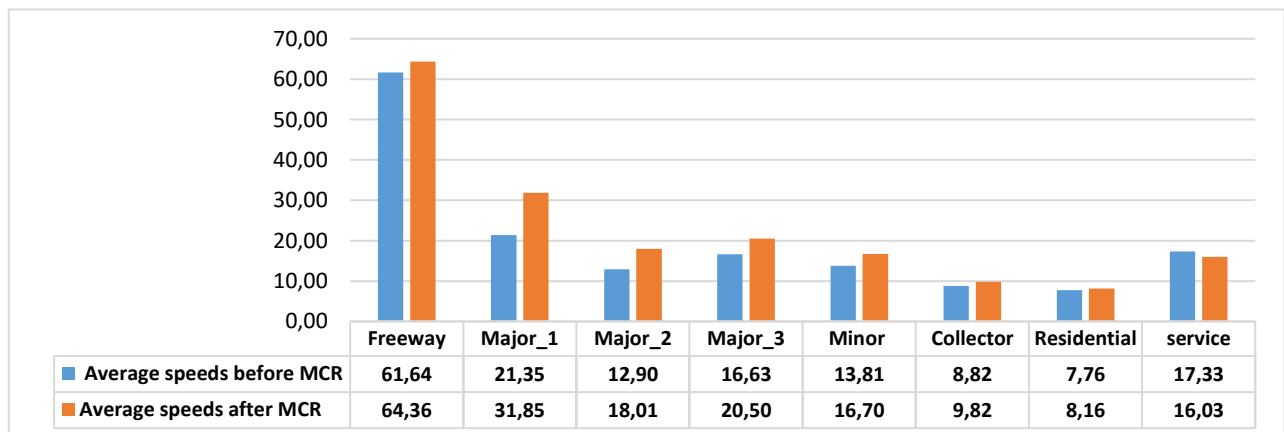facility type of the road network after redevelopment except for service roads, which have a higher value of (V/C) after MCR as shown in **Figure 6**.
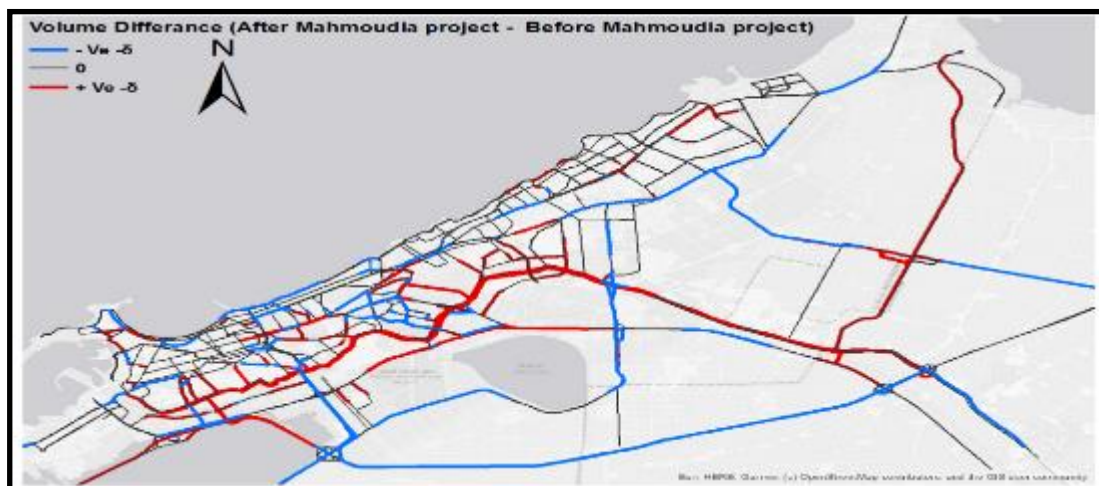
Fig. 5: Volume difference after and before Mahmoudia corridor redevelopment.

	Freeway	Major_1	Major_2	Major_3	Minor	Collector& Residential	service
■ V/C ratio before MCR	0,92	1,02	1,13	1,05	1,18	0,88	0,58
■ V/C ratio after MCR	0,89	0,95	1,05	0,98	1,05	0,87	0,84
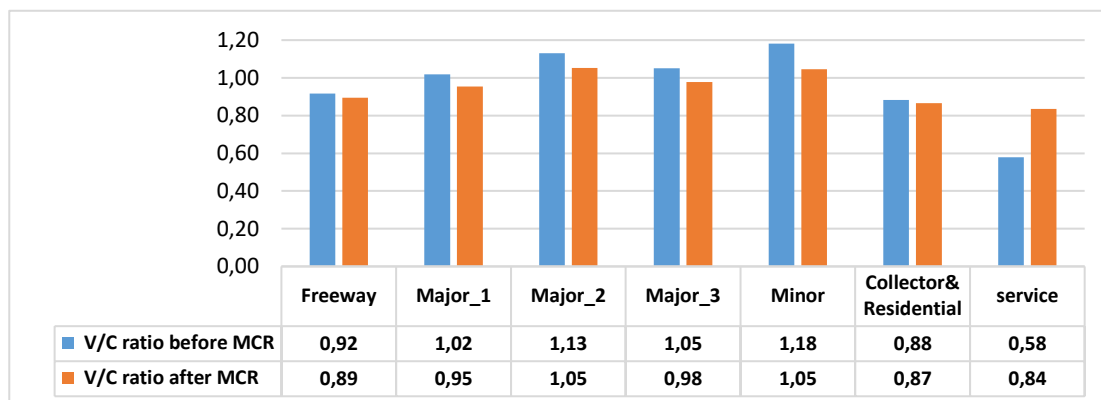
Fig. 6: Average (V/C) ratio for each facility type before and after Mahmoudia corridor redevelopment.

7.2 Local Impact Evaluation.

Despite. the little effects of the MCR on the overall performance of the network, the project has a considerable local impact in the vicinity regions. The change in travel time is a very important measure of performance, which can be used in locally evaluating the project's impact. The service area method (contour line method) can be used to show the inclusion of all accessible streets that can be reached within a specified time around (starting or ending at) any location on the road network. This method helps evaluating accessibility and the impact of any change on the local network. By comparing the service area of a specified impedance (10 or 20 minutes) on the same location on the network before and after the project execution, the impact of the project can be evaluated. In fact, the results show a significant traffic impact around the Mahmoudia corridor after the redevelopment. **Figure 7** shows a 10-minute service area on the network around a specified location before and after the MCR. It is easy to notice the difference in service area between before and after the project at the shown location. The redevelopment increased the service
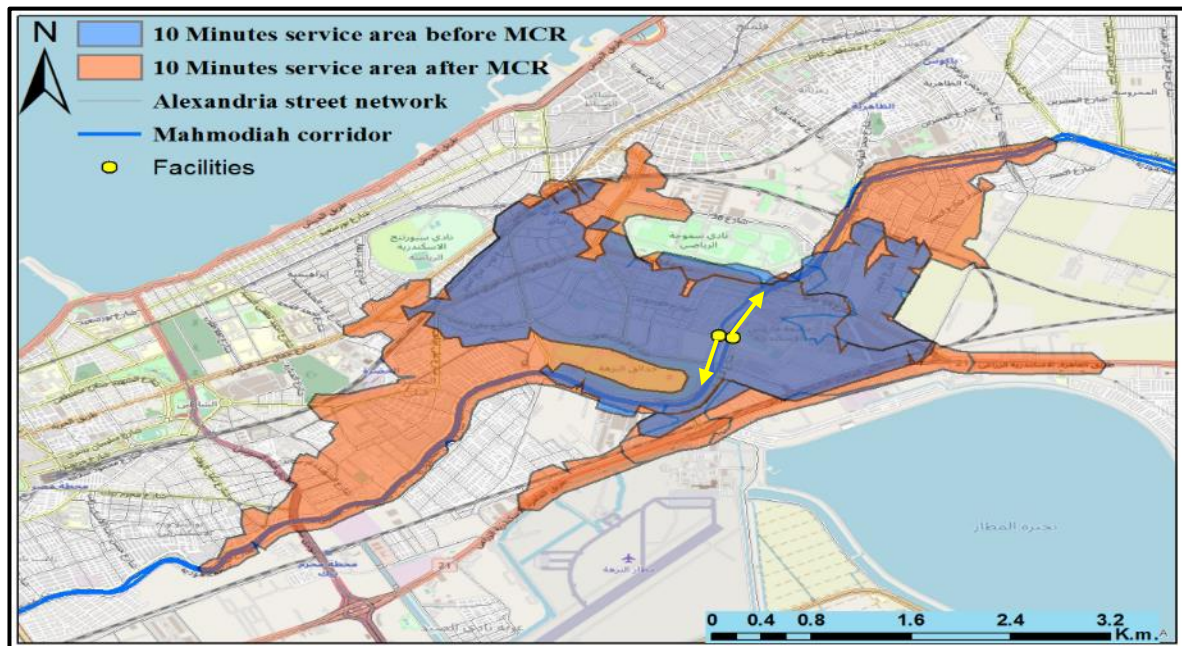
area in the longitudinal direction of the Mahmoudia corridor as a result of improvement of the travel speed along with the corridor compared to a minor- to- no increase in the traverse direction.

Fig. 7: 10-minute service area before and after the Mahmoudia corridor redevelopment.

8. CONCLUSION

This paper serves as a framework based on the trip assignment model for the city of Alexandria for the purpose of evaluating the impact of local improvements on the road network performance. The road network performance analysis framework is formulated based on the deterministic user-optimal equilibrium assignment technique. Moreover, the proposed methodology will serve as an effective and scientifically sound tool in road network performance surveillance and analysis that can be used by the traffic administration of Alexandria and other cities.

During the model preparation, a classified road network of Alexandria with link characteristics was created, which could be useful for future research in Alexandria. In addition, the primary estimation of the BPR's parameters was carried out that can be the basis for estimating more accurate values in future researches. Moreover, the performance measures in this paper are designed to provide both mathematical statistics, and graphical displays, that allow users to easily identify the extension of the impacts of proposed traffic congestion-relieving projects. The visualization measure shows the spatial distribution of change in travel speed/ time on the network that allows for a more coordinated and focused approach to the project prioritization process.

The model was applied with respect to the project of Mahmoudia corridor redevelopment (MCR) as a case study. The results show that the project has a noticeable impact on the performance of the Alexandria road network. However, based on the overall performance evaluation the impact of the MCR is limited. The results show a small increase of the average speed at the network level from 13 km/hr before MCR to 14.8 after MCR. Correspondingly, a considerable decrease in the average travel time at the network level, from 51 minutes before MCR to 45 minutes after. It is worth emphasizing that a significant impact in the areas of close proximity to the corridor was achieved in terms of localized impacts on travel time or speed. The results show noticeable speed improvement for trips along the corridor but a limited improvement for trips that cross the Mahoudia corridor. It is also worth mentioning that the corridor's service roads should be improved to enhance the project's impact and facilitate flow in and out of the corridor.

References

[1] Wardrop, J. G. (1952). Road paper. some theoretical aspects of road traffic research. Proceedings of the institution of civil engineers, 1(3), 325-362.
[2] Roads, U. S. B. o. P.(1964). Traffic assignment manual for application with a large, high speed computer (Vol. 2): US Department of Commerce, Bureau of Public Roads, Office of Planning, Urban ….
[3] Oppenheim, N.(1995). Urban travel demand modeling: from individual choices to general equilibrium.
[4] Manual, H. C. (2000). Highway capacity manual. Washington, DC, 2, 1.

[5]   Dijkstra, E. W. (1959). A note on two problems in connexion with graphs. Numerische mathematik, 1(1), 269-271.
[6]   Frank, M., & Wolfe, P. (1956). An algorithm for quadratic programming. Naval research logistics quarterly, 3(1-2), 95-110.
[7]   Manual, H. C. (2010). HCM2010. Transportation Research Board, National Research Council, Washington, DC, 1207.
[8]   Huimin, W., Zhongwei, H., Jifu, G., Liyun, Z., & Jianping, S. (2008). Operational analysis on Beijing road network during the Olympic Games. Journal of Transportation Systems Engineering and Information Technology, 8(6), 32-37.
[9]   Hashim, I. H., & Abdel-Wahed, T. A. (2011). Evaluation of performance measures for rural two-lane roads in Egypt. Alexandria engineering journal, 50(3), 245-255.
[10]   Brennan, T. M., Gurriell, R. A., Bechtel, A. J., & Venigalla, M. M. (2019). Visualizing and evaluating interdependent regional traffic congestion and system resiliency, a case study using big data from probe vehicles. Journal of Big Data Analytics in Transportation, 1(1), 25-36.
[11]   Manual, R. C. (1997). Model Validation and Reasonableness Checking Manual.
[12]   CAPMAS. The Central Agency for Public Mobilization and Statistics. The Arab Republic of Egypt.
[13]   Egypt: Administrative Division (Governorates and Districts) - Population Statistics, Charts and Map. Retrieved from https://www.citypopulation.de/en/egypt/admin/
[14]   OpenStreetMap. Retrieved from https://www.openstreetmap.org/
[15]   Elefteriadou, L. A. (2016). The highway capacity manual 6th edition: A guide for multimodal mobility analysis. ITE Journal, 86(4).
[16]   EGISRail. (2016). Alexandria Urban Transport .French Development Agency.
[17]   Patriksson, M., & Labbé, M.(2002). Transportation planning: state of the art (Vol. 64): Springer Science & Business Media.

The Relationship between the Use of Information Technologies and Innovation in Small Hotels; A Research

Kürşad SAYIN*

Selcuk Üniversity, Post Vocational School of Silifke-Taşucu, Mersin, Turkey, kursadsyn@hotmail.com, kursadsyn@selcuk.edu.tr

Abstract

In this study, it is aimed to determine the information resources used for information technology (IT) ownership, IT usage, the level of innovation and technology and to reveal the relationship between computer usage and innovation in small resort hotels in Mersin Province, on the Eastern Mediterranean coast of Turkey, where tourism is developing. As a result of a review of the relevant literature, it has been concluded that there has not been much research on the subject of small hotels. Therefore, the study is important.

The survey method was applied in the study. The prepared questionnaires were filled out by the hotel managers through face-to-face interviews, the data obtained were evaluated by percentage-frequency analysis and chi-square tests and interpreted with the help of tables. In this study, it was concluded that the participants mostly preferred to use information technologies to "obtain customer records in order to provide information to security forces", they often used information technologies for "check–in and check–out operations and internet use", and they mostly used the Internet for e-mail, and they mostly "received information from the Internet" for innovation and technology supply. In addition, with the Chi-square tests conducted, it was also concluded that there is no relationship between the number of computers used and product innovation, process innovation and management innovation, and that there is a relationship between marketing innovation and educational innovation.

Keywords: Small hotel, hospitality, information technology, innovation

1. INTRODUCTION

Information technologies are generally defined as tools that enable the collection, storage, protection, transmission and use of data to the required places. The current century is a period when it is extremely important to access, obtain, store and transmit information to the necessary places due to the rapidly increasing competitive environment. Information technologies have become the most important element of competitive advantage in terms of internet and web page usage. With the spread of internet usage, the costs of hotel distribution channels are decreasing and helping hotel businesses access world markets. In addition, the chances of accessing people all over the world via e-mail are increasing. Thanks to the Internet, the globalization of the world is accelerating and the world is getting smaller [1],[2].

---

* Corresponding author.

Innovation is the realization of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in internal business practices, workplace organization, or relationships [3]. In other words, innovation is the process of making changes in services, products and the style of the enterprise in order to create economic and social benefits [4].

It is extremely important that rapid changes occur with globalization and that the individual has innovative features in order to be able to fight with competitors in business lifeIn business applications, innovation, which can be defined as the realization of a new or significantly improved product (good or service) [5], [6], process, a new marketing method or a new organizational method in workplace organization or external relations, and training of personnel [7],[8] is possible by using information technologies effectively, employing qualified personnel, keeping the pulse of the market, making medium and long-term plans and developing strategies [9] , [10], [11].

IT strongly influences innovation [12]. Today, IT has become an important role to compete in hotel businesses as well as in all businesses. In the current era, hotel guests have reached a structure that uses technology more, is open to researchers and innovations, and guest tastes and preferences have also started to change. For this reason, hotel enterprises should also be innovative and adapt to a dynamic atmosphere by closely following the developments in information technologies [13],[14]. Due to this, information technologies have also introduced important innovations in the corporate context to hotel enterprises in recent years. It is possible for hotel enterprises that use information technologies to cover all business functions to achieve a competitive advantage by increasing their performance. However, it is not enough to use information technologies, in a world where competition is fierce, it is necessary to take into account both the tastes and preferences of customers who use technology well, to make innovations and to keep up with the developments in information technologies [15],[16].

Internet, e-mail, online booking, voice mail, internet and the web pages and check-in/check - out systems, accounting practices, energy efficient systems, card door systems (electronic door locking systems), automatic telephone, central-wake up and voice messaging, internet in rooms, TV connection, entertainment-installation of multi-vision systems, computerized accounting, food and beverage order automation, teleconferencing, mobile phones, electronic credit card authorization and reporting are some of the examples of information technologies used in hotels. Research shows that the most important role of information technologies is to increase the effectiveness and ensure guest satisfaction [17], [18], [19], [20],[21].

Small businesses play a central role in the world and in Turkey in terms of social and economic development with their number, employment opportunities and the added value they provide to the country's economies [22]. The majority of the studies conducted on the subject have been conducted on large hotels. Therefore, it is necessary to reveal the characteristics of small businesses. In the study, it is examined what information resources are used for the use of information technologies and technology provision in small hotels and the relationship between the number of computers used and innovation. This study will help to fill the information gap on the topic and will play a guiding role in future studies.

2. MATERIAL METHOD

2.1. Method (Reason and method)

When the literature on the subject was examined, it was concluded that the majority of the research conducted between the use of information technologies and the use of computers and innovation was conducted on large hotels. Small hotel enterprises, Ingram et al., (2000) has defined the number of rooms as hotel establishments with up to 50 rooms [23]. Therefore, the research was conducted in order to determine the information technology ownership, the use of information technologies, the information resources used to supply technology and innovation in small hotels in Mersin Province which is developing in terms of tourism on the Eastern Mediterranean coast of Turkey, and to determine the relationships between the level of use of computers and innovation. The survey method was used as a data collection tool in the study. First of all, a literature review was conducted on the subject. Then, a questionnaire form was prepared by using the studies of Özen &Bingöl (2007) [15]. The prepared questionnaire was conducted in April-November 2021 with the method of face-to-face interviews with managers of small hotel operators. The data obtained were evaluated using the SPSS program. Frequency and chi-square tests were analyzed with the help of and interpreted with the help of tables.

2.2. Findings and Comments

The findings of the research are shown in Tables 1, 2, 3 ,4, 5, 6 ,7 and 8

Table 1: Results of the demographic characteristics of the participants

Your age?	f	%	Education?	f	%	Duty?	f	%
20-29	18	25	Primary School	8	10,0	Business Owner	39	48,8
30-39	21	26,3	High School	39	48,8	Manager	37	46,3
40-49	26	32,5	Bachelor	32	40,0	Department Chief	4	5,0
50 and over	15	18,8	Post Graduate	1	1,3	Total	80	100
Total	80	100	Total	80	100			
Gender?	f	%	Have a tourism education?	f	%			
Male	59	73,8	Yes	25	31,3			
Female	21	26,3	No	55	68,8			
Total	80	100	Total	80	100			

According to Table 1, the vast majority of the participants are male and the age range is 40-49 (32.5%) and 30-39 (26.3%).

According to Table 1, although the vast majority of the participants graduated from high school (48.8%) and university (40%), 68.8% did not have a tourism education.

The majority of the participants consist of business owners (48.8%) and managers (46.3%). It is considered that this situation is important for the reliability of the research.

Table 2: Findings for the business

Number of Rooms?	f	%	Number of Beds?	f	%	Number of Employees?	f	%
0-9	6	7	0-49	40	50	0-9	69	86,2
10-19	32	40	50-99	33	41,2	10-19	8	10
20-29	25	32	100-149	6	7,5	20-29	-	
30-39	10	12	150-199	1	1,2	30-39	3	3,8
40-49	7	8	Total	80	100	Total	80	100
Total	80	100						

According to Table 2, the vast majority of small businesses in the range of 10-29 rooms (72%) , in the range of 0-99 beds (91,2%) in the range of 0-9 staff (86,2%).

Table 3: Findings on the number of computers used in the business

Number of the computers used	1-3		4-7		Total	
	f	%	f	%	f	%
How many computers are used in your business?	76	95	4	5	80	100

According to Table 3, the number of computers in the majority of small businesses (76%) ranges from 1 to 3.

Table 4: Findings on the information technologies used in enterprises and the reasons for preference

* Information technology applications that you have used	f	%	* Your reasons for choosing information technologies		f
Check/in- check/out processes	77	96,2	Preventing loss of labor and time	64	80
Booking processes via the Internet	53	66,2	Improving the quality of service	66	82,5
Electronic door locking system.	10	12,5	Facilitating Sales Transactions	52	65
Energy saving systems	15	18,7	Keeping records and reports	58	72,5
Internet	78	97,5	Reducing costs	31	38,7
Food and beverage operations	46	57,5	Following the technological developments	22	27,5
Devices used in customer rooms (TV, etc.)	60	75	Improving the efficiency of employees	24	3,3
Menu management systems	10	12,5	Advertising and promotion	50	62,5
Automatic wake-up, voice message (electronic customer support systems)	3	3,7	Reaching new customers	47	58,7
Accounting operations	62	77,5	Getting reservation	62	77,5
Personnel operations	75	93,7	Tracking, checking customer accounts	26	32,5
			Registering customer information	68	85
* More than one option is marked			Obtaining customer records in order to provide information to the security	74	92,5

According to Table 4, information technology applications are most often used in small hotel enterprises for Internet (97.5%), "check-in-check-out" (96.2%), "personnel operations" (93.7%) and "accounting operations" (77.5%).In addition, according to table 4, information technologies in small hotel enterprises are most preferred for "obtaining customer records for the purpose of providing information to security" (92.5% and "registering customer information" (85%) in small hotel enterprises.

According to Table 4, "automatic wake-up, voice message" (3.7%), "electronic door locking systems" (12.5%) and "menu management systems" (12.5%) are the least used information technology applications.

Table 5: Findings on Internet use and inability to have a web page

Findings regarding internet usage and lack of a web page	Yes		No		Total	
	f	%	f	%	f	%
Do you use the internet?	100	100	-	-	100	100
Do you have a web page?	60	75	20	25	100	100

According to Table 5, all participants (100%) use the Internet, while 60 enterprises (75%) have a web page

Table 6: Findings on the reasons for Internet use and non-use of web pages in businesses

* What is the Reason for Using the Internet?	f	%	* What is the Purpose of Setting Up a Web Page? (60 businesses have web pages)	f	%
Banking transactions	63	79	On-line reservation	48	80
Reaching the news, stock market, etc.	10	12,5	Speeding up booking requests	45	75
Online booking tracking	46	57,5	Technological superiority	42	70
Communication on the Internet	55	68,7	Superiority in the competitive environment	38	63

Advertising and promotion	53	66,2
Getting information about competing businesses	23	28,7
Following the technological developments	27	33,7
E-mail	70	87,5
* More than one option is marked		

According to Table 6, the Internet is most often used in enterprises for the purpose of "e-mail" (97.5%), "banking transactions" (79%), "Internet communication"(68.7%) and "advertising and promotion" (66.2%). According to Table 5, 25% of enterprises do not have a web page. In enterprises with a web page (75%), the web page is most often used for "on-line booking", "speeding up booking requests" and "technological superiority".

Table 7: Findings on innovation practices in businesses

Innovation applications	Yes		No		Total	
	f	%	f	%	f	%
Have you innovated in your products in the last 3-5 years?	59	73,8	21	26,3	80	100
Have you done process innovation (software, technical equipment) in the last 3-5 years?	39	48,8	41	51,3	80	100
Have you made marketing innovations in the last 3-5 years?	35	43,8	45	56,3	80	100
Have you made any innovations in terms of management and organization in the last 3-5 years?	15	18,8	65	81,3	80	100
Have you done any training programs for your employees in the last 3-5 years?	11	13,8	69	86,3	80	100

According to Table 7, enterprises have made the most "innovation for products" (73,8%), the least "innovation for management and organization" (18,8%) and "innovation for employees" (13,8) in the last 3-5 years.

Table 8: Findings on the information resources used for innovation and technology procurement in businesses

* What information resources do you use to provide innovation and technology in your business?	f	%
follow sectoral publications	30	37,5
analyze competitors	54	67,5
Contact the suppliers	41	51,3
Get help from universities	5	6,3
Get help from consultants	2	2,5
Participate in domestic and international fairs	12	15
Get information from the internet	73	91,3
* More than one option is marked		

According to Table 8, businesses most often "receive information from the Internet" (91.3%) and "analyze competitors"(67.5%) for the supply of innovation and technology. and they receive assistance from universities the least (6,3%) and consultants (2,5%).

In addition, with the Chi-square tests conducted, it was concluded that there is no relationship between the number of computers used and product innovation, process innovation and management innovation, and that there is a relationship between marketing innovation (P<0,01) and educational innovation(P<0,01).

3. CONCLUSIONS AND RECOMMENDATIONS

In the study, it was concluded that although the majority of the participants graduated from high school (48.8%) and university (40%), the majority of the participants (68.8%) did not have a tourism education. In addition, according to Table 8, it has been concluded that a very small number of small business managers receive assistance from universities (6,3%) and consultants (2,5%). In short, although the managers of the small businesses that are the subject of the study do not receive training in tourism, they also do not receive assistance from universities and consulting companies.

According to Table 2, it is concluded that the vast majority of small hotel enterprises have rooms in the range of 10-29 rooms (72%), beds in the range of 0-99 (91,2%) and staff numbers in the range of 0-9 staff (86,2%). In addition, according to Table 7, training programs for employees are the least preferred (13.8%) innovation activities. In this case, it is considered that the number of staff working in small hotels is small compared to the number of rooms and beds, and the required attention is not paid to the staff by the managers of small hotels in hotel establishments where the service is at the forefront

In the survey, it was concluded that 1-3 computers are used in the majority of small businesses, that there is no relationship between the number of computers used and product innovation, process innovation and management innovation, and that there is a relationship between marketing innovation and educational innovation.

In the study, it was concluded that the Internet was used in all small hotels, but the participants did not master the importance of using a web page (25% of them do not have a web page). In addition, it was also concluded that they use information technologies most often because they have an obligation to provide information to security (92.5), the internet is usually used for communication, banking and advertising promotion purposes, while information technology applications such as automatic wake-up, voice mail (electronic customer assistant systems), electronic door locking systems, energy saving systems are the least used or least preferred information technology applications.

According to Table 7, over the past 3-5 years, the most "product-oriented" innovations have been made in enterprises (73.8%), the least "management and organizational innovation" (18.8%) and "employee training programs" innovations (13.8) have been made in businesses.

The ability of small businesses to maintain their presence against large businesses is possible in a technologically constantly developing and changing world, especially in a world that can use information technologies well, has an investigative feature, is open to innovation, is constantly renewing itself taking into account the characteristics of customers looking for quality. Therefore, it is recommended that small hotel business managers in the region where the research is conducted receive training from the tourism departments of private and public organizations and universities that provide tourism education, and increase their service quality by providing trainee students.

References

[1] Tekin, M., & Zerenler, M. (2001). Küresel rekabet ortamında işletmelerde teknoloji kullanımının işletme üzerindeki etkileri. *Selçuk Üniversitesi Sosyal Bilimler Meslek Yüksekokulu Dergisi, 1(4),* 1-14.

[2] Karaman, A., & Sayın, K. (2017). The importance of internet usage in hotel businesses: a study on small hotels. *Internet Applications and Management*, 8 (1), 65-74.

[3] Oslo Klavuzu (2005): Yenilik Verilerinin Toplanması ve Uygulanması İçin İlkeler, 3. Baskı, https://www.tubitak.gov.tr/tubitak_content_files/BTYPD/kilavuzlar/Oslo_3_TR.pdf. Accessed on: 15.05.2022.

[4] Çınarı K. (2017). Otel işletmelerinde yenilik algısı ve uygulamaları. *Aksaray Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 9 (2) 37-50*

[5] Cengiz, M. (2012). *Alanya Bölgesindeki Dört ve Beş Yıldızlı Otellerde Çalışan Yöneticilerin Yenilikçilik Anlayış.* Yüksek Lisans Tezi, Akdeniz Üniversitesi Sosyal Bilimler Enstitüsü: Antalya

[6] Durna, U. (2002). *Yenilik Yönetimi*, Nobel Yayın Dağıtım, Ankara.

[7] Günday, G., Ulusoy, G., Kılıç, K., & Alpkan, L. (2011). Effects of innovation types on firm performance. *International Journal of Production Economics,* Vol. 133, 662–676.

[8] Wang, C. L., & P. K. Ahmed,. (2004). The development and validation of the organisational innovativeness construct using confimatory factor analysis, *European Journal of Innovation Management, 303*-313.

[9] Kendir, V. (2017). A Study on the Relationship Among Organizational Culture, Learning and Innovativeness: A Survey Study at a University Hospital. *International Conference On Eurasıan Economıes.*

[10] Işık, C., & Türkmendağı, T. (2016). Atatürk Üniversitesi turizm fakültesi öğrencilerinin bireysel yenilikçilik algılarının belirlenmesi1. *Turizm fakültesi dergisi, 67-96*

[11] Tekin, Y., Durna, U. (2012). Otel işletmelerinde yenilik yönetimi uygulamaları alanya'da beş ve dört yıldızlı otel isletmelerinde bir arastırma. *International Journal of Alanya Faculty of Business*. 4(3), 93-110.

[12] Chatterjee, S., Gregory, D. M., Lowry, P. B., Chakraborty, S., & Hardin, A. (2020). The nonlinear influence of harmoniousinformation technology affordance onorganisational innovation. *Information System Journal*, 294-322.

[13] Awasthi, A. (2020). Information Technology Plays A Key Role in 52-57 Hospitality Industry. In Shiwani, T., Ruchika, K. & C. V., Singh (Eds), Tourism And Hospitality Perspectives, Patterns and Practices (pp.52-57). Bharti Publications: New Delhi.

[14] Zheng, L. & Montargot, N. (2020). Anger and fear: effects of negative emotions on hotel employees' information technology adoption. *International Journal of Productivity and Performance Management, 1708-1727.*

[15] Özen, Ü., & Bingöl, M. (2007). İşletmelerde bilişim teknolojileri ve yenilikçilik: Erzurum, Erzincan ve Bayburt'taki kobi'lerde bir araştırma. *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 10(2*), 399-417.

[16] Durna, U., & Babür, S.(2011). Otel işletmelerinde yenilik uygulamaları. *Uuluslararası Alanya İşletme Fakültesi Dergisi 3(1), 73-98.*

[17] Çakmakçı, E. (2012). Bilgi teknolojisi kullanımının otel performansı ve verimliliğine etkisi, Verimlilik Dergisi, 4, 47-66.

[18] Lam, T., W., Cho, V., & Qu, H. (2007). A Study Hotel Employee Behavioral İntentions Towards Adoption Of İnformation Technology, İnternational Journal Of Hospitality Management, 26(1), 49-65.

[19] Öğüt, A., Güleş, H.,K.., & Çetinkaya, A. Ş. (2003). *Bilişim Teknolojileri Işığında Turizm İşletmelerinde Yönetim; Enformatik Bir Bakış*, Nobel Yayıncılık: Ankara.

[20] Lee, S-C., Barker, S., & Kandampully, J .(2003). Technology, Service Quality, And Customer Loyalty İn Hotels: Australian Managerial Perspectives, *Journal of Service Theory and Practice, 13(5), 423-432.*

[21] Williams, P. W., Bascombe, P., Brenner, N., &Green, D. (1996). Using the Internet for tourism research: information highway or dirt road? *Journal of Travel Research 34(4): 63-70, 34(4), 63-70.*

[22] Emeksiz, M., Yolal, M., & Çetinel, F. (2007). Future expectations of SMHES in Turkey. *Asian Journal of Tourism and Hospitality Research 1(*1), 128-138.

[23] Ahmad, S. Z., & Arif, A. M .M .(2016) Entrepreneurial characteristics, motives, and business challenges: exploratory study of small- and medium-sized hotel businesses, *International Journal of Hospitality & Tourism Administration*, 17:3, 286-315.

Evaluation of Registered Geographical Indication Products of Konya within the Scope of Gastronomy Tourism

Alper ATEŞ[a]*, Mehmet ŞAHİN [b], H. Arif TUNCEZ [c],   Halil SUNAR [d]

[a] Selcuk University, Faculty of Tourism, Turkey, alpera@selcuk.edu.tr
[b] Selcuk University, Aksehir Vocational High School, Turkey, sahinmehmet@selcuk.edu.tr
[c] Selcuk University, Akşehir Faculty of Economics and Administrative Sciences, Turkey,
hatuncez@selcuk.edu.tr
[d] Giresun University, Tirebolu Mehmet Bayrak Vocational High School, Turkey,
halil.sunar@windowslive.com

Abstract

The Turkish Patent and Trademark Office give a geographical indication. Geographical indications are the registration marks that show and guarantee the source, characteristic features of local products in Turkey, and the connection between the said characteristic features of the product and the geographical region as a result of the evaluation in terms of tradition and quality. Geographical indication applications have been made for fifteen products throughout the province of Konya. Seven of these applications have been registered, and the application process for eight of them is still ongoing. This study aims to evaluate the registered geographical indication products of Konya within the scope of gastronomy tourism. Interviews were held with traditional manufacturers for each product during the evaluation phase. In line with the information obtained in this context, the products were analyzed as touristic and different suggestions were made to bring them into the tourism economy. Action plan summaries for private and public stakeholders of Konya tourism are among the study's outputs.

Keywords: Gastronomy Tourism, Geographical Indication, Konya, Tourism marketing

1. INTRODUCTION

In today's modern world, local values are becoming increasingly important as all goods and services are increasingly similar. As a result of this situation, products belonging to a specific local culture and geography have started to be protected by legal regulations such as geographical indications by countries not to be exposed to unfair competition and to be protected from imitations. The transformation of local products into tourism products with geographical indication and its effects is a crucial issue in destination marketing activities. The increase in interest and demand for local products belonging to a specific region in the world effectively protects these products.

Depending on the conditions provided by its geographical location and historical richness, Turkey is a country with a high geographical indication potential and a comprehensive portfolio. Geographically indicated products ensure that local foods are first registered, then promoted, transformed into geographical products, and marketed. Protected by geographical indications, local foods make an essential contribution to Turkey's tourism. The synergy created by

---

* Corresponding author.

the protection, production, and integration of such products into tourism plays a vital role in Turkey's economic development. The concept of geographical indication plays a valuable role in gastronomy tourism. While people choose the destination they want to visit for gastronomic tourism, they examine the destination's culinary culture and food inventory. As a result of this review, they make their travel plans.

2. GEOGRAPHICAL INDICATION

The concept of a geographical indication is expressed as "Geographical Indication" or "GI" in English (Piramanayagam & Seal, 2022; Geuens et al.; 2021 Raimondi et al., 2020; Menapace & Moschini, 2014). Geographical indications are a vital tool to encourage local movements against globalization. (Arıkan & Taşçıoğlu, 2016). Geographical indications are used to distinguish essential products due to their geographical origin, identify where the consumed products come from, and reveal the brands (Süslü, et al., 2020: 136). According to Zhang et al. (2021), the extant literature, has mainly examined GI products in terms of their labels' function, identification, classification, certification, and protection at the macro-level (Geuens et al., 2021; Lans et al., 2013; Menapace et al., 2011).

Geographical Indication comes to the fore when the product, which has emerged from past generations and produced with traditional knowledge, cannot be limited to the geographical region where its reputation is rooted. It is necessary to protect the product registered with Geographical Indication and transfer traditional knowledge and production methods to future generations, both for the continuity of the culture and traditions of the society and for the development and sustainability of the region (most likely rural) (Doğanlı, 2020:527).

Today, with the increase in the importance of the environment, health, and the local tendency, the necessity to protect these products sustainably has emerged. Countries apply various legal regulations in this regard. One of these applications is geographical indication registration. With geographical indication registration, products are registered according to a certain standard. Geographically indicated products are unique to the region, and they are high-quality products that differ from similar products with specific features. Geographical indication registration in Turkey is made by the Turkish Patent Institute in two ways a name of origin and a sign of origin. The name of origin is given when all transactions related to the product are carried out within the determined region. The origin sign is given when at least one of the transactions related to the product is carried out within the determined region (Kaya & Şahin, 2018:199).

The Turkish Patent and Trademark Office defines a geographical indication as a sign/symbol indicating a product identified with the region, area, region, or country of origin in terms of its distinctive quality, reputation, or other characteristics. Identified with a particular geographical area in terms of distinctive quality, reputation, or other characteristics; Geographical indications, which are the subject of products whose production, processing, or other processes must occur within the specified geographical area, are called "origin marks." (ci.turkpatent.gov.tr).

In order to protect local products from imitations and provide economical income to local producers, geographical indication applications have been applied, and laws have been enacted around the world, especially in European countries (Ertan, 2010:157). The first legal regulation on geographical indication emerged in 1992 at the European Union level. Within the framework of these regulations, it has been ensured that the products, the number of which is increasing day by day, are registered and protected. While the majority of these registered products have gained economic value, the protection efforts have reached the international level at the level of the World Trade Organization (Orhan, 2010: 243).

Local dishes are the foods and drinks that the people of the region have made a tradition due to living together for many years and are served with appropriate cooking techniques in line with these traditions and customs. It is the food consumed more on special occasions, settled in the culture as a result of an event, and is preferred by the people over other dishes (Saatcı, 2019:366). Local food and beverages play an essential role in the emergence of tourist areas and the visit of tourists to the region. The registration and promotion of geographical indications increase this importance because geographical indications are an essential tool to increase the region's tourism potential, preserve its local flavors, and increase its number (Yazıcıoğlu et al., 2019: 582).

Geographical indications are used to express the local or regional connection of a product. Geographical indication registration serves to protect a region's values and contributes to the local economy (Dayısoylu et al., 2017: 80). The advantages of protecting the products with geographical indications can be evaluated in three groups. These; include providing protection to producers, increasing marketing opportunities, and supporting rural development by providing economic returns. Geographically marked products that provide collective monopoly rights can be used by all producers in the region. It is ensured that those who produce in that region primarily benefit from this protection and

can take commercial measures against imitations. The protection of a product by law encourages the preservation of a certain quality in the production of the product and ensures that the product is produced in the manner in which it is registered. Due to the control mechanism, manufacturers act more carefully. This quality production reflects the consumers' preferences, affects the demand for these products and gives the product identity by enabling the consumers to distinguish that product from other products. Therefore, geographical indications are an element of trust for consumers. At the same time, geographical indications also provide benefits to producers living in rural areas. In order to fully benefit from geographical indication protection, the relatively poor agricultural sector will be supported in low-income countries. Thus, a continuous income flow will be provided to this segment, and the economic disparity between developed and underdeveloped areas will be eliminated (Çevik, 2018:22).

In order to perform Geographical Indication, the authenticity of the products and their origin must be determined first. Since the commercial value of the products increases with the Geographical Indication certificate, the competition created by this situation causes counterfeit products to take place in the market and unfair competition as long as their distinguishability from the real is not controlled. In order to ensure the protection of actual production, it is a must to prove the conformity of these products to the original (Doğanlı, 2020:528).

Geographically indicated products also strengthen branding and regional tourism by strengthening the destination image. Geographically indicated products; play an important role in regional tourism and destination marketing as they encourage traditional production, protect the traditional life culture and the products offered by this culture, and effectively attract tourists to the region identified with the product by promoting them. Products with geographical indications direct consumers' preferences, affect the demand for these products and provide an identity to the product by enabling consumers to distinguish that product from other products. In the globalizing world, geographically marked products, referred to by destination names, and are essential in terms of brand identity and image in protecting local heritage and cultural values through registration and transferring them to the future (Acar, 2018:173). Local products protected within the scope of geographical indication contribute to the development of gastronomic tourism and the protection of cultural heritage (Özdemir & Dülger Altıner, 2018).

3. GASTRONOMY TOURISM

The food and catering industry, driven by the social, economic, ecological, and digital transformations in the 21st century, has undergone a much faster and more radical change in recent years than before. With this change, gastronomy has also improved to offer memorable moments other than just the meal at every meal. The aim here is not just to satisfy the desire to eat or fill their stomachs; it is also about making guests feel incredible and unique through innovative recipes and presentations. When the trends in the international and national gastronomy markets are examined, it is seen that the gastronomic trends in recent years are in the direction of an increasing interest in value-added dishes where the raw material and input quality are the main components, and the presentation style is differentiated (Ateş & Sunar, 2021:7).

Gastronomy is not only the food that customers will consume but also all the elements that must be considered so that they can taste and feel a complete and unique gastronomic experience before, during, and after the meal. Food and gastronomy are important identity markers. In this sense, "gastronomy is very important for country or city marketing Food is part of the culture of a city or nation, a part of its symbolic capital. This is important; because food is not just about stomachs but also quality of life, meeting people, sharing experiences, and sharing a taste (Kowlaczyk, 2020: 108). It can be stated that food service in modern tourism affects the choice of holiday and gastronomy is a robust travel motivation. From this point of view, gastronomy plays an active role in attracting tourists to the destination (Henderson, 2004: 69).

Today, with the effect of globalization, fast food and ready-made processed foods have started to take an important place in the nutritional habits of countries. However, since the harmful effects of these foods on human health have come to the fore in recent years, consumers have started to tend to consume local foods again. Tourists now want to escape from the traditional routines of daily life and have different experiences during their travels (Hazarhun & Tepeci, 2018:375). Thinking on a global scale and marketing originalities on a local/local scale is one of the important marketing strategies of recent years. The changing understanding of tourism and tourist motivations tend to consume and protect traditional values. The local food and beverages of the destinations make significant contributions to the destination's differentiation according to its competitors and the formation of national brands such as Turkish Cuisine, French Cuisine, and Italian Cuisine of the destination (Duman et al., 2019: 819).

Businesses operating in the tourism sector benefit from the attractiveness of gastronomy to improve themselves and increase their diversity. As gastronomic tourism is a type of tourism that can be requested for twelve months,

many countries use products from their own culture in promotion and marketing by enriching them with products with geographical indications and with their tangible and intangible cultural heritage (Kargiglioğlu et al., 2019:626).

Gastronomy tourism has been a subject of intense academic studies in tourism in recent years. There are many definitions of gastronomic tourism in the relevant literature. Gastronomic tourism; covers all products and services related to food and beverage consumed by tourists as a part of the local culture (local and traditional dishes), playing an important role in developing regional tourism, competitive marketing, local agriculture, and, therefore, economic development (Yüncü, 2010: 32). Gastronomy tourism is a form of tourism to explore the consumption, preparation, presentation, characteristics of the cuisine, meal habits, and eating styles of foods in a different culinary culture than the usual (Öney, 2013: 171).

Food events are at the forefront of activities related to gastronomic tourism. Geographically indicated products have important functions in preserving the local culinary cultures and production techniques of local products of the regions and determining the marketing activities and policies in transferring these cultures to the tourists. Products registered with geographical indication contribute to the region economically by guaranteeing product quality and increasing the reputation and added value of the product (Ceyhun Sezgin, 2016:351).

These tendencies of tourists toward local foods are significant in the emergence of the gastronomy tourism type. However, local foods are not enough to develop this type of tourism. In the preference of destination, local products, apart from the food culture belonging to the region, attract tourists' attention, provide destination branding, and contribute to its economic development. On the other hand, the life manner of local people, the history of the destination, and the customs and traditions are other essential factors in the development of gastronomy tourism (Pamukcu et al., 2021:1).

During the gastronomy tourist's travel, besides tasting the local food and beverage in the destination, the desire to experience local products' production, processing, and service rituals increases the time they will spend in the destination. Considering that these tourists are generally gastronomy actors, it can be said that they also contribute to the advertising and marketing of the destination (Çavuş & Eker, 2022:306).

4. THE REGISTERED GEOGRAPHICAL INDICATION PRODUCTS OF KONYA

The presence of Konya's local values, which have characteristic features unique to the region and are referred to by their names, makes the region a destination of interest from cultural and tourist attractiveness. To date, 12 bakery and pastry products, pastries, desserts, 25 dishes and soups, one soft drinks group, one chocolate, confectionery, and derivative products group, one dairy products group other than cheeses and butter, and two products in the category of other products have been registered in Konya province. Konya province has a wealthy heritage of geographically marked products. Considering the applications currently underway, it can be said that it is one of the wealthiest provinces in Turkey in this area.

Table 1. The Registered Geographical Indication Products of Konya

Geographical Indication Name	Type	Registration Year	Product Group
Konya Etli Düğün Pilavı	Merchandise mark	2011	Meals and soups
Kadınhanı Tahinli Pidesi	Merchandise mark	2013	Bakery and pastry products, pastries, desserts
Konya Etliekmek	Merchandise mark	2017	Bakery and pastry products, pastries, desserts
Konya Peynir Şekeri	Merchandise mark	2019	Chocolate, confectionery and derivative products
Akşehir Tandır Kebabı	Merchandise mark	2020	Meals and soups
Konya Tandırda Çebiç	Merchandise mark	2021	Meals and soups
Konya Tutmaç Çorbası	Merchandise mark	2021	Meals and soups
Konya Çöpleme	Merchandise mark	2021	Meals and soups
Konya Şalgam Gallesi	Merchandise mark	2021	Meals and soups
Konya Hassaten Lokma	Merchandise mark	2021	Meals and soups
Konya Ildız Kökü Yemeği	Merchandise mark	2021	Meals and soups
Konya Kikirdekli Kesme Çorbası	Merchandise mark	2021	Meals and soups
Konya Kuru Kabak Sarması	Merchandise mark	2021	Meals and soups

Konya Kıtırlı Mantı	Merchandise mark	2021	Meals and soups
Konya Menekşeli Pilav	Merchandise mark	2021	Meals and soups
Konya Ovmaç Çorbası	Merchandise mark	2021	Meals and soups
Konya Patlıcan Bayıldan	Merchandise mark	2021	Meals and soups
Konya Bamya Çorbası	Merchandise mark	2021	Meals and soups
Konya Bütümet / Konya Orta	Merchandise mark	2021	Meals and soups
Konya Cimcik	Merchandise mark	2021	Meals and soups
Konya Domalan Yemeği	Merchandise mark	2021	Meals and soups
Konya Etli Yaprak Sarması	Merchandise mark	2021	Meals and soups
Konya Haside Tatlısı/ Kara Helvası	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Akşehir Peynir Baklavası	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Konya Kakırdaklı Börek	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Konya Kara Erik Kavurması	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Konya Kenevir Helvası	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Konya Paluzesi / Konya Palize	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Konya Sac Arası	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Konya Vişne Tiridi	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Konya Zerdesi	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Konya İrmik Helvası	Merchandise mark	2021	Bakery and pastry products, pastries, desserts
Konya Reyhan Şerbeti	Merchandise mark	2021	Soft drinks
Bozkır Tahini	Merchandise mark	2021	Other products
Konya Kayısı Hoşafı/Zerdali Hoşafı	Merchandise mark	2021	Other products
Ereğli Koyun Yoğurdu	Merchandise mark	2021	Dairy products other than cheeses and butter
Akşehir Hersesi	Merchandise mark	2022	Meals and soups
Konya Ekşili Kabak	Merchandise mark	2022	Meals and soups
Konya Zülbiyesi	Merchandise mark	2022	Meals and soups
Konya Çirli	Merchandise mark	2022	Meals and soups
Konya Çullama	Merchandise mark	2022	Meals and soups
Konya Patlıcan Tiridi	Merchandise mark	2022	Meals and soups

In Table 1, the name, type, registration year, and product group of Konya's geographically indicated foods and beverages are indicated. Descriptions of the products given in the table are given below. Most product names have no equivalent except for the Turkish language, so the names are written in their original form.

Konya Etli Düğün Pilavı: This meal consists mainly of the meal and presentation given to the guests in wedding organizations or other celebrations. Konya-specific features of Wedding Rice with Konya Meat and its presentation are due to the ingredients it contains, how it is prepared, and how it is presented (ci.turkpatent.gov.tr).

Kadınhanı Tahinli Pidesi: A portion of this product is a pita made with flour, tahini, cream, and butter, which can be consumed optionally warm, cold, and/or pouring syrup on it after baking in the oven. Its difference from other pitas is that the tahini, cream, and butter are wholly integrated with the dough with the folding technique applied during the kneading of the dough and the use of quality flour that ensures the elasticity of the pita dough. After the cooked pita is cooled, it is ready to be eaten by sherbets with cooled syrup, preferably 30 minutes before it is eaten. It can also be eaten without sherbet, depending on preference. Although the raw materials used in the product can be substituted with their counterparts with similar qualities, the product that can be distinguished as Kadınhanı Tahinli Pidesi comes out from the traditional kneading technique specific to the region and cooking in coal-fired ovens covered with local volcanic baking stones (ci.turkpatent.gov.tr).

Konya Etliekmek: This dish is a local food that has reached the present day from the past, is loved and consumed, and is identified with the Konya region, which has gained fame for its production technique and taste. In the production method, the way the dough is opened, the placement of the material inside, the way the product is baked in the oven, the size of the product, and the way it is presented differ from similar products. (ci.turkpatent.gov.tr).

Konya Peynir Şekeri: This product is included in the hard candies group. Although it has a rock-hard appearance, it is a slightly hard candy that disperses quickly in the mouth when eating, is large compared to similar products, has a smooth surface, is generally white (which can be colored according to the aroma type), and also dazzles the teeth when bitten. It was also called dead sugar by the locals of Konya; it was also served to the guests who came to visit the funeral home on the day of the funeral. On normal days, it was eaten as a meal by making rolls after spreading it in equal amounts by crumbling or breaking into the fresh dough. However, as time passed, this consumption tradition disappeared. Today, there is a significant increase in production and consumption, especially in December when the great thinker Mevlana commemoration ceremonies are held and in the summer season when tourists visit (ci.turkpatent.gov.tr).

Konya Tandırda Çebiç: This dish is produced by cooking Angora goat (cebiç) or lamb, which is not yet one year old, in a tandoor fire and placing it on bulgur pilaf. On and inside the çebiç or lamb, it is cooked by spreading a mixture of onion, garlic, strained yogurt, tomato paste, and salt. Bulgur pilaf is prepared by using the fat of the meat cooked in the tandoor and the liver, heart, and kidneys cooked in the animal. In the production of the Çebiç dish in Konya Tandır, lamb is used in summer, and çebiç is used in winter. Especially preferred on special occasions and invitations, Konya Tandırda Çebiç has an important place in Konya's food culture. Its history is ancient. In Konya Tandır, which has a production method specific to the geographical border and the skinning, preparation, and cooking of the lamb with the çebiç requires mastery skills, the Çebiç dish has a connection with the geographical border (ci.turkpatent.gov.tr).

Konya Tutmaç Çorbası: This dish is a soup made with mutton, strained yogurt, and sticky dough. Handle dough; It is made with wheat flour, eggs, salt, and water. The soup; is made of wheat flour, egg, and salt, fried in butter and called kakırdak, and buttered mint or red chili pepper sauce is poured. Konya Tutmaç Soup, whose origin is based on Seljuk cuisine, also takes place in the works of Mevlana. It has an important place in Konya cuisine, and its history goes back to ancient times. For these reasons, the product has a reputation linked with the geographical border (ci.turkpatent.gov.tr).

Konya Zülbiyesi: This dish is a kind of stew prepared using cubed lamb meat from a mixture of ribs, forearms, and shallots. The history of Konya Zülbiye goes back to ancient times. It is one of the important dishes of Konya cuisine culture. Its production involves geographical boundary-specific conditions. For these reasons, Konya Zülbiye has a reputation connected with the geographical border (ci.turkpatent.gov.tr).

Konya Çöpleme: This dish is a meat dish prepared by dicing mutton leg meat, eggplant, onion, and tomato by arranging them on skewers. Skewers are used in production; it is made of wheat, vine, or wood. Konya Trash; it has an important place in Konya cuisine, and its history goes back to ancient times. After being skewered, the way the ingredients are cooked is unique to the geographical border. For these reasons, the product has a reputation linked with the geographical border (ci.turkpatent.gov.tr).

Konya Şalgam Gallesi: This dish is a local dish produced using mutton, turnip, onion, butter, lard, and salt. Konya Turnip Galle has an important place in Konya food culture. Its history is ancient. For this reason, Konya Turnip Galle has a famous connection with the geographical border (ci.turkpatent.gov.tr).

Konya Hassaten Lokma: This dish is made with lamb, chickpeas, chestnuts, carrots, onions, pine nuts, currants, various spices, and rice. Konya Hassaten Lokma has an important place in Konya food culture. Its past is based on the Seljuk State. The combination of materials used in its content is specific to the geographical limit, and the production method requires mastery skills. For this reason, Konya Hassaten Lokma has a reputation connected with the geographical border (ci.turkpatent.gov.tr).

Konya Ildız Kökü Yemeği: This dish, whose Latin name is Helianthus tuberosurus, is cooked with yams, carrots, potatoes, onions, and tomato paste. It is a dish specific to the province of Konya. It is served with garlic yogurt. Jerusalem artichoke is called "star root" at the geographical limit. Konya Ildız Root Dish has a special place in the gastronomy of Konya. Its history is ancient. There is a connection with the geographical border (ci.turkpatent.gov.tr).

Konya Kikirdekli Kesme Çorbası: This dish is a soup produced by boiling half of the dough made with wheat flour, egg, salt, and water and mixing it with strained yogurt and garlic, then pouring hot butter on it, and then adding the other half of the dough fried in butter. Fried dough is called "kikirdek" in Konya. In the Selcukname, which contains information about the local foods and beverages of Konya cuisine, It is told that the Seljuk ruler I. Alaaddin Keykubat was given banquets during his visit to the province of Konya. In addition, Evliya Çelebi said, "Of the foods, white bread, kaisi, pastry, honey pastry, varieties of halva, zülbiye, pandisi, peşmanisi and tahini are famous. Nevertheless, when lovers eat soapy white ring tiles, their taste buds go crazy." It gives information about the historical past of the food, soup, and desserts of Konya. Konya Kikirdekli Cut Soup has a special place in Konya cuisine, and it has a connection with the geographical border (ci.turkpatent.gov.tr).

Konya Kuru Kabak Sarması: This dish is a local wrap made with dried zucchini, minced meat, fine bulgur, rice, onion, parsley, tomato paste, and various spices. Konya Dried Zucchini Wrap has an important place in Konya food culture. It has an ancient history, and the geographical border-specific production method requires skillful dexterity. For this reason, Konya Dried Zucchini Wrap has a famous connection with the geographical border (ci.turkpatent.gov.tr).

Konya Kıtırlı Mantı: First, the dough made from flour, eggs, water, and salt is cooked in a pan to produce this dish. After it is cut into small squares and cooked with boiled green lentils, a sauce consisting of yogurt, garlic, and salt is added. Some dough separated from the dough previously cooked in the pan is roasted in butter and placed on the sauced dough. It is served hot after sprinkling with red pepper and black pepper. Konya Kıtırlı Mantı has an important place in Konya food culture. It has an ancient history, and the geographical border-specific production method requires skillful dexterity. For this reason, Konya Kıtırlı Mantı has a connection with the geographical border (ci.turkpatent.gov.tr).

Konya Menekşeli Pilav: This dish is produced by boiling the green lentils slightly, adding bulgur, and pouring the hot butter over it. It is served in spring, decorated with wild violets. Konya Violet Rice has an important place in Konya food culture. Its history goes back to the past, and the production method specific to the geographical border requires mastery skills. For this reason, Konya Violet Rice has a connection with the geographical border. (ci.turkpatent.gov.tr).

Konya Ovmaç Çorbası: This dish is a local soup made with small pieces of dough, green lentils, broth, and spices. Dough pieces used in the production of Konya Ovmaç Soup are small pieces of dough in the form of noodles, formed by rubbing and sifting the dough made with wheat flour, egg, and salt is called "ovmaç" in the geographical border. Konya Ovmaç Soup has a long history. Konya has an important place in the culinary culture. There is a connection between the geographical border and the reputation for these reasons (ci.turkpatent.gov.tr).

Konya Patlıcan Bayıldan: This dish is an invitation to dinner with an important place in Konya food culture. It is produced by combining the eggplants cut and fried in a round shape and boiled meat on the same tray and cooking them with various vegetables. The history of Konya Eggplant Bayilda is formed by bringing together the meat boiled in the middle of the tray, the eggplants lined up on the edge of the meat, and the peppers and tomatoes on it go back to ancient times. The production of the product requires mastery skills, especially in terms of combining the ingredients and cooking, so there is a connection with the geographical border (ci.turkpatent.gov.tr).

Konya Patlıcan Tiridi: This dish is a local dish that combines tandoori bread, sauce prepared with garlic and strained yogurt, and eggplant flavored with various vegetables and spices, and ground meat. Konya Eggplant Tirid has a long history. It is one of the important dishes of Konya cuisine culture. Its production involves geographical boundary-specific conditions. For these reasons, Konya Eggplant Tirid has a famous connection with the geographical border. (ci.turkpatent.gov.tr).

Konya Bamya Çorbası: One of the indispensable Konya cuisine, which was developed in the Seljuk palaces and kneaded with the Mevlevi tradition, Konya Okra Soup has been among the indispensable tables, especially for weddings and unique invitations, for centuries. It has been an indispensable part of Mevlevi tables throughout history. In Konya, it is used as an appetizer to eat second-order meals, after dessert, at weddings and invitation dinners. Apart from weddings, it is an important soup made and consumed at homes and merchants' restaurants. Flower okra and tail oil are used in the production of Konya Okra Soup (ci.turkpatent.gov.tr).

Konya Bütümet / Konya Orta: This dish is a meat dish prepared by first boiling the sheep's forearm, hind leg, or rib and then frying it. Konya Butümet / Konya Orta; It is the main dish of the "black meal" table, prepared for distinguished guests in Konya cuisine. It has an important place in Konya cuisine, and its history goes back to ancient times. The product has a reputation linked with the geographical border for these reasons (ci.turkpatent.gov.tr).

Konya Cimcik: This dish is prepared with cimcik dough prepared with wheat flour, egg, water, and salt shaped and boiled, then served with minced meat and yogurt sauce. Cooking the stuffing separately and serving it on top of it is peculiar to the geographical border. Konya Cimcik has an important place in Konya food culture. It has an ancient history, and the geographical border-specific production method requires skillful dexterity. For this reason, the Konya Cimcik dish has a connection with the geographical border (ci.turkpatent.gov.tr).

Konya Domalan Yemeği: This dish is a local dish produced by adding butter, onion, tomato, and tomato paste to roasted fatty mutton and cooking, then adding truffles, whose Latin name is Tuber melanosporum, and cooking the mushrooms over low heat. Among the tangible cultural heritage of Konya province, Konya Truffles Meal has an important place, and it has a reputation linked with the geographical border (ci.turkpatent.gov.tr).

Konya Ekşili Kabak: This dish is produced by cooking zucchini, tomatoes, chickpeas, and boned mutton with velvet leaves, basil leaves, garlic, spices, and vermicelli syrup. Konya Sour Zucchini has a long history. It is one of

the important dishes of Konya cuisine culture. Its production involves geographical boundary-specific conditions. For these reasons, Konya Sour Squash has a connection with the geographical border (ci.turkpatent.gov.tr).

Konya Haside Tatlısı / Konya Kara Helvası: This dessert is prepared by roasting wheat flour with unsalted butter and flavoring it with grape molasses. Evliya Çelebi's Travel Book, "White bread, kaisi, pastry, honey pastry, varieties of halva, zülbiye, pandisi, peşmanisi, and tahini are famous. Nevertheless, when lovers eat soapy white ring tiles, their taste buds go crazy." It gives information about the cultural accumulation of desserts and dishes in Konya province. Konya Haside Dessert / Konya Black Halva has a long history in Konya cuisine. There is a connection between the border and the reputation for these reasons (ci.turkpatent.gov.tr).

Konya Kakırdaklı Börek: This dish is a pastry produced by adding a mixture of kakardak (roasted tail fat), dry onion, tomato, green pepper, parsley, black pepper, and chili flakes into a soft dough prepared with pastry wheat flour, milk, fresh yeast, and white sugar and cooking in the oven. Its shape is oval. Konya Kakırdaklı Börek has an important place in Konya food culture. It has an ancient history, and the geographical border-specific production method requires skillful dexterity. For this reason, Konya Kakırdaklı Börek has a connection with the geographical border (ci.turkpatent.gov.tr).

Konya Kara Erik Kavurması: This product is prepared by mixing sweet white granulated sugar and dried black plum following the production method and roasting this mixture. Konya Black Plum Roasted; It is a product that requires mastery skills with the components used in its production and the product-specific production method. Konya Black Plum Roasted, which has a long history, has a reputation in the province of Konya, where it is produced (ci.turkpatent.gov.tr).

Konya Kenevir Helvası: This sweet halva is prepared by re-roasting the roasted hemp seeds with walnut kernels, almond kernels, and pistachio kernels, adding boiling grape molasses on top, and then cooling them on a tray covered with chickpea powder. Konya Hemp Halva, which dates back to the Seljuk period, was an important part of the entertainment culture on cold winter nights and was defined as "entertainment." Konya Hemp Halva, which maintains its importance in Konya cuisine, has a famous connection with the geographical border (ci.turkpatent.gov.tr).

Konya Paluzesi / Konya Palize: This product is the traditional dessert of Konya cuisine, produced using starch, water, and honey. Konya Paluzesi / Konya Palize is traditionally served to postpartum mothers and visiting guests in Konya and is often consumed throughout the province. It has an important place in Konya cuisine, and its history goes back to ancient times. The product has a reputation linked with the geographical border for these reasons (ci.turkpatent.gov.tr).

Konya Sac Arası: This product is a rose-shaped dessert with syrup, prepared by adding cream between thin phyllo dough. This dessert, which has an essential place in Konya cuisine and has a long history, got this name because it was cooked between two plates in ancient times. Preparing the Konya Sac Arası dough in the appropriate consistency, opening the dough, and baking it requires mastery skills. In many cookbooks and academic studies published on Konya cuisine, Konya Sac Arası is included. The product has a reputation linked with the geographical border for these reasons (ci.turkpatent.gov.tr).

Konya Vişne Tiridi: This product is a local dessert produced by pouring cherry sherbet on bread fried in butter or ghee. Konya Sour Cherry Tiridi has an important place in Konya food culture. Its history is ancient. For this reason, Konya Sour Cherry Tirid has a reputation linked with the geographical border (ci.turkpatent.gov.tr).

Konya Zerdesi: This product is a sweetened rice dessert with color and fragrance with saffron (Crocus sativus L.). Konya Zerdesi has an important place in Konya cuisine, and it is traditional to serve it with rice at weddings and celebrations held in Konya. The history of Konya Zerde goes back to ancient times. Seljuk Ruler I. Alaaddin Keykubat was presented at the banquet given in 1220 when he first came to Konya. In the book titled Traditional Konya Foods, published in 1976, and in the research titled A Study on Konya Wedding Dinner, published in 1996, it is stated that zerde is served in Konya wedding meals. For this reason, Konya Zerde has a connection with the geographical border (ci.turkpatent.gov.tr).

Konya İrmik Helvası: This dessert is produced by adding sweetened milk to semolina and pine nuts roasted in butter and cooking. After cooking, the halva is covered with a clean cloth or paper towel to absorb its steam, and it is left to rest and mixed to form grains. Konya Semolina Halva is served hot. Konya Semolina Halva, which has a long history, is one of the important elements of Konya cuisine, which contains the effects of the Mevlevi tradition, and takes place in unique invitations, especially at weddings. For this reason, Konya Semolina Halva has a famous connection with the geographical border (ci.turkpatent.gov.tr).

Konya Reyhan Şerbeti: This beverage is a non-alcoholic beverage prepared by mixing water, white granulated sugar, basil, lemon salt, and lemon peels following the production method and then straining. Konya Reyhan Sherbet; It is a product that requires mastery skills with the components used and the product-specific production method.

Konya Reyhan Sherbet, which has a long history, has a reputation in the province of Konya, where it is produced (ci.turkpatent.gov.tr).

Akşehir Peynir Baklavası: This sweet baklava is a dessert cooked by putting unsalted fresh cheese between phyllo dough and consumed warm. The history of Akşehir Cheese Baklava dates back to the Ottoman period. It is essential in Akşehir cuisine because it is performed on special occasions such as speech ceremonies, weddings, and holidays. For these reasons, Akşehir Cheese Baklava has a famous connection with the geographical border (ci.turkpatent.gov.tr).

Akşehir Hersesi: This dish is prepared with meat, bone, split, and cooked for a long time in a wood fire. In production, beef or dried sheep or goat rib meat is used. Akşehir Hersesi, which has a long history, is referred to as "herise" in Mevlana Celaleddin-i Rumi's "Fihi Mafih" and "Mesnevi" works and as "herse" in the cafeteria of Konya Mevlevi convent of the period. Akşehir Herses, which has an important place in Akşehir cuisine, connects with the geographical border (ci.turkpatent.gov.tr).

Akşehir Tandır Kebabı: This dish is a local dish that has survived from the past and is identified with the Akşehir district of Konya province. Akşehir Tandır Kebab is a local dish made from lamb meat with fruitwood (oak) in heated stone ovens, using the local embers cooking technique. The history of Akşehir Tandır Kebab dates back to the Seljuks. In the Selçuknâme, which specifically mentions the Seljuks, the expression "biryan" is used in the meals eaten at a banquet given by Alaeddin Keykubad I in the month of Shawwal (1237 May) in 634. Biryan means "kebab". Therefore, Akşehir Tandır Kebab is referred to among the dishes in the Seljuk period (ci.turkpatent.gov.tr).

Bozkır Tahini: This product is obtained by separating the shells of sesame seeds soaked with water, roasted in juniper wood fire, and grinding in stone mills. It has a light-dark amber color and intense flavor due to its roasting in a juniper wood fire. Bozkır Tahini has two types, whole wheat, and bran-free. While all of the sesame hulls are taken to produce wholemeal Bozkır Tahini, at least 50% of it is taken for the production of wholemeal Bozkır Tahini. The consistency of wholemeal tahini is more intense, and its astringent taste is more dominant (ci.turkpatent.gov.tr).

Konya Kayısı Hoşafı / Konya Zerdali Hoşafı: This product is a compote prepared by mixing water, white granulated sugar, cherries, dried apricots, dried yellow grapes and currants, and grape molasses, following and boiling the production method. It is a product that differs in terms of the components used in its production and requires mastery skills with its product-specific production method. Konya Apricot Hosaf with a long history / Konya Zerdali Hosaf; It has a famous connection with the province of Konya, where it is produced (ci.turkpatent.gov.tr).

5. EVALUATION OF REGISTERED GEOGRAPHICAL INDICATION PRODUCTS OF KONYA

5.1. The Aim of the Research

This study is aimed to develop suggestions related to the subject by evaluating the geographically marked dishes (foods and drinks) of Konya province within the scope of gastronomic tourism. Within the scope of this aim, a qualitative research technique was adopted in the study. In this context, the research universe includes foods and beverages that have been applied for and received geographical indications by various institutions and organizations in Konya province.

5.2. Research Method

In the study, the interview technique, one of the qualitative data collection methods, was technically used. The interview technique is a technique that can be performed in different ways (structured, semi-structured, unstructured, ethnographic, and focus group) depending on the characteristics of the data to be collected and the availability of resources (Büyüköztürk vd., 2012).

The interview form used to collect data in the study; What does gastronomic tourism mean for Konya, how the current situation of Konya is evaluated in terms of geographical indications, the importance, and benefits of geographically indicated products in the development of gastronomy tourism, how these products can be evaluated as a gastronomic tourism product, what activities can be done to attract tourists to the region through these products. It consists of 5 questions: what kind of promotional and marketing activities can be done to contribute to the development of gastronomy tourism.

5.3. Findings

When the findings obtained in this study are evaluated in general. The idea that geographically marked products effectively reflect the traditional gastronomic culture of Konya emerges. Emphasizing the importance of highlighting the province of Konya, which has a rich culture, with its gastronomic products registered with geographical indications, the participants expressed their opinions on the subject and stated the precautions to be taken. This study, which emerged as a result of the discussion of the production potential and promotion activities of gastronomic products of Konya province, the adequacy of the number of geographically indicated products, raising awareness and providing training on the subject, which emerged in the previous research on the subject, exhibits a complementary quality. Most participants stated that the protection of local Konya dishes with geographical indication registration provides a standard production, creates quality and customer satisfaction, and contributes to the promotion at the national and international levels.

6. CONCLUSION

While geographical indications increase the value of local products, they provide essential contributions to the region, such as protecting traditional knowledge and cultural values, combating product imitation and protecting actual producers, supporting local production and rural development, protecting biodiversity, and promoting the region. Today, to create a destination brand identity and positive brand image, destinations, and geographically indicated products. They want to gain a competitive advantage, be preferred more, and use traditional products as an effective marketing tool to transfer them to future generations.

According to the findings obtained from the research, Konya is a city that has many different geographically marked products. The city of Konya, which wants to be active in gastronomic tourism, should highlight and promote its local products that have a geographical indication. In order to revive gastronomy tourism in Konya, marketing studies should be carried out for regional products with geographical indications. To revive and develop gastronomy tourism in Konya, unique marketing strategies can be developed for geographically indicated products, and their awareness can be increased at the national and international levels by making necessary promotions and advertisements. It should be ensured that restaurants in the city include more frequently geographically marked dishes and beverages in their menus. In addition, it would be beneficial for these restaurants to provide their staff with basic training on Konya gastronomy and Konya's geographically marked dishes. Again, training should be given in these restaurants to produce geographically marked products following the standard specified in the registration. With the cooperation of public and private sector stakeholders, local events should be organized to promote and sustain Konya's geographically indicated gastronomy products, highlighting the features of the products and increasing their awareness. In order to contribute to the development of gastronomic tourism, instead of working independently of public and private institutions in Konya, all the dynamics in the province should come together and work together. This issue should be made a strict city policy.

References

[1] Acar, Y. (2018). Türkiye'deki Coğrafi İşaretli Ürünlerin Destinasyon Markalaması Kapsamında Değerlendirilmesi, *Journal of Tourism and Gastronomy Studies*, 6(2), 163-177.

[2] Ateş, A. & Sunar, H. (2021). Gastronomi Pazarlaması, İçinde: *Pazarlamada Güncel Yaklaşımlar* (Eds.) Alper Ateş, Bilal Erdem), Konya: Eğitim yayınevi

[3] Arıkan, M. & Taşçıoğlu, Y. (2016). Avrupa Birliğinde ve Türkiye"de coğrafi işaretli ürünlerin gelişimi ve yasal yapılanmanın incelenmesi. 12. Ulusal Tarım Ekonomisi Kongresi, Isparta, 571-580.

[4] Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş. & Demirel, F. (2012). "Bilimsel Araştırma Yöntemleri", 12. Basım, Ankara: Pegem Akademi

[5] Ceyhun Sezgin, A. (2016). Coğrafi işaretli ürünlerin gastronomi turizmine yansımaları. I. Ulusal Alternatif Turizm Kongre Kitabı, 350-356.

[6] Çavuş, O. & Eker, Ş. (2022). Coğrafi İşaretli Ürünlerin Sürdürülebilir Gastronomi Turizmi Bağlamında Değerlendirilmesi: Bolu Kanlıca Mantarı, Mengen Örneği, *Türk Turizm Araştırmaları Dergisi*, 6(1): 303-320.

[7] Çevik, S. (2018). Coğrafi İşaretli Ürünlerin Turizmdeki Rolü: Eskişehir Turlarına İlişkin Bir İçerik Analizi, *Journal of Recreation and Tourism Research*, 5 (4), 21-44.

[8] Dayisoylu, S. K., Yörükoğlu, T. &Ançel, T. (2017). Kahramanmaraş'ın coğrafi işaretli ürünleri ve ilin potansiyel durumu. *KSÜ Doğa Bilimleri Dergisi*. Cilt 20 (1), 80-88.

[9] Doğanlı, B. (2020). Coğrafi İşaret, Markalaşma ve Kırsal Turizm İlişkileri, *İnsan ve Sosyal Bilimler Dergisi*, 3 (2), 525-541

[10] Duman, S., Tanrısever, C. & Pamukçu, H. (2019). Kastamonu Ilgaz Dağı Milli Parkı'na Gelen Turistlerin Coğrafi İşaretli Ürün Algısı. *Journal of Tourism and Gastronomy Studies*, 7 (2), 818-838.

[11] Ertan, A. (2010). Prestijli Tarım Ürünlerinin Pazarlanmasında Kalite ve Coğrafi İşaret Kavramlarının Tutundurulması ve Bu Bağlamda Tarım Satış Kooperatiflerinin Önemi. *Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 12(2), 157-170.

[12] Geuens, M., Byrne, D., Boeije, G., Peeters, V., & Vandecasteele, B. (2021). Investigating the effectiveness of simplified labels for safe use communication: The case of household detergents. *International Journal of Consumer Studies*, 45, 1410-1424.

[13] Hazarhun, E. ve Tepeci, M. (2018). Coğrafi İşarete Sahip Olan Yöresel Ürün ve Yemeklerin Manisa'nın Gastronomi Turizminin Gelişimine Katkısı. *Güncel Turizm Araştırmaları Dergisi*, 2(Ek.1), 371-389.

[14] Henderson, J. C. (2004). Food as a Tourism Resource: A View from Singapore. *Tourism Recreation Research*, 29(3), 69-74.

[15] Kargiglioğlu, Ş., Çetin, Y. & Erkol Bayram, G. (2019). Gastronomi Turlarının Coğrafi İşaretli Ürünler Aracılığı İle Oluşturulması: Batı Karadeniz Turları Örneği, *Gastroia: Journal of Gastronomy and Travel Research* Vol. 3, Issue 4 (Özel Sayı), 624-639.

[16] Kaya, Y., S. & Şahin E. (2018). Tescilden Uygulamaya Coğrafi İşaretler: Adana Kebabı Üzerine Bir İnceleme. Güncel Turizm Araştırmaları Dergisi, 2(Ek.1), 189-199.

[17] Kowlaczyk, A. (2020). Dimensions of Gastronomy in Contemporary Cities. In Gastronomy and Urban Space. *Changes and Challenges in Geographical Perspective;* Kowlaczyk, A., Derek, M., Eds.; (pp. 91-120). Cahm: Springer.

[18] Lans, I. A., Der, V., Ittersum, K. V., Cicco, A. D., Loseby, M., & Tuscia, U. (2013). U.S. consumers' preference and willingness to pay for country-of-origin-labeled beef steak and food safety enhancements. *Canadian Journal of Agricultural Economics*, 61(1), 93–118.

[19] Menapace, L., Colson, G., Grebitus, C., & Facendola, M. (2011). Consumers' preferences for geographical origin labels: Evidence from the Canadian olive oil market. *European Review of Agricultural Economics*, 38(2), 193–212.

[20] Menapace, L., & Moschini, G. C. (2014). Strength of protection for geographical indications: Promotion incentives and welfare effects. *American Journal of Agricultural Economics*, 96(4), 1030–1048.

[21] Orhan, A. (2010). Yerel Değerlerin Turizme Dönüştürülmesinde Coğrafi İşaretlerin Kullanımı: İzmit Pişmaniyesi Örneği. Anatolia Turizm Araştırmaları Dergisi, 243-254.

[22] Öney, Hüseyin, Bahçe, Sadık, Yüksek, Gökçe, vd. (2013). Gastronomi Turizmi. *Alternatif Turizm*. Eskişehir: Anadolu Üniversitesi Açıköğretim Fakültesi Yayınları.

[23] Özdemir, G. ve Dülger Altıner, D. (2018). Türkiye'de Üretilen Coğrafi İşaret ile Tescillenmiş Peynir Çeşitleri. Uluslararası Gastronomi Turizmi Araştırmaları Kongresi, Kocaeli, 1-11.

[24] Pamukçu, H.; Saraç, Ö.; Aytugar, S.; Sandıkçı, M. (2021). The Effects of Local Food and Local Products with Geographical Indication on the Development of Tourism Gastronomy. *Sustainability*, 13, 6692, 1-13.

[25] Piramanayagam, S. & Seal, P., P. (2022). Geographical Indication (GI) tagged foods and promotion of gastronomic tourism: A developing country perspective. In Hera Oktadiana, Myrza Rahmanita, Rina Suprina, Pan Junyang (Eds.), *Current Issues in Tourism, Gastronomy, and Tourist Destination Research,* (pp.391-398). London: Routledge.

[26] Raimondi, V., Falco, C., Curzi, D. & Olper, A. (2020). Trade effects of geographical indication policy: The EU case. *Journal of Agricultural Economics*, 71(2), 330-356.

[27] Saatcı, G. (2019). Coğrafi İşaretli Yiyeceklerin Tanıtım Unsuru Olarak Yöresel Yemekler Kapsamında Değerlendirilmesi. *Journal of Tourism and Gastronomy Studies*, 7 (1), 358-374.

[28] Süslü, C., Eryılmaz G. & Demir, E. (2020). Coğrafi İşaretli Ürünlerin Gastronomi Kapsamında Değerlendirilmesi: Mersin İli Örneği. *Journal of Recreation and Tourism Research*, 7 (2), 135-149.

[29] Yazıcıoğlu, İ, Işın, A. & Yalçın, E. (2019). Coğrafi İşaretli Ürünlerin Gastronomi Turizmi Kapsamında Değerlendirilmesi: Akdeniz Bölgesi Örneği, *E.Gastroia: Journal of Gastronomy and Travel Research*, Vol. 3, Issue 4 (Özel Sayı), 861-871.

[30] Yüncü, H. (2010). Sürdürülebilir turizm açısından gastronomi turizmi ve Perşembe Yaylası, 10. Aybastı-Kabataş Kurultayı, *Yerel Değerlerce Yayla Turizmi* İçinde Şengel, S. (Ed.) Detay Anatolia Akademik Yayıncılık, Ankara, 28-38.

[31] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2645   (Accessed at 10.04.2022)

[32] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2577   (Accessed at 10.04.2022)

[33] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2587   (Accessed at 10.04.2022)

[34] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2580   (Accessed at 10.04.2022)

[35] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2667   (Accessed at 10.04.2022)

[36] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2579   (Accessed at 10.04.2022)

[37] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2606   (Accessed at 10.04.2022)

[38] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2609   (Accessed at 10.04.2022)

[39] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2662   (Accessed at 10.04.2022)

[40] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2646   (Accessed at 10.04.2022)

[41] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2644   (Accessed at 10.04.2022)

[42] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2648   (Accessed at 10.04.2022)

[43] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2604   (Accessed at 10.04.2022)

[44] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2586   (Accessed at 10.04.2022)

[45] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/662   (Accessed at 10.04.2022)

[46] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/38507 (Accessed at 10.04.2022)

[47] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/38645 (Accessed at 10.04.2022)

[48] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/1783   (Accessed at 10.04.2022)

[49] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2578   (Accessed at 10.04.2022)

[50] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2581   (Accessed at 10.04.2022)

[51] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2608   (Accessed at 10.04.2022)

[52] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2584   (Accessed at 10.04.2022)

[53] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/38006 (Accessed at 10.04.2022)

[54] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2605   (Accessed at 10.04.2022)
[55] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/38506 (Accessed at 10.04.2022)
[56] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/38029 (Accessed at 10.04.2022)
[57] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/38077   (Accessed at 10.04.2022)
[58] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2607   (Accessed at 10.04.2022)
[59] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2668   (Accessed at 10.04.2022)
[60] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2664   (Accessed at 10.04.2022)
[61] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2563   (Accessed at 10.04.2022)
[62] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2575   (Accessed at 10.04.2022)
[63] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2572   (Accessed at 10.04.2022)
[64] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2574   (Accessed at 10.04.2022)
[65] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2666   (Accessed at 10.04.2022)
[66] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2660   (Accessed at 10.04.2022)
[67] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/38107   (Accessed at 10.04.2022)
[68] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/2663   (Accessed at 10.04.2022)
[69] https://ci.turkpatent.gov.tr/cografi-isaretler/detay/38376 (Accessed at 10.04.2022)
[70] https://ci.turkpatent.gov.tr/sayfa/co%C4%9Frafi-i%C5%9Faret-nedir

The Impact of Digitalization on the Accounting Profession and Digital Accounting

H. Arif TUNCEZ [a*], Mehmet ŞAHİN [b], Alper ATEŞ [c] , Halil SUNAR [d]

[a] *Selcuk University, Akşehir Faculty of Economics and Administrative Sciences, Turkey, hatuncez@selcuk.edu.tr*
[b] *Selcuk University, Aksehir Vocational High School, Turkey, sahinmehmet@selcuk.edu.tr*
[c] *Selcuk University, Faculty of Tourism, Turkey, alpera@selcuk.edu.tr*
[d] *Giresun University, Tirebolu Mehmet Bayrak Vocational High School, Turkey, halil.sunar@windowslive.com*

Abstract

Digitization can be defined as the processing and monitoring of manually processed information via computers and digital media. Digitalization has brought about various changes in the professional field as well as in all areas of social life and has brought practicality to the professions in the process of performing these professions. The accounting profession has also affected by this change and transformation and had to renew itself according to the requirements of this new age. For this reason, in order to adapt the digital transformation to the accounting profession successfully, it has become an obligation, rather than a necessity, to develop infrastructure studies that will support the digital skills of those who practice the accounting profession, as is the case with the development of technological infrastructure. In this study, technological developments, digitalization, the effect of digitalization on the accounting profession and digital accounting are explained.

Keywords: Technology, Digitalization, Digital Accounting

1. INTRODUCTION

Technological developments have constantly affected the environment in which businesses are located, due to reasons such as globalization, competition and market conditions, and have led to change in the field. This has resulted in faster generation of information and easier access to users. Access to information in a faster and more convenient way increases the competitive situation among businesses and highlights the quality of the products. Technological developments have increased the importance of knowledge and acquiring knowledge.

Thanks to technology, it has become easier to access global information. Developments in technology and digitalization as a result of these developments is an important factor in expressing today as the information age (1). The digitalization process has started with the use of computers where this digital data can be managed in businesses. Digitization within businesses has become important with the use of the software system with the automation of business processes, and later on, that led to changing business models with the support of the internet and various digital technologies (2). Digital connectivity enables products and services to be produced automatically without human intervention and provides easier access to information and documents in real time and an easy global exchange between people (3).

---

* Corresponding author.

While some professions disappear and new ones emerge, some professions are undergoing serious transformation. One of these transformative professions is the accounting profession. Applying and using innovations in science and technology has become a necessity for the accounting profession to produce and present knowledge.

2. TECHNOLOGICAL DEVELOPMENTS AND DIGITALIZATION

2.1. Development Process of Technology

Considering the historical development of the industry, the transition process from hunter-gatherer society to agricultural society brought radical changes in lifestyle. Production systems have also been affected by this change and three industrial revolution processes have taken place until today. In the first industrial revolution, which lasted from 1760 to the 1840s, the construction of the railway began and mechanical production began with the invention of the steam engine. The second industrial revolution, which started at the end of the 19th century and the beginning of the 20th century, is the period in which mass production began to be realized with the introduction of electricity and assembly lines. The third industrial revolution, on the other hand, is commonly referred to as the computer age or digital revolution, as it developed under the influence of semiconductors and mainframes in the 1960s, personal computers in the 1970s-1980s, and the Internet in the 1990s. Today, this process still continues and with the introduction of artificial intelligence in a digitalized world, the human factor is purified from many sectors. In addition, it offers new job opportunities to people who develop themselves according to this digitalizing process. At this point where technology has come, it is impossible to be in the digital revolution and to be involved in the developing process without an information infrastructure. The systems that make up this information infrastructure are as follows (4):
• Cloud Computing and Information System

• Broadband

• Cyber-Physical Systems

• Internet of Things

2.2. Digitization Concept

Digitalization can be defined simply as the monitoring and processing of manually processed data via computers and digital media. In other words, digitalization is the presentation of real information in a way that is not tied to a physical location. Developments in the field of digitalization reveal the need to redesign and build many issues such as social life and the functioning of professions. Adaptation to digital systems has become a necessity of our age (5). It can be said that digitalization is generally perceived in society as the use of electronic systems with an advanced technology, and this is perceived as faster, richer information with less workforce (6).

Digital technologies mean the integration of technologies such as information, communication, internet, automation, data collection and dissemination with new production opportunities. Considering the conditions of the era we are in, it can easily be said that it is both necessary and compulsory for businesses to use digital technologies. It is important for businesses to carry out the digital transformation process effectively and to adapt well to new information and communication technologies.

Digitalization has a dynamic structure, not a static structure. With the developments in technology, everyone has had to adapt to this dynamic structure. Digitalization and e-transformation process form the basis of the transition from product-oriented understanding to information-oriented understanding. With the introduction of rapidly developing information technologies into commercial life in recent years, the restructuring process initiated by new technologies has emerged in the accounting profession. As a result of digitalization and technological developments, as in other professions, the accounting profession is also changing and developing. Accounting and technology are getting closer every day and the need for technology in the accounting profession is increasing.

3. THE EFFECT OF DIGITALIZATION ON THE ACCOUNTING PROFESSION

Thanks to the systems that emerged with the development of information technologies, it has become possible to access large volumes of data quickly, to collect, store and analyze data. However, accountants and regulators are no longer the only parties in designing accounting practices in the changing accounting profession with a number of new

technological developments. The accounting profession, which has evolved over time and under the influence of industrial revolutions, has been keeping pace with the digital revolution to a large extent by developing and continuing to develop accounting standards, procedures and services suitable for the new global, technology-centered business world (7).

Along with information technologies, computer software has started to be used in data processing and recording processes. As a result of this, it has been ensured that the accounting transactions have become easier and the manual transactions have been eliminated. Thus, the activities and financial results of the companies were presented to the shareholders in a shorter time and with relatively less errors.

With the digital transformation, the limitations of traditional record keeping methods in accounting have disappeared, and it has become easier to store information, access information, control data and use it in comparisons. Thus, the understanding of digital accounting emerged with an innovative transformation. It is necessary to present the information produced by the accounting to the information users in a timely manner in accordance with the truth and to store them reliably. While digital transformation ensures that this information is presented in a timely manner and stored reliably, it also contributes to the execution of audit activities in a faster and more transparent manner (8).

Using scientific methods instead of traditional methods in accounting transactions will increase efficiency and speed. Financial engineering will train accountants who focus on the analysis and design as a whole in all kinds of information systems and thus improve accounting for the accounting profession.

It provides significant benefits in matters such as increasing the quality of information in accounting, compliance with international accounting standards, and development of budget and decision support processes through developing information technologies.

4. DIGITAL ACCOUNTING

Digitalization has shown its effects in almost every field including service branch, and has caused rapid changes in the structure and functioning of the professions. Digitalization process leads to differentiation of both the functions and objectives of accounting. In the traditional period, which is accepted as the process before the realization and spread of digitalization, accounting functioned for many years as controlling and recording financial transactions, and the financial activities of the enterprise were manually recorded in the physical accounting books. With digitalization, the accounting registration system has begun to be called a smart registration system (10). With the widespread use of information technologies and applications in accounting, tiring and long-lasting accounting transactions have begun to be carried out in digital environments, which are a part of the management information system.

Digital accounting, also known as new generation accounting, where accounting applications are carried out through digital systems, allowed financial transactions to be carried out error-free and in a much shorter time, saving time for businesses.

The fact that with digitalization in accounting, transactions can be done better by a robotic accounting program is actually both disturbing and exciting. The use of robotic technologies for manual and routine accounting processes not only saves time for accountants, but also ensures accuracy. Consider an accounting system in which routine and ordinary accounting records are made by robotic accounting programs, there will be no obstacles in front of accountants to turn to more value-added and correct jobs. For professional accountants, data science will reveal the time required for specific tasks such as consulting, analysis, interpretation, system design and auditing.

Companies providing accounting software services have started to benefit more and more from the opportunities provided by digital accounting informatics. Digital accounting, which has replaced traditional accounting computer programs today, has created an internet-based system that allows many companies to manage their financial data more effectively. In addition to these, digital accounting and internet also provide an infrastructure service that can meet all needs of companies.

Digital accounting is the processing and transmission of financial information through digital tools and methods. In addition, digital accounting is to ensure that the sector creates value with new techniques, services and technology to satisfy the customer. In this new digital business model, which is inevitably affected by technological developments, accounting practices are based on the data necessary for the creation of important institutional processes such as strategic management and value (11). In order to have a strong future of accounting profession, accounting professionals who know their information technologies very well and can make learning continuous are needed.

With the digitalization of accounting, internal control and control processes have become continuous. In particular, all accounting information is stored in the computer environment in companies with a strong information technology infrastructure and can be examined continuously by internal control departments. In addition, all parts can be stored separately and the audit can be provided more comprehensively.

With digital transformation, the study procedures have become more flexible, the regulation of data, access to more accurate and reliable data and comparison of data. Furthermore, the storage of data through cloud storage provides cost and time saving, resulting in limited but adequate documentation forms for company growth (12). In addition, the accounting information system created through computerization also contributes to effective organizational performance (13).

A number of difficulties may be encountered in achieving the objectives of the system at the lowest cost and in realizing it in a way that secures the information processing capacity. These problems can be caused by hardware, software or the difficulty in finding a combination of accounting software and other subsystems.

The fact that members of the profession do not have sufficient information about the system, applications and programs that form the infrastructure of new digital platforms can cause some difficulties in adapting to change. This process, which is directly related to both performance and work efficiency, can be made more efficient by reducing the possibility of mistakes by professionals, and increasing the efficiency of the system, by ensuring that employees receive the necessary training on digital platforms and software used by accounting educators and professional institutions.

5. CONCULIONS

With the effect of globalization, digital developments in the world enable businesses to progress towards becoming a world company. This situation has led to the development of accounting systems in parallel with this digital progress. Today, accounting systems have begun to form in a digital way.

In order for the accounting profession to adapt to digital transformation successfully, investments should be made that will contribute to the digital skill development of accountants, as well as infrastructure development. To ensure that digital systems are adequately managed properly, an internationally recognized training program needs to be developed.

With the digitalization of accounting, the ease of work of accounting has increased, and storage has become even easier and more reliable. Due to the fact that internal and external audits can be performed more accurately and faster, contemporary reports were able to reach the management and stakeholders in the shortest time possible. As a result of this, accounting has also undertaken the task of guiding the management about its targets and strategies and has become a signal and compass that can detect risks beforehand.

Most of our expenditures can be recorded digitally and we can access this data whenever we want. Invoices can now be issued and accounted for automatically. It is predicted that in the near future, money exchanges of all people and businesses will be automatically recorded with artificial intelligence. This situation shows that in terms of the accounting profession, a return to the concept of a digital accounting profession is taking place, where every information is in the digital environment and information is processed from the digital environment.

With the integration of technological developments into accounting, accounting professionals provide significant benefits in terms of processing data, accuracy rates, timing, speed of access to information, minimizing the risk of error and easing the workload in the process.

References

[1] Pusmaz, T., & Özulucan, A. (2021). Muhasebe meslek mensuplarının dijital muhasebe okuryazarlık düzeylerinin tespiti üzerine kayseri ve niğde illerinde bir araştırma. Ömer Halisdemir Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 14(4) 1431-1452, s.1431.

[2] Klein, M., (2020). İşletmelerin dijital dönüşüm senaryoları - kavramsal bir model önerisi. Elektronik Sosyal Bilimler Dergisi, 19(74), 997-1019. , s. 998

[3] Hofmann, E., & Rüsch, M. (2017). Industry 4.0 and the current status as well as future prospects on logistics. Computers in İndustry, 89, 23-34. S., 9

[4] Mert, H., & Güner, M., & Duyar, G.. (2022). Dijitalleşme sürecinin gelişimi ve muhasebe uygulamalarına etkileri yönünden İstanbul ilinde SMMM'ler üzerinde bir araştırma, Muhasebe ve Denetime Bakış, 66, 195-218, 198

[5] Tekbaş, İ. & Kurnaz, E., & Azaltun, M., (2018). Dijital muhasebe okuryazarlığı: muhasebe meslek mensupları üzerine bir araştırma, 5 th International Congress on Accounting and Finance Research (ICAFR'18), Izmir / TURKEY, s.224

[6] Ersöz, B., & Özmen, M., (2020), Dijitalleşme ve bilişim teknolojilerinin çalışanlar üzerindeki etkileri, AJIT-e: Bilişim Teknolojileri Online Dergisi, 42, 170-179:173

[7] Hunton, J. E. (2002). The impact of digital technology on accounting behavioral research. Advances in Accounting Behavioral Research, 5, 3-17: 4

[8] Şeker, Y., & Hoş, S., (2021). Muhasebe meslek mensuplarının dijital muhasebe uygulamalarını kullanımlarına ilişkin bir araştırma, Anadolu Üniversitesi Sosyal Bilimler Dergisi, 21(4), 953, 972, s., 955

[9] Tekbaş, İ. (2019). Muhasebenin dijital dönüşümü ve malı mühendislik. İstanbul: Hümanist Kitap Yayıncılık

[10] Gönen, S., & Rasgen, M. (2019). Endüstri 4.0 ve muhasebenin dijital dönüşümü. Manas Sosyal Araştırmalar Dergisi, 8(3), 2898-2917. S. 2906

[11] Geerts, G. L., & Graham, L. E., & Mauldin, E. G., & McCarthy, W. E., & Richardson, V. J. (2013). Integrating information technology into accounting research and practice. Accounting Horizons, 27(4), 815–840, s., 816

[12] Bygren, K. (2016). The digitalization impact on accounting firms business models, master of science thesis, KTH Industrial Engineering and Management Stockholm, Sweden: 12

[13] Soudani, S. N. (2012). The usefulness of an accounting information system for effective organizational performance. International Journal of Economics and Finance, 4(5), 136-145.: 136

[14] Dursun, G. D., & Ektik, D., & Tutcu, B. (2019). Mesleğin dijitalleşmesi: muhasebe 4.0. Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi, 6(6), 263-271.: 270 [12] Bygren, K. (2016). The digitalization impact on accounting firms business models, master of science thesis, KTH Industrial Engineering and Management Stockholm, Sweden: 12

[13] Soudani, S. N. (2012). The usefulness of an accounting information system for effective organizational performance. International Journal of Economics and Finance, 4(5), 136-145.: 136

[14] Dursun, G. D., & Ektik, D., & Tutcu, B. (2019). Mesleğin dijitalleşmesi: muhasebe 4.0. Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi, 6(6), 263-271.: 270

The Relationship between Organizational Justice and Organizational Commitment in Restaurants

Mehmet ŞAHİN[a*], Alper ATEŞ[b], H. Arif TUNCEZ[c], Halil SUNAR[d]

[a]*Selcuk University, Aksehir Vocational High School, Turkey, sahinmehmet@selcuk.edu.tr*
[b]*Selcuk University, Faculty of Tourism, Turkey, alpera@selcuk.edu.tr*
[c]*Selcuk University, Akşehir Faculty of Economics and Administrative Sciences, Turkey, hatuncez@selcuk.edu.tr*
[d]*Giresun University, Tirebolu Mehmet Bayrak Vocational High School, Turkey, halil.sunar@windowslive.com*

Abstract

Employees' organizational justice views must be supportive of organizational commitment creation in order to enable the efficient and effective functioning of human resources policies in organizations. Employees with high organizational commitment are thought to be more efficient and productive, which helps the company achieve its goals and objectives. Employee perceptions of organizational fairness influence organizational commitment, management confidence, and job satisfaction. The goal of this research is to look at the connection between organizational justice and organizational commitment in restaurants. The purpose of this research is to look at the link between organizational justice and organizational commitment in restaurants. Questionnaire technique was used to collect data. The prepared questionnaires were applied to people working in restaurants operating in Konya. Obtained data were analyzed with statistical analysis program. Organizational justice subdimensions influenced normative commitment subdimensions of organizational commitment, according to the findings. In the conclusion part of the study, various recommendations were made to the organizations.

Keywords: Organizational Commitment, Organizational Justice, Restaurants

1. INTRODUCTION

Organizational commitment, which is one of the important issues in the realization of the goals and objectives of the organizations today, has become one of the subjects that are frequently examined due to its relationship with organizational justice. The perception of organizational justice is of great importance in order to create the organizational commitment of the employees in the enterprises and to increase the level of commitment. The increasingly difficult competition conditions and the effects of the global economy have led organizations to work on the factors that will ensure continuity. Employees' commitment to the organization increases productivity, provides competitive advantage and directly affects the permanence of the organization. In this context, it is necessary to analyze and implement the factors that will ensure employee loyalty for the organization. The most important factor affecting employee loyalty is fair practices. Fair or unfair practices determine the degree of commitment.

---

* Corresponding author.

The aim of this study is to determine the relationship between organizational justice and organizational commitment levels of employees in organizations. Organizational justice perceptions of employees towards practices in organizations have an impact on their commitment to their organizations. If the practices carried out in the organizations are fair, the commitment of the employees to the organization increases, while the unfair practices have a negative effect on the organizational commitment. Therefore, it is important to determine the relationship between organizational justice and organizational commitment in organizations.

In this study, firstly the concept of organizational justice is defined and the sub-dimensions of organizational justice are explained. Then, the concept of organizational commitment is explained and information is given about its importance and sub-dimensions. In order to determine the organizational justice and organizational commitment relations of the employees, the findings obtained in the research on the employees in the restaurants operating in the province of Konya are given, and in the conclusion section, general inferences and recommendations regarding the justice and commitment of the employees are presented.

2. CONCEPTUAL FRAMEWORK

2.1. *Organizational Justice*

Justice is one of the most important issues in social and organizational life. Justice means truthfulness, honesty, equality, compliance with the criteria of fairness, legitimacy, impartiality, humanity and goodness. Organizational justice is a term used to reveal the effect of justice in businesses. More specifically, organizational justice is a concept that includes the perceptions of employees in the organization about how fair they are treated in the workplace and how this perception affects other results in terms of organizations (İşcan&Sayın, 2010).

The emergence of the concept of organizational justice took place with Adams's "equality theory". Adams, in his theory of equality, stated that individuals' work-related success and satisfaction are related to the perceived equality or inequality in the work environment (Luthans, 1997: 197). The concept of organizational justice is one of the most important behavioral and psychological concepts for organizations, which are characterized as a living organism, consisting of individuals who come together to achieve predetermined goals and objectives (Eberlin and Tatum, 2008: 311).Organizational justice is a term used to describe the role of justice as it relates directly to the workplace. In particular, organizational justice is concerned with the way employees determine whether they are treated fairly in their jobs and the way these determinations affect other work-related variables. If employees believe they are being treated fairly, they will be more likely to have positive attitudes about their job, job results, and supervisors. In other words, organizational justice is a behavior that determines whether individuals are treated equally and fairly in the organization they work for, and how this situation affects other work-related factors (Moorman, 1991: 845). In the studies carried out on the concept of organizational justice, it has been agreed that there are some general principles regarding the concept. General principles of organizational justice; Equality, Perception, Interpersonal Justice, Consistency, Equality, Correction, Accuracy, Representation, Ethics.

Organizational justice is often examined in three different dimensions, namely "distributive justice", "procedural justice" and "interactional justice", each of which has separate dynamics:

The distributive justice dimension is based on the principle of equal results in return for equal effort, in line with the theory of equality. In this direction, it occurs in the form of equal reward or punishment according to the performance of the employees at the point of reaching the organizational goals. It is not in the sense of equal reward or punishment for everyone, but in the form of rewarding or punishing those who perform equally according to their performance (İşcan&Naktiyok, 2004).Distributive justice is the dimension of fairness in the distribution of organizational outputs. In the most general sense, procedural justice is concerned with how a distributive decision is made, and for this reason it is compared with distributive justice, which expresses the justice of the outcome of the decision (Konovsky, 2000).Procedural justice can be defines as the preferred method in the selection and measurement of elements such as remuneration, promotion, financial opportunities, working conditions and performance evaluation for employees as the degree of fairness of rules and policies (Greenberg, 1990).In other words, while distributive justice is about the distribution of organizational outputs to employees, procedural justice is about the justice of the transactions that cause this distribution. Interactional justice is a dimension discussed by researchers. While some researchers state that interactional justice is included in procedural justice, some researchers consider it as a major dimension. Interactional justice is related to the human aspects of organizational practices. According to this dimension, individuals are not interested in what the decision methods are or the degree of adherence to these methods, but whether it is sufficient to inform them about the behaviors and procedures shown to them while applying the rules and procedures (Aslan &Özkoç, 2015). It is concerned with the human aspect of organizational practices, i.e. the way management (or those who control rewards and resources) treats the recipient of justice. In this respect, interactional justice is concerned with aspects of the communication process between the source and recipient of justice, such as courtesy, honesty and respect (Cohen-Charash and Spector, 2001: 281).

2.2. Organizational Commitment

Organizational commitment is the desire of the employees within the organization to stay in the organization beyond monetary concerns by integrating with the goals, objectives and principles of the organization (Güney, 2015: 277). All organizations should take into account the feelings of attachment and ownership of the people working in the organization in order to survive, to ensure their continuity and to achieve the goals they have determined. The most important element of organizations is the human factor. Organizational commitment should be created in order to increase the productivity of the human factor in the organization (Topaloğlu, Koç, &Yavuz, 2008). Organizational commitment essentially includes the view that the individual identifies with the organization and the goals of the organization, and commits to the organization for the sake of achieving these goals (Bağcı, 2013).

The concept of organizational commitment reflects the interest shown by the employee for the organization to be successful, the commitment to the organization and the belief in organizational values (Kaya, 2008: 126). Since people cannot act independently of their feelings and thoughts in the working environment, the management of the human factor is difficult. Individuals feel connected to that organization when they work in an organization where their needs are met and they feel happy (İmamoğlu, 2011: 12). According to Becker (1960, pp.32–33), commitment arises because the employee is aware of what he will lose if he does not feel committed. Allen and Meyer (1990, p.3) defined organizational commitment as a behavior that is shaped by the relationship of the employees with the organization and makes them decide to be a permanent member of the organization.

The studies carried out by Allen and Meyer are very important in the organizational commitment literature. Allen and Meyer examine organizational commitment in three basic classes within the scope of their research, and this classification is frequently used in the organizational literature. Within the scope of the classification made by Allen and Meyer, organizational commitment is examined under three main headings as affective commitment, continuance commitment and normative commitment. Affective commitment is about individuals' desire to be in the organization and seeing themselves as a part of the organization. Meyer and Allen (1984) define emotional commitment as feeling like a part of the organization and identifying with it. The basis of emotional commitment is that employees are attached to the organization not on the basis of material interests, but with an emotional bond because they want it (Yalçın and İplik, 2005: 397-398).

3. METHOD

The main purpose of the research is to determine the extent of the relationship between the organizational justice perceptions of the employees and their organizational commitment levels. As a secondary purpose, it is tried to reveal how the demographic characteristics of the employees affect their organizational justice perceptions and organizational commitment levels. In this direction, an application was carried out for the employees in the restaurants operating in Konya. A total of 150 questionnaire forms were distributed to individuals, and 121 of these forms were returned. 13 questionnaire forms were not evaluated for various reasons and a total of 108 questionnaires were evaluated.

A questionnaire consisting of 3 parts was prepared to measure the organizational justice and organizational commitment of the employees. In the first part, there are 5 questions about the demographic characteristics of the employees. In the second part, the Organizational Justice Scale, which was developed by Niehoff and Moorman (1993), consisting of 20 questions, was used to measure the organizational justice (distribution, transactional, interactional justice) perceptions of the employees. In the third part, the Organizational Commitment scale developed by Allen and Meyer (1990) consisting of 24 questions to measure the organizational commitment (emotional, continuity, normative commitment) attitudes of the employees was used.

In the study, the data were analyzed with the SPSS 22.0 program. The validity and reliability of the organizational justice and organizational commitment scales in the research were measured by calculating the frequently preferred Cronbach Alpha coefficients.

Table 1. Internal Consistency Coefficients of Organizational Justice and Organizational Commitment Scales

Organizational Justice	Cronbach Alpha
Distributive Justice	0,773
Procedural Justice	0,861
Interactional Justice	0,912
General Organizational Justice	0,934
Organizational commitment	

Emotional Commitment	0,728
Continuance Commitment	0,749
Normative Commitment	0,728
General Organizational Commitment	0,801

An acceptable alpha value is desired to be at least 0.70 as a result of the calculation of the Cronbach Alpha coefficient (Özdamar, 2002: 673). Accordingly, as can be seen in Table 1, both dimensions and overall organizational justice and organizational commitment scales have high and very high reliability levels.

4. FINDINGS

The findings regarding the demographic characteristics of the employees are shown in Table 2.

Table 2. Demographic Characteristics of Employees

Variable	Choice	Frequency (n)	Percentage (%)
Gender	Man	91	84.3
	Woman	17	15.7
Marital status	Married	66	61.1
	Single	42	38.9
Age	20-30	53	49.1
	31-40	35	32.4
	41-50	17	15.7
	50+	3	2.8
Level of education	Primary education	23	21.3
	High school	41	38.0
	Associate degree	28	25.9
	Licence	12	11.1
	Graduate	4	3.7
Position	Executive	16	14.8
	Worker	92	85.2

While 84.3% of the employees are men, 61.1% are married. The group with the highest percentage in terms of age is the employees between the ages of 20-30 with 49.1%. While the group with the highest percentage by education level is high school graduates, 85.2% of those who participated in the research are not in a managerial position.

The Relationship Between Demographic Characteristics and Organizational Justice and Organizational Commitment

Within the scope of the research, the relationship between the demographic characteristics of the participants, their perceptions of organizational justice and their organizational commitment levels were also examined. Since the frequency (n) ≥ 30, it was decided to apply parametric tests. In this analysis, "Independent Sample T Test" and "ANOVA (One-way analysis of variance)" test were applied.

According to the results of the T-test, which was conducted to determine whether the employees' perception of organizational justice differs according to gender, there was no significant difference according to gender in the distributional, procedural and interactional justice score averages of the participants ($p > 0.05$). Likewise, the emotional, continuance and normative commitments of employees do not differ significantly by gender ($p > 0.05$).

According to the results of the T-test performed to determine whether the organizational justice perception and organizational commitment levels of the employees differ according to gender, there is no significant difference in the distributional, procedural and interactional justice score averages of the participants according to marital status

(p>0.05).Likewise, employees' emotional, continuance and normative commitments do not differ significantly according to marital status (p>0.05).

According to the results of the ANOVA test, which was conducted to determine whether the organizational justice perception and organizational commitment levels of the employees differ according to age, there was no significant difference according to age in the distributional, procedural and interactional justice score averages of the participants (p>0.05). Likewise, the emotional, continuance and normative commitments of the employees do not differ significantly according to age (p>0.05).

According to the results of the ANOVA test, which was conducted to determine whether the organizational justice perception and organizational commitment levels of the employees differ according to age, there was no significant difference according to age in the distributional, procedural and interactional justice score averages of the participants (p>0.05). Likewise, the emotional, continuance and normative commitments of the employees do not differ significantly according to age (p>0.05).

According to the results of the ANOVA test, which was conducted to determine whether the organizational justice perception and organizational commitment levels of the employees differ according to the education level, there was no significant difference in the distributional and interactional justice score averages of the participants according to the education level (p>0.05). However, it was determined that the procedural justice averages of the employees differed significantly according to the education level. Accordingly, the procedural justice perceptions of employees with a graduate education level differ significantly from those of other employees (p<0.05). On the other hand, the emotional, continuance and normative commitments of employees do not differ significantly according to education level (p>0.05).

According to the results of the ANOVA test conducted to determine whether the organizational justice perception and organizational commitment levels of the employees differ according to their position in the business, there is no significant difference in the distributional, transactional and interactional justice score averages of the participants according to their position in the business (p>0.05). Likewise, the emotional, continuance and normative commitments of the employees do not differ significantly according to their position in the enterprise (p>0.05).

The Relationship Between Perception of Organizational Justice and Organizational Commitment

In order to test the primary hypothesis of the research that "organizational justice significantly affects organizational commitment", the coefficients of the relationships between the scores obtained from the organizational justice and organizational commitment scales were calculated and examined.

Table 3. Correlation Coefficients of the Relationships between Organizational Justice and Organizational Commitment

Points	1	2	3	4	5	6	7	8
Distribution justice	1							
Operational Justice	0.523**	1						
Interactive Justice	0.604**	0.807**	1					
General Organizational Justice	0.770**	0.896**	0.946**	1				
Emotional Loyalty	0.535**	0.408**	0.520**	0.553**	1			
Continue Commitment	0.065	0.045	0.194*	0.129	0.180	1		
Normative Loyalty	0.493**	0.320**	0.429**	0.465**	0.599**	0.285**	1	
General Organizational Commitment	0.435**	0.304**	0.472**	0.464**	0.698**	0.736**	0.808**	1

*p<0,05

**p<0,01

According to the results obtained, it was understood that there is a positive and moderately significant relationship between organizational justice and organizational commitment levels (r=,464 p<0.01).

There is a moderately significant positive correlation between the distributive justice factor and the affective commitment factor (r=.535 p<0.01); there is a very low significant positive correlation between the distributive justice factor and the continuance commitment factor (r=.065 p<0.01); there is a moderate positive correlation between the distributive justice factor and the normative commitment factor (r=.493 p<0.01).There is a moderately significant positive correlation between the procedural justice factor and the affective commitment factor (r=.408

p<0.01); there is no significant relationship between the procedural justice factor and the continuance commitment factor (r=.045 p<0.01); there is a low positive correlation between the procedural justice factor and the normative commitment factor (r=.320 p<0.01). There is a moderately significant positive correlation between the interactional justice factor and the affective commitment factor (r=.520 p<0.01); a positive low level significant relationship between the interactional justice factor and the continuance commitment factor (r=,194 p<0.05); there is a moderate positive correlation between the interactional justice factor and the normative commitment factor (r=,472 p<0.01). There is a moderately significant positive correlation between employees' general organizational justice perceptions and their general organizational commitment levels (r=,464 p<0.01).

5. CONCLUSION

In this study, it is aimed to determine the relationship between the sense of organizational justice and organizational commitment in terms of restaurants. For this purpose, in the present study, analyzes were also carried out to determine whether there were any differences which was aimed to determine the relationship between the sense of distributive justice, sense of procedural justice and communication justice, which are the elements of organizational justice in restaurants, and organizational commitment, and to determine whether the feelings of organizational justice and commitment differ in terms of gender, marital status, age, educational status and the position of employment. As a result of the correlation analysis, it was determined that there is a significant (r=464) relationship between the sense of organizational justice and organizational commitment in restaurants. This result is also compatible with the literature. In addition, the relationship between organizational justice and commitment was also examined in terms of distributive, procedural and interactional justice. It was determined that there was a significant relationship between distributive justice and organizational commitment at the level (r=435), a significant relationship at the level of procedural justice and organizational commitment (r=304), and a significant relationship at the level of interactional justice and organizational commitment (r=472). In addition, the relationship between organizational justice and affective, continuance and normative commitment was also examined. A significant relationship was found between organizational justice and affective commitment (r=553), and a significant relationship was found between organizational justice and normative commitment (r=465). On the other hand, no significant relationship was found between organizational justice and continuance commitment (r=129).

The relationship between demographic variables, organizational justice and organizational commitment was examined, and only a significant difference was found between procedural justice and education level. Accordingly, employees with postgraduate education differ from others in terms of procedural justice.

As a result of the findings, the high sense of justice towards the enterprise will affect the organizational commitment level of the employees, and the employees whose organizational commitment is positively affected will play their roles well. Naturally, the performance of the employees who play their role well will be high. Since the turnover rate of employees with high organizational commitment will be low, continuity in the quality of the service provided will be ensured.

References

[1] Allen N.J.&Meyer J.P., (1990). "The Measurement and Antecedents of Affective, Continuance and Normative Commitment to the Organization", Journal of occupational and organizational psychology, Cilt:63, Sayı:1, s.1-8.

[2] Aslan, Z. &Özkoç, A. G., (2015). Örgütsel Adalet, D. Küçükaltan, Tükeltürk, Ş. A. ve Gürkan, G. Ç(Editör). Örgütsel Davranışta Güncel Konular, Ankara: Detay Yayıncılık

[3] Becker, H., (1960). "Notes on the Concept of Commitment", The American Journal of Sociology, Vol.66, No.1, s.32–40

[4] Cohen-Charash, Y. &Spector, P. E., (2001). The role of justice in organizations: A meta analysis, Organizational behavior and humandecision processes, 86 (2), 278-321

[5] Eberlin, R. J. &Tatum, B. C. (2008). Making Just Decisions: Organizational Justice, Decision Making, And Leadership. Management Decision, 46, 310-329.

[6] Greenberg, J., (1990). Organizational justice: Yesterday, today, and tomorrow, Journal of management, 16 (2), 399-432

[7] Güney, S. (2015). Örgütsel Davranış (3. Basım), Ankara: Nobel Akademik Yayıncılık.

[8] İmamoğlu, G. (2011). İlköğretim Okulu Öğretmenlerinin Örgütsel Bağlılık Düzeyleri Ve Örgütsel Adalet Algıları Arasındaki İlişki. Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Eğitim Bilimleri Ana Bilim Dalı, Eğitim Yönetimi Ve Denetimi Bilim Dalı, Yüksek Lisans Tezi, 29-30.

[9] İşcan, Ö. F. &Naktiyok, A., (2004). Çalışanların örgütsel bağdaşımlarının belirleyicileri olarak örgütsel bağlılık ve örgütsel adalet algıları, Ankara Üniversitesi Siyasal Bilgiler Fakültesi Dergisi, 59 (1), 181-201.

[10] İşcan, Ö.F. & Sayın, U. (2010). "Örgütsel Adalet, İş Tatmini ve Örgütsel Güven Arasındaki İlişki", Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi, 24(4), 195-216.

[11] Kaya, H. (2008). Kamu ve Özel Sektör Kuruluşlarının Örgütsel Kültürünün Analizi ve Kurum Kültürünün Çalışanların Örgütsel Bağlılığına Etkisi: Görgül Bir Araştırma. Maliye Dergisi (155), 119-142.

[12] Konovsky, M. A. (2000). Understanding procedural justice and its impact on business organizations, Journal of management, 26 (3), 489-511.

[13] Luthans, F. (1997). Organizational Behavior. New York: McGraw-Hill.

[14] Meyer, J. P.,&Allen, N. J. (1984). Testingthe" side-bet theory" of organizational commitment: Some methodological considerations. *Journal of appliedpsychology*, *69*(3), 372.

[15] Moorman, R. H., (1991). Relationshipbetweenorganizationaljusticeandorganizationalcitizenshipbehaviors: Do fairnessperceptionsinfluenceemployeecitizenship?,Journal of appliedpsychology, 76 (6), 845.

[16] Niehoff B. P. ve Moorman, R. H. (1993). Justice as a Mediator of theRelationshipBetweenMethods of MonitoringOrganizationalCitizenshipBehavior. *Academy of Management Journal,* 36 (3), 527-556.

[17] Özdamar, K. (2002). *Paket Programlar ile İstatistiksel Veri Analizi.* Eskişehir: Kaan Kitabevi.

[18] Topaloğlu, M., Koç, H. ve Yavuz, E. (2008). "Öğretmenlerin Örgütsel Bağlılığının Bazı Temel Faktörler Açısından Analizi", Kamu-İş, 9(4).

[19] Yalçın, A.,& İplik, F. N. (2005). Beş Yıldızlı Otellerde Çalışanların Demografik Özellikleri ile Örgütsel Bağlılıkları Arasındaki İlişkiyi Belirlemeye Yönelik Bir Araştırma: Adana İli Örneği. Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 14(1), 395-412.

A Study on Tourism Guidance Education of Tourism Faculties

Ömür Hakan KUZU[a*]

[a] Selcuk University, Beysehir Ali Akkanat Faculty of Tourism, Turkey, ohkuzu@selcuk.edu.tr

Abstract

The aim of this study is to examine the course 'curricula' of Turkish universities' undergraduate tourism guidance departments. The main purpose of the study is to reveal how the courses diversify in terms of the theme of "knowing the world", based on the 'similarity/isomorphism' phenomenon in the course distributions of the tourism guidance departments. This study was designed in the "case study" model, one of the qualitative research models. The "document analysis" method was used in the analysis of the data in the study. The data in the study were obtained from the web pages of the universities. "Descriptive and content analyses" of the data were made using Excel and Voyant Tools programs. According to the findings obtained from the study, there are tourism guidance departments in 39 universities and 41 faculties/schools out of a total of 209 universities in Turkey. In the study, the motto of "being a world-class university" in many universities in the world and in the country is a generally accepted vision, and the course curricula in tourism guidance departments were also evaluated under the theme of "knowing the world" (learning, evaluation, and comparison). It was observed that the three categories at most were "geography", "cuisine" and "intercultural communication", respectively. The three least repeated categories are the museum, history of civilization, and others (music, art ect.). The findings obtained from the study were discussed within the scope of the literature and some suggestions were made for course curriculum design and future studies.

Keywords: Tourism Higher Education, Tourism Guidance, Curriculum

1. INTRODUCTION

Like the multi-activity structure of tourism (Netto, 2009), tourism education is a process possessing multi-disciplinary fields (Airey & Johnson, 1999). For this reason, tourism is viewed as a very complex phenomenon and it is stated that it can only be fully comprehended by adopting a multidisciplinary approach (Candela & Figini, 2012). Tourism education has been going through a process of continuous self-development for more than thirty years, starting from the interaction of these multi-disciplinary perspectives with each other.

Tourism education firstly started in technical or vocational schools (Inui, Wheeler, & Lankford, 2006). In recent years, however, tourism education has demonstrated significant developments at both undergraduate and graduate levels (Wattanacharoensil, 2014). Since the 1990s, it has played a vital role in the dissemination of tourism education at the undergraduate level, in many aspects, from academicians in the field of geography to academicians in the field of business (Goodenough & Page, 1993).

The point emphasized by these discussions, in which even the ideal of tourism education should be considered as a 'transdisciplinary' field, (Jafari & Ritchie, 1981) is that tourism education is/should be 'multidisciplinary or interdisciplinary'. Despite this, it is considered critical that the tourism education curriculum, the content of which has been discussed since the 1990s, should be addressed in terms of its professional aspect, career opportunities and

---

* Corresponding author.

industry relations (Airey & Johnson, 1999). The interdisciplinary relationship of tourism education is shown in Figure 1:
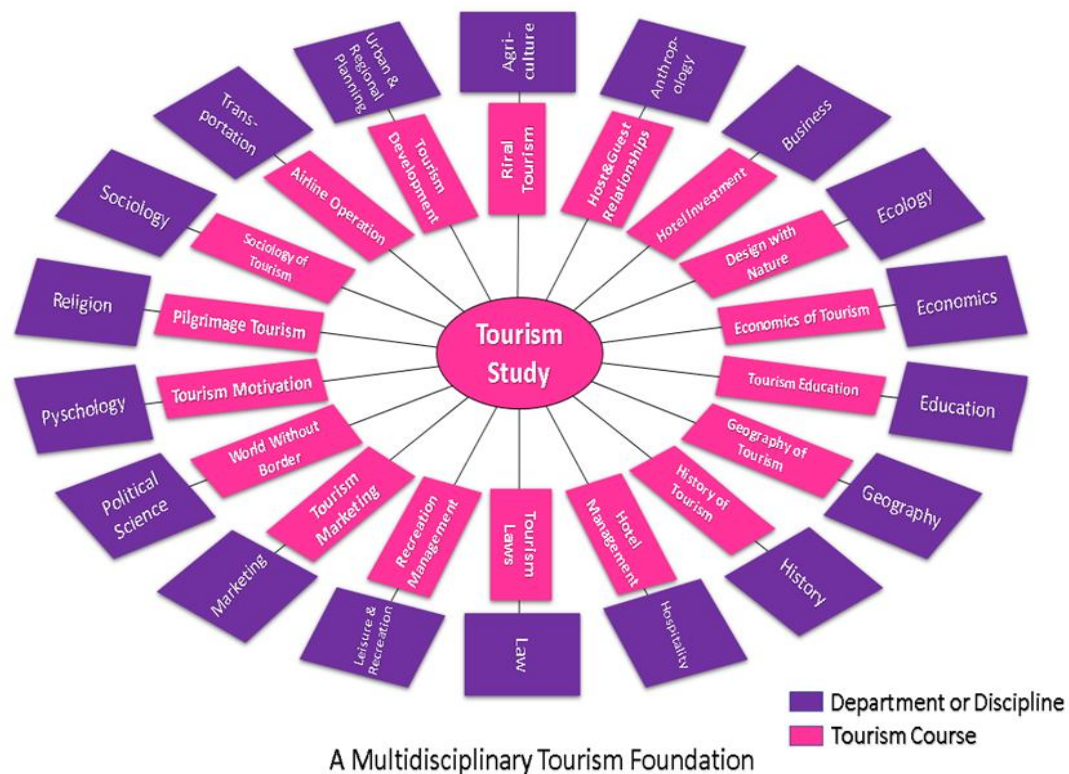

Fig. 1. Model of knowledge production in tourism
(Source: Netto, 2009: 50, as cited in Jafari & Ritchie, 1981:23)

Although the issues suggested in Figure 1 are the basis for the approaches applied in many aspects of the tourism education curriculum, it is noticed that they have developed by analysing with some criticisms. Despite this, it is seen that there exist many concerns in defining and establishing a theoretical basis in the curriculum design of tourism education. Because it is thought that a complete model that can explain the numerous aspects of tourism cannot be created. Moreover, it is considered that curriculum discussions will become more complicated when the concept of 'commercialization' is included in the discussions in determining the characteristic structure of tourism (Netto, 2009).

Despite these debates in tourism curricula, the modern, interesting and easily adaptable/applicable aspect of tourism programs is prevalent. As a matter of fact, with the developments in tourism and professionalization in tourism management since the 1990s, the field of tourism has started to draw the attention of many academic disciplines. As a result, there has been a quick increase in undergraduate programs in the field of tourism at universities (Marinov & Dogramadjieva, 2013).

The tourism and travel industry is a rapidly extending and labour-intensive service industry. Therefore, the sector development also depends on individuals receiving qualified education in terms of 'knowledge', 'skills', 'values', and 'personality'. Qualified personnel are of great importance in terms of competition in the tourism sector and tourist satisfaction. This necessitates a quality curriculum that includes theoretical and practical information together and even makes practical lessons more vital (Yedla & Ajoon, 2022).

Because travel is the most substantial dynamic in tourism, and considering that tourism is a movement (Sert & Nalçacı İkiz, 2012) between civilizations for reasons such as experiencing new geographies, establishing relationships with people from different nations, and benefiting from their cultures, the conclusion that tourism is an international and worldwide field emerges spontaneously. Assuming that the travel industry is at the core of tourism, tourist guides become one of the most noteworthy players in the tourism industry. As tourist guides are in direct contact with both the visitor and the visited. Tour guides also act as a bridge or link between visitors and host

people. They also act as cultural translators and ambassadors of their place of residence (Avcikurt, Alper, & Geyik, 2009).

Since the 'interpretation' task of tourist guides is seen as a 'conduit' function between the visitor/tourist and the place visited (Christie & Peter, 2003), it is expected them to have some characteristics in terms of knowledge, skills and qualifications. It is thought that these knowledge, skills and qualifications should be taken as a prerequisite and independent from the courses taught in the vocational certificate program, two-year and four-year education (Avcikurt, Alper, & Geyik, 2009), as in the case of Turkey. Because, as the people who establish the connection between the visitor and the visited place, the tourist guides not only confirm the promotional image of that region but also participate in the 'final delivery of the tourism product' while conveying the natural, cultural, social and other values of that country/region. Such a special position is, however, not found in any other sector of the tourism system (Rabotic, 2015).

Beyond being such an crucial job position in the tourism system, the criteria summarized in Table 1 for the tourism guidance profession form the details of the 'knowledge' + 'skill' + 'competence' formula (Günay, 2018) required to gain 'qualification'. On the other hand, the importance of the competence concept for the tourism guidance profession is increasing, and even the subject of competence-based curriculum becomes inevitable for tourism education (Mbarushimana, Role, & Allida, 2017).

The qualifications/licenses that tourist guides should have, are summarized in Table 1. Accordingly, it is necessary to shape the curricula in terms of learning outcomes to be acquired by tourism guides[1] in terms of knowledge, skills and competence. The career planning of students will, in fact, become more functional if the curriculum is designed to contribute to these qualifications and includes applications for the sector (Gökdemir et al., 2021).

Table 1. Tourism guidance higher education qualification acquisitions

KNOWLEDGE	SKILLS	COMPETENCE
Native language proficiency	Language and expression skills	Leadership
Foreign language knowledge	Effective communication skill	Extroversion
(General/local) history, geography and natural knowledge	Ability to access and interpret information	Hospitality
Knowledge of world history and cultures	Wit and humour skills	Open-mindedness
Information about the region/district	Organizational skill	Being presentable
Art history and ethnographic knowledge	Coordination skill	Practicality/Result oriented
Archelogy and mythology knowledge	Ability to ask interesting and critical questions	Collaboration
Tourism psychology and sociology knowledge	Ability to solve problems	Being ethical
First aid and basic health information	Innovation and continuous learning ability	Sustainability awareness

Source: Adapted from Gökdemir et al., 2021; Sheldon, Fesenmaier, & Tribe, 2010; Tourist Guiding Professional Regulation, 2014.

The knowledge, skills and competencies indicated in Table 1 can be seen in miscellaneous variations of course content that may have general validity worldwide (Tanrısever, Bektaş, & Koç, 2019). At the same time, these achievements can be considered as a mixed presentation of the 'The Tourism Education Futures Initiative-TEFI' values (Sheldon, Fesenmaier, & Tribe, 2010). While the knowledge values in TEFI coincide with the knowledge and skill outcomes in Table 1, the values of management, ethics, mutual respect and professionalism in TEFI correspond to the competence outcomes in Table 1.

This study aims at analysing the curricula of tourism guidance departments of universities in Turkey in terms of knowledge, skills and competence. In this part of the study, the situation of the courses on world history and culture (knowing, learning and evaluating the world) in the departments that deliver tourism guidance education, as the emphasis of the missions in the universities to be worldwide and internationalization (Salmi, 2009) is gaining importance day by day. For this purpose, answers to the following research questions were sought:

1- How much space do the courses with the theme of knowing the world (learning, evaluation and comparison) take up in the tourism guidance departments of universities in Turkey that provide undergraduate (four-year) education?

2- How do the distribution and scope of the courses with the theme of knowing the world differ/similar?

---

[1] In the study, the words "tourist/tourism guidance" are employed in the same sense and as the equivalent of the same profession.

2. METHOD

2.1. Research model

This study was carried out in the case study model, one of the qualitative research designs, to analyse the course distribution of the departments that deliver tourism guidance education in tourism faculties in Turkey. According to Creswell (2007), a case study is a qualitative research model in which one or more situations limited in time are examined in depth with data collection tools containing multiple sources, and situations and themes related to the situation are defined. In the study, the case study model was preferred, as the examination of the course distribution of tourism guidance departments is aimed.

2.2. Study group

In this study, the purposive sampling method (Mason, 2002) was favoured to contribute to the objective of the study. Since the researcher is a faculty member in the tourism guidance department in the tourism faculty, the sample of the study consisted of the departments that deliver tourism guidance education at the undergraduate level among the tourism higher education institutions in Turkey. The fact that the decision to close the colleges that supply associate degree (two-year) education in tourism guidance in the country is being discussed and the postgraduate level education is still new and does not show much diversity (Çakmak and İstanbullu Dinçer, 2018) has been effective in the selection of the sample.

2.3. Data collection tool

In the study, "document analysis", one of the data collection methods, was employed. The main purpose of document analysis is to analyse written documents containing information about the facts/situations to be analysed, and this method can be used alone or enriched by methods such as interviews and observation (Yıldırım & Şimşek, 2008). Due to the purpose of the study and time constraints, only the document analysis method was preferred in the study.

2.4. Data collection

The data used in the study were acquired in three stages. First, the names of universities and departments that deliver tourism guidance education at the undergraduate level were picked from the Higher Education Program Atlas website (https://yokatlas.yok.gov.tr/) affiliated with the Higher Education Council of Turkey (YÖK). Second, the curriculum documents received from the websites of the universities were reported to scan the curricula of the departments that deliver tourism guidance education at the undergraduate level. Finally, a literature review was conducted on the subject.

2.5. Data analysis

In this study, the data were interpreted based on descriptive and content analysis methods. In the descriptive analysis, data are analysed with previously specified themes, while in content analysis, it is essential to reach concepts and themes by coding and categorizing the data (Yıldırım & Şimşek, 2008). In the first stage of this study, since it was aimed to analyse the theme of "knowing the world"; the "content analysis method" was favoured because it was aimed to create coding and category in terms of the "descriptive analysis method" and the distribution and scope of these courses. Microsoft Excel and Voyant Tools software programs (Cortés‑Sánchez, 2017) were used to carry out the said analyses.

2.6. Validity and reliability

To ensure internal validity, the researcher triangulation (Denzin & Lincoln, 1994) technique was used in the study and contributions were received from two different expert academicians in data collection, analysis and interpretation. For external validity, the process of data collection and analysis is detailed. In addition, direct transfer of information obtained from secondary sources (university web pages) is also included. In the study, the consensus formula of Miles and Huberman (1994) was taken as a basis for internal reliability and it was ensured that the coders

were coding until they reached a consensus of more than 80% on the data. For external reliability, the coding notes and other records on the data were preserved in their raw form. In addition, a comparison was made with the relevant literature in the interpretation of the data.

3. FINDINGS

In the study, firstly, it was found that there are tourism guidance departments at the undergraduate level in 41 faculties/schools in 39 universities in Turkey. It has been observed that two of these universities have two tourism guidance departments. The distribution of these sections is shown in Table 2:

Table 2. Distribution of undergraduate tourism guidance departments in Turkey by universities

Unit	State University	Foundation University	Total
Faculty	33	1	34
College	5	2	7
Total	38	3	41

Secondly, to answer the research questions in the study, analyses were made about how many courses were included in the theme of "knowing the world" and how these courses were distributed. Accordingly, the concepts of "world, country, and culture" were scanned for the theme of "knowing the world" in the tourism guidance departments, and the course names obtained were first classified under 10 categories as a result of the separate analyses of the two expert academicians who participated in the study. As a result of a second evaluation made by academics together, the courses were classified under 9 categories. In Table 3, the number of courses and titles of tourism guidance departments coded according to themes and categories are given:

Table 3. Categories of courses in undergraduate tourism guidance departments in Turkey by name

Theme	Category	n
	World Geographies and Destinations	20
	World Cuisine and Food Culture	15
	Intercultural Communication	9
	Countries and World Cultures	7
Knowing the World	World Ancient Cities	7
	World Cultural Heritage	5
	World Museums	3
	World Civilization History	3
	Other	3

In Table 3, it is seen that under the theme of knowing the world (learning, evaluation and comparison), at most three categories are on "geography", "cuisine" and " intercultural communication", respectively. The three least repeated categories are museum, history of civilization, and other. Under the other category, course names were found as world music in one university, world literature and classics in another, and "guidance organizations in the world" in another university.

4. DISCUSSION AND CONCLUSION

Discussions on tourism education have been progressing more systematically for the last 30 years. It can be expressed that the training of tourist guides who will work in the travel sector, one of the two main components of the tourism sector, has started to gain prestige in these discussions. Although the studies on tourism guidance education are not yet at the desired level and richness in the world (Rabotic, 2015), it is accentuated that these studies should be increased (Çakmak and İstanbullu Dinçer, 2018). In this study, on the examination of the course curricula of tourism guidance education, it was tried to specify which courses the guide candidates took according to the theme of "knowing the world", which can be considered an important universal intersection element of the knowledge, skills and competence components.

It has been concluded that the 41 undergraduate tourism guidance departments of Turkish universities, which are the sample of the study, mostly have courses on world geography and destinations, world cuisines and food cultures, and intercultural communication. This finding partially overlaps with the finding in the study of Tanrısever, Bektaş, and Koç (2019) that the most common subjects in tourism guidance education in the world's countries are history, art history and geography. It is thought that the weight of world cuisine courses in tourism guidance departments in Turkey is due to the Gastronomy and Culinary Arts departments, which have recently increased in number in the tourism faculties of Turkish universities. Because, in the study, it was seen that most of the courses with the theme of "knowing the world" are electives in the common elective pool of the faculty.

According to the findings of the study, world museums, world civilization history and world art (such as literature, music and architecture) are rarely included in the curriculum of the tourism guidance departments; Değirmencioğlu (2001) uncovered in the study that architecture and fine arts are among the top three courses in the tourist guides, which can be interpreted as a positive development in the curriculum of the country even after 21 years. On the other hand, it is hoped that this negative situation can be compensated by including the subjects of art and museology in the world cultural heritage courses, which have a relative surplus in the curriculum. Considering that intangible cultural heritage elements have started to gain importance at least as much as tangible cultural heritage elements in the marketing of tourism (Aydoğdu Atasoy, 2019), it is inevitable that more importance should be given to the world art and history in tourism guidance departments.

While the vision of becoming a world-class university is already presented as a fundamental recipe for universities (Altbach, 2004; Salmi, 2009), the fact that tourism and tourism education curriculum, a universal sector and discipline by nature (Kuzu, 2020), is focused on "knowing the world" and is almost a "spontaneity". The importance of knowing the world is also evident in tourism guidance education, which is stated to require intercultural communication and messenger skills (Saraiva & dos Anjos, 2019). Perhaps, increasing the number of such courses will eliminate the problem that tourist guides, whose duty is to interpret as well as translate, are insufficiently taught on "Turkey's international problems" as stated in Değirmencioğlu's (2001) study, and thus improve the ability to analyse the national/international problems of the country by getting to know the world.

This study has certain limitations. At the beginning of these, the curriculum of the tourism guidance department is limited only to the example of Turkey. The curricula of tourism guidance departments in the universities of the countries of the world, especially those of developed European, Asian and American countries, can be compared with Turkey's example. As in this study, course curricula are not limited to the theme of knowing the world, but it is possible to reach common/general themes through the categories and codes of the courses. By diversifying the methods operated in this study, studies can be accomplished in which both qualitative and quantitative research methods are assessed together. Most importantly, to eliminate the limitation of analysing the course curricula only on their names, as in this study, data can be acquired from students, academicians and sector representatives/tourist guides with qualitative and quantitative data collection tools for the state of the course content and how it should be developed. What this study is trying to do is to open a door about whether the tourist guides are competent/qualified to answer this question from the perspective of the richness of our unique world and the peoples of our sister world, based on the assumption (?) that the tourists ask the guides questions about their own country that the guide introduces the most.

References

[1] Airey, D., & Johnson, S. (1999). The content of tourism degree courses in the UK. *Tourism Management, 20*(2), 229-235.

[2] Altbach, P. G. (2004). The costs and benefits of world-class universities. *Academe, 90*(1), 5-8.

[3] Avcikurt, C., Alper, B., & Geyik, S. (2009). Education and training of tourist guides in Turkey. *Management and Education, V*(1), 57-63.

[4] Aydoğdu Atasoy, Ö. (2019). Somut olmayan kültürel miras unsurlarının turizm işletmelerinde kullanılmasına yönelik yeni yaklaşımlar. *The Journal of International Social Research, 12*(67), 822-829.

[5] Çakmak, T. F., & İstanbullu Dinçer, F. (2018). Turist rehberliği bölümleri ders programlarının "Türk Kimliği" açısından incelenmesi. *International Journal of Contemporary Tourism Research, 2*(2), 67-75.

[6] Candela, G., & Figini, P. (2012). *The economics of tourism destinations. Springer texts in business and economics*. Heidelberg: Springer.

[7] Christie, M. F., & Peter M. A. (2003). Transformative tour guiding: Training tour guides to be critically reflective practitioners. *Journal of Ecotourism, 2*(1), 1-16.

[8] Cortés-Sánchez, J. D. (2017). *Mission and vision statements of universities worldwide-a content analysis, Documento de investigación No. 152*. Bogotá D. C., Colombia: Editorial Universidad del Rosario.

[9] Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches*. USA: SAGE Publications.

[10] Değirmencioğlu, A. Ö. (2001). Türkiye'de turizm rehberliği eğitimi üzerine bir araştırma. *Anatolia:Turizm Araştırmaları Dergisi, 12,* Güz, 189-196.

[11] Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of qualitative research*. Thousand Oaks, CA: Sage.

[12] Gökdemir, S., Korkmaz, H., Bozdoğan, S., & Kahraman, D. (2021). Turist rehberliği eğitimi alan öğrencilerin kariyer algıları: Çanakkale onsekiz mart üniversitesi turizm fakültesi örneği. *Journal of Travel and Tourism Research, 18,* 102-130.

[13] Goodenough, R. A., & Page, S. J. (1993). Planning for tourism education and training in the 1990s: bridging the gap between industry and education. *Journal of Geography in Higher Education, 17*(1), 57-72.

[14] Günay, D. (2018). Türkiye'de lisansüstü eğitim ve lisansüstü eğitime felsefi bir bakış. *Üniversite Araştırmaları Dergisi, 1*(2), 71-88.

[15] Inui, Y., Wheeler, D., & Lankford, S. (2006). Rethinking tourism education: What should schools teach? *Journal of Hospitality, Leisure, Sport and Tourism Education, 5*(2), 25-36.

[16] Jafari, J., & Ritchie, J. R. B. (1981). Toward a framework for tourism education: *Problems and prospects, 8*(1), 13-34.

[17] Kuzu, Ö. H. (2020). Mission and vision analysis of tourism faculties in the context of the fourth generation university model: The case of Turkey. *African Journal of Hospitality, Tourism and Leisure, 9*(1), 1-16.

[18] Marinov, V., & Dogramadjieva, E. (2013). Tourism curriculum as a tool for responsible tourism education at Sofia University: The students' perspective. *Journal of Hospitality Industry Research and Education, 1*(1), 21-33.

[19] Mason, J. (2002). *Qualitative researching*. London: Sage.

[20] Mbarushimana, N., Role, E., & Allida, V. (2017). Competency-based curriculum in tourism and hospitality: A practical model for Rwanda. *Journal of Research Innovation and Implications in Education, 1*(3), 96-109.

[21] Miles, M., B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded Sourcebook*. (2nd ed). Thousand Oaks, CA: Sage.

[22] Netto, A. P. (2009). What is tourism? Definitions, theoretical phases and principles. In J. Tribe (Ed.), *Philosophical issues in tourism* (pp. 43-61). Bristol: Channel View Publications.

[23] Rabotic, B. (2015). Tourist guiding as a new course in higher education: The case of college of tourism in Belgrade. In M. Brito & M. Soares (Eds.), *Abstracts & selected papers e-book: 4th international research forum on guided tours* (pp. 114-129). Estoril: Escola Superior de Hotelaria e Turismo do Estoril.

[24] Salmi, J. (2009). *The challenge of establishing world-class universitie*s. Washington D. C.: The World Bank.

[25] Saraiva, A. L. O., & Anjos, F. O. (2019). Tour guide competencies: a study of vocational programs in Brazil. *Revista Brasileira de Pesquisa em Turismo, São Paulo, 13*(3), 36-54.

[26] Sert, S., & Nalçacı İkiz, A. (2012). Turizmin bilimsel konumuna ilişkin akademisyenlerin tutumları üzerine bir araştırma. *VI. Lisansüstü Turizm Öğrencileri Araştırma Kongresi,* 12-15 Nisan 2012, Kemer, Antalya, 523-535.

[27] Sheldon, P., Fesenmaier, D., & Tribe, J. (2010). The tourism education futures initiative (TEFI): Activating change in tourism education. *Journal of Teaching in Travel and Tourism, 11*(1), 2-23.

[28] Tanrısever, C., Bektaş, İ., & Koç, D. E. (2019). Dünyada turist rehberliği eğitimi. *Turist Rehberliği Dergisi, 2*(1), 44-56.

[29] Tourist Guiding Professional Regulation. (2014). Retrieved from https://teftis.ktb.gov.tr/TR-264061/turist-rehberligi-meslek-yonetmeligi.html (April 15, 2022).

[30] Wattanacharoensil, W. (2014). Tourism curriculum in a global perspective: Past, present, and future. *International Education Studies, 7*(1), 9-20.

[31] Yedla, V. R., & Ajoon, E. J. (2022). Re-orienting curriculum of tourism education in the context of covid-19: An empirical study. *Habitus Toplumbilim Dergisi, 3*(3), 251-274.

[32] Yıldırım, A., & Şimşek, H. (2008). *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayınevi.

Fuzzy MCDM Method to Evaluate Agile Supply Chain Success Factors

Gülçin BÜYÜKÖZKAN[a*], Esin MUKUL[b]

[a] *Galatasaray University, Faculty of Engineering and Technology, Department of Industrial Engineering, Istanbul, Turkey, gbuyukozkan@gsu.edu.tr*
[b] *Galatasaray University, Faculty of Engineering and Technology, Department of Industrial Engineering, Istanbul, Turkey, emukul@gsu.edu.tr*

Abstract

In recent years there has been a growing interest in the design and implementation of the agile supply chain (ASC). The idea of agility in the context of supply chain management focuses on responsiveness. The ASC paradigm relates to the interface between companies and markets, an external perspective on flexibility. Successful implementation involves responding to rapidly changing and continually fragmenting global markets by being dynamic, context-specific, growth-oriented, flexible across the organization, and driven by the customer. This paper explores and illustrates an analytical framework to assess the influence of success factors in ASC management to support managerial decision-making. More precisely, this paper provides an evaluation model based on the fuzzy Analytical Network Process (ANP) approach to assist in determining the most appropriate factors of agility in supply chain management. The dynamic characteristics and complexity of the ASC analysis environment offer the possibility of using the fuzzy ANP approach as a suitable tool for this study. The supplied case study provides additional insights for practical applications and research.

Keywords: Agile supply chain management, Analytic network process, Fuzzy logic, Strategic decision making.

1. INTRODUCTION

The requirement for organizations to become more responsive to customers' needs, the changing conditions of competition, and increasing levels of environmental turbulence are driving interest in the concept of "agility." Agile manufacturing is a new production model that has resulted from changes in the environment [1-7]. It links innovations in manufacturing, information, and communication technologies with radical organizational redesign and new marketing strategies [6]. Christopher [2] makes a clear distinction between speed (meeting customer demand in the context of shortened delivery lead times), leanness (doing more with less), and agility (responding quickly to changes in demand in terms of both volume and variety). The notion of agility is recognized as holistic rather than functional and strategic rather than tactical importance [7].

The concept of agility has also been extended beyond the individual organization's traditional boundaries to encompass the supply chain operations within the operating organization. The effectiveness of an organization's response to rapidly changing market conditions will be primarily determined by the capabilities of trading partners [2,4,5]. A manufacturer with critical suppliers with poor quality and delivery records will find it very difficult to provide high levels of customer service even in stable environments. Place this manufacturer in a rapidly changing

---

* Corresponding author.

environment, and it will be eliminated from participation in the competitive game altogether. In this context, supply reliability becomes a critical issue that can best be facilitated by sharing accurate, timely information with suppliers. At the downstream end of the supply chain, this same manufacturer will again find it hard to operate in this environment if distribution channels are unable to respond due to physical or information flow-related issues. In this sense, the development of strategies for competing based on agility becomes very strategic for managing the total supply chain [6-8].

As an agile supply chain (ASC) is seen as a dominant competitive advantage in today's business [9], it is a favored research area in the academic research world [6,7,10]. Following this, to attain the expected benefits of the ASC and to support managerial decision-making, this paper explores and illustrates an analytical framework to assess the influence of success factors on ASC effectiveness. Identifying the ASC success factors could provide organizations with directions and targets for establishing and improving their ASC management practices. The proposed framework consists of two main phases: Developing a conceptual model for evaluating ASC success factors and evaluating these factors by industrial experts.

Evaluating various ASC success factors can be viewed as a complex multi-criteria decision-making (MCDM) problem. Analytic Hierarchy Process (AHP) [11] is one of the more widely used MCDM methods. Yet, AHP is limited to relatively static and unidirectional interactions with little feedback among decision components and alternatives. The analysis technique to model this decision structure is the more general form of the AHP technique called the systems with feedback approach, also defined as the Analytic Network Process (ANP) [12]. This paper considers an expanded look at the dynamic relationships among ASC success factors.

However, when information is uncertain, it is difficult to choose and rank alternatives. Decision-Makers (DMs) may have difficulty explaining their views in numbers [13]. Furthermore, DMs may express themselves more freely while using fuzzy numbers. In this study, fuzzy ANP [14-16] allows for a systemic (non-linear) strategic analysis of ASC success factors.

The organization of the paper is then as follows. The suggested evaluation framework is described in the next section. Following this, the fuzzy ANP methodology is briefly presented. In latter section includes the illustration of the proposed framework through a case study. Finally, some concluding remarks are given in the last section.

2. AN EVALUATION MODEL FOR ASC

The overall goal of the proposed model is to assist in evaluating the ASC success factors to improve the performance of ASC practices. For this reason, a detailed literature search in the areas of agility and supply chain management is realized. During this study, three main questions were attempted to answer:

- Which performance output is mainly desired by the company due to the ASC practices?
- Which strategy must the company apply to create value for effective ASC?
- What are the main factors that must be supported for a successful ASC?

The next step of this study is based on a group Delphi method. Consistent with the method, three industrial experts were interviewed, and the relevant components of ASC are structured in the form of a hierarchy, as shown in Fig. 1. The proposed evaluation model is based on three dimensions (clusters): ASC performance outputs, ASC strategies, and ASC success factors. The arrows indicate the direction of the hierarchy between the dimensions. The single arrow in the model indicates a one-way relationship. Arrows flowing in both directions indicate a two-way (interdependent) relationship between two dimensions. For example, in this model, interdependency occurs between the ASC strategies and the ASC performance outputs. Another form of interdependency is the internal cluster interdependency, shown in Fig. 1 by the looped arc that appears, for example, on the ASC strategies.
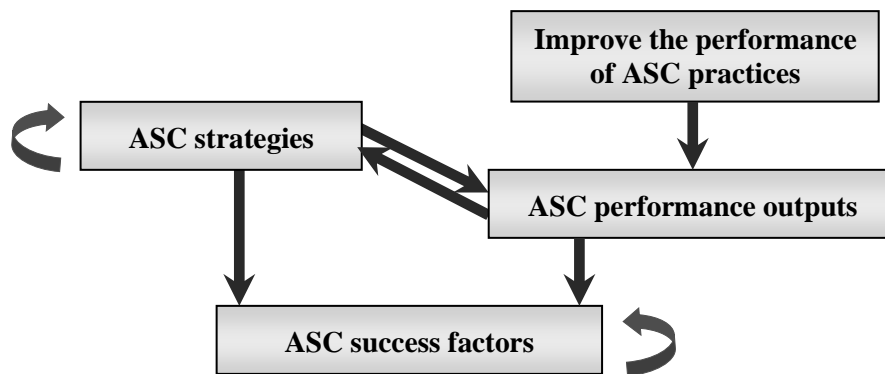
Fig. 1. Graphical representation of proposed evaluation model

The proposed evaluation model consists of three components:

- **ASC performance outputs:** Most companies realize that supply chain management should be assessed for its performance to be evolved as an efficient and effective supply chain [6]. Christopher [2] has explained the issues related to market qualifier and market winner in a supply chain and identified quality, cost, lead-time, and service level as four performance measures.
- **ASC strategies:** It has been suggested that an agile supply chain has several strategies [5,7,8]. Specifically, the agile supply chain is:

Market (customer) sensitive – it is closely connected to end-user trends,

Virtual – it relies on shared information across all supply chain partners,

Network-based – it gains flexibility by using the strengths of specialist players,

Process aligned – it has a high degree of process interconnectivity between the network members.

- **ASC success factors:** Achieving ASC may require focusing on strategic planning, agile working performance, and information technology management [6,7,15].

3. RESEARCH METHODOLOGY: THE FUZZY ANP METHOD

Selection of a suitable methodology that can decode the high-level relationship model presented in Fig. 1 to determine the importance of ASC success factors is a critical issue. This methodology should be able to use quantitative, qualitative, tangible, and intangible factors pertaining to the decision of which ASC success factors should be evaluated. With this trend, ANP [12] is capable of taking the multiple dimensions of information into the analysis. ANP can incorporate this and many other inter-relationships of factors into the decision model [17]. It also allows for comparing factors based on both strategic (long-term) and operational (short-term) standpoints, which adds more rigor and practicality to the decision analysis. Finally, it provides a framework for the DM to structure and understand the many variables that influence such a decision [15]. All these points give a more accurate approach for modeling complex decision/evaluation environments and then the number of ANP-related works has increased in the recent years.

The ANP uses ratio scale measurements based on pairwise comparisons; however, it does not impose a strict hierarchical structure as in AHP, and models a decision problem using a systems-with-feedback approach. The ANP refers then to the systems of which a level may both dominate and be dominated, directly or indirectly, by other decision attributes and levels. The ANP approach is capable of handling interdependence among elements by obtaining the composite weights through the development of a "supermatrix". Saaty [12] explains the supermatrix concept similar to the Markov chain process.

In the fuzzy ANP method, pairwise comparison matrices are created between the criteria affecting the decision in solving complex problems. In this way, the importance weights of the criteria can be determined. The DM is asked to compare the generated pairwise comparison matrices with linguistic expressions.

There are five significant steps in applying the fuzzy ANP technique [15]:

1. *Develop an evaluation network hierarchy showing the relationships among analyzing factors.* There is no discernable hierarchy in this network decision framework, but it typically has a general objective itself with various dimensions and factors that need to be evaluated. Instead of hierarchical levels, the factors are grouped into clusters that may have numerous controlling relationships.

2. *Elicit pairwise comparisons among the factors influencing the evaluation.* The ANP approach will then require analysts to systematically elicit inputs by asking users/experts to evaluate the relative importance of one factor when compared to another factor – pairwise comparisons – concerning a third controlling factor. Using triangular fuzzy numbers in Table 1, the relative strength of each pair of elements and the preferences of the DM in the same hierarchy are indicated. The controlling factor may be at the same or different levels (clusters) in the ANP model. The corresponding set of pairwise comparisons can be represented in matrix form for each controlling factor. Via pair-wise comparison, the fuzzy judgment matrix is constructed as:

$$\widetilde{A}' = \begin{bmatrix} \widetilde{a'}_{11} & \widetilde{a'}_{12} & \cdots & \widetilde{a'}_{1n} \\ \widetilde{a'}_{21} & \widetilde{a'}_{22} & & \widetilde{a'}_{21} \\ \vdots & & \ddots & \vdots \\ \widetilde{a'}_{n1} & & \cdots & \widetilde{a'}_{nn} \end{bmatrix} \tag{1}$$

$\widetilde{a'}_{ij} = (l'_{ij}, m'_{ij}, u'_{ij})$ indicates the importance among the compared criteria (importance of i over j) where i = j = 1,2, . . . , n.

Table 1. Fuzzy ANP linguistic scale [15]

Linguistic term	Abb.	TFN
None	N	(0,0,0.1)
Very Low	VL	(0,0.1,0.2)
Low	L	(0.1,0.2,0.3)
Fairly Low	FL	(0.2,0.3,0.4)
More or less Low	ML	(0.3,0.4,0.5)
Medium	M	(0.4,0.5,0.6)
More or less Good	MG	(0.5,0.6,0.7)
Fairly Good	FG	(0.6,0.7,0.8)
Good	G	(0.7,0.8,0.9)
Very Good	VG	(0.8,0.9,1)
Excellent	E	(0.9,1,1)

3. *Calculate relative-importance-weight vectors of the factors.* The priority vectors for each pairwise comparison matrix will be needed to complete the various supermatrix submatrices. Estimate triangular fuzzy priorities $\widetilde{w}_k$ where k = 1, 2 . . . , n from the judgment matrix. The logarithmic least-squares method can be used for calculating these weights:

$$\widetilde{w}_k = \left(w_k^l, w_k^m, w_k^u\right) \text{ where,} \quad w_k^s = \frac{(\prod_{i=1}^n a_{kj}^s)^{1/n}}{\sum_{i=1}^n (\prod_{j=1}^n a_{ij}^m)^{1/n}}, \ s \in \{l, m, u\} \tag{2}$$

4. *Defuzzify the weights obtained from fuzzy matrices.* In this step, defuzzification of the weights is calculated with equation (3).

$$F\left(\tilde{t}_{ij}\right) = \frac{1}{2}\int_0^1 (\inf \tilde{t}_{ij}^\alpha + \sup \tilde{t}_{ij}^\alpha)d\alpha \tag{3}$$

5. *Form and normalize the supermatrix.* Form a supermatrix and normalize this supermatrix so that the numbers in every column sum to one.
6. *Determine the priority values of each of the alternatives/factors.* Raise the normalized supermatrix to a large power to calculate the factors' converged (stable) weights.

These six steps will be discussed in conjunction with the case study in the following section.

4. APPLICATION OF THE PROPOSED RESEARCH METHODOLOGY

Agility in the automotive supply chain is crucial. The proposed analytic model is applied with the help of five experts from the Turkish automotive industry.

1. *The evaluation network hierarchy:* After discussion with the industrial experts, the proposed evaluation model is detailed, as given in Fig. 2.

The capital letters from A to G in parentheses in Fig. 2 represent the relationships signified by submatrices for supermatrix evaluation of the relative importance weights.

2. *Pair-wise comparisons:* Eliciting preferences of various components and attributes will require a series of pairwise comparisons where the assessor will compare two components simultaneously with respect to an upper-level 'control' criterion. The pairwise comparison matrices are constructed by DMs using linguistic expressions in Table 1. Table 2 shows the evaluation matrices. This evaluation can be seen in Fig. 3 as matrix A of supermatrix. Other evaluations are populated in the same way.

Calculation of relative importance weights: Once all the pairwise comparisons are completed, the relative importance weight for each component is determined with equation (2).

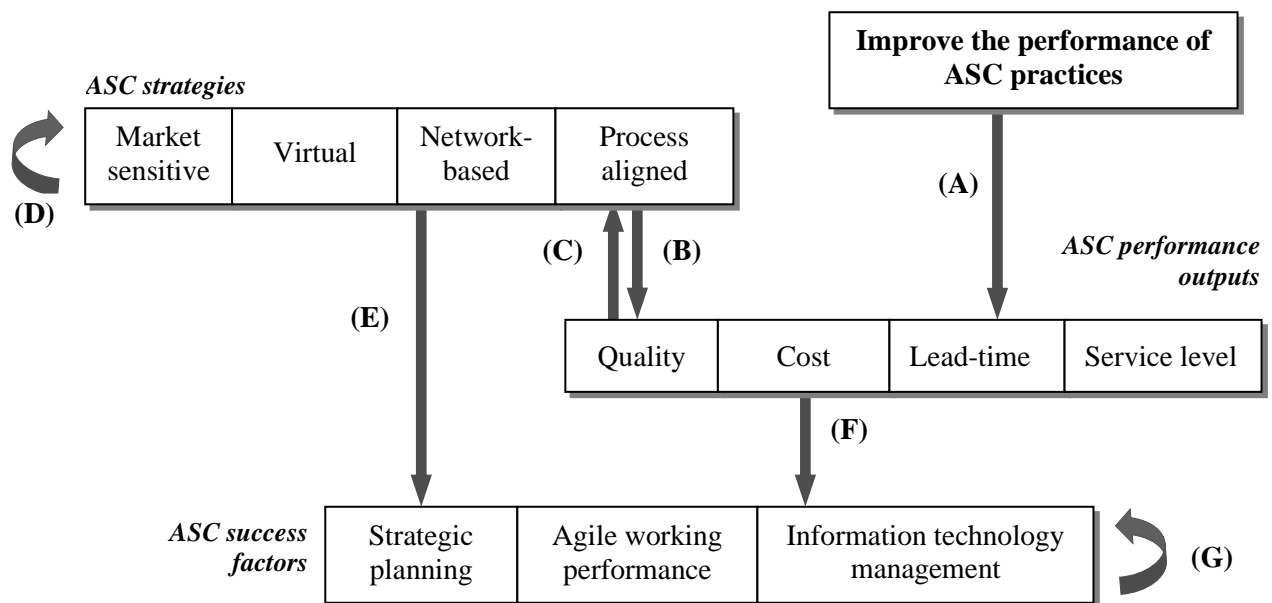3. *Defuzzification:* The obtained values are defuzzified by using equation (3).

Fig. 2. The strategic evaluation model for ASC success factors

Table 2. Evaluation matrices of ASCPO concerning goal

Linguistic Expressions				Fuzzy Numbers			
ASCPO1	ASCPO2	ASCPO3	ASCPO4	ASCPO1	ASCPO2	ASCPO3	ASCPO4
1	G	VG	VG	1	(0.7,0.8,0.9)	(0.8,0.9,1)	(0.8,0.9,1)
	1	G	FG	(1/0.7,1/0.8,1/0.9)	1	(0.7,0.8,0.9)	(0.6,0.7,0.8)
		1	ML	(1/0.8,1/0.9,1)	(1/0.7,1/0.8,1/0.9)	1	(0.3,0.4,0.5)
			1	(1/0.8,1/0.9,1)	(1/0.6,1/0.7,1/0.8)	(1/0.3,1/0.4,1/0.5)	1

4. *Supermatrix formation:* ANP uses the supermatrix construction, allowing the effect of interdependences existing between the clusters within the decision network hierarchy. The supermatrix is a partitioned matrix, where each submatrix is composed of a set of relationships between two clusters in the graphical model. A generic supermatrix is shown in Fig. 3. The notation represents the various relationships from Fig. 2; for instance, "A" is the submatrix describing the influence relationship between "ASC performance outputs" and the control factor of the goal of improving the performance of ASC practices.

The supermatrix M is a reducible matrix with multiple roots, as defined by Saaty [12]. To solve for the values of the alternatives, Saaty [12] recommends that the values of M be column stochastic. That is, the sums of the columns

should be normalized to equal a value of 1. Each of the columns may either be normalized by dividing each weight in the column by the sum of that column to complete this task.

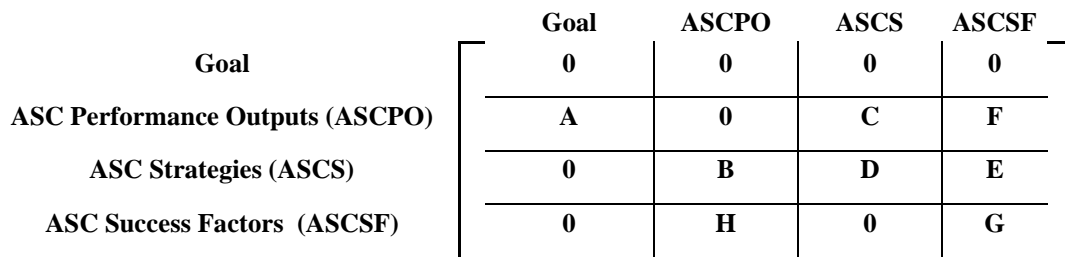|	**Goal**	**ASCPO**	**ASCS**	**ASCSF**
Goal	**0**	**0**	**0**	**0**
ASC Performance Outputs (ASCPO)	**A**	**0**	**C**	**F**
ASC Strategies (ASCS)	**0**	**B**	**D**	**E**
ASC Success Factors (ASCSF)	**0**	**H**	**0**	**G**

Fig. 3. General submatrix notation for supermatrix

By entering the priorities calculated by ANP into the appropriate columns, the detailed initial supermatrix of the proposed model is constructed as in Table 3.

Table 3. Initial supermatrix

	Goal	ASCPO1	ASCPO2	ASCPO3	ASCPO4	ASCS1	ASCS2	ASCS3	ASCS4	ASCSF1	ASCSF2	ASCSF3
Goal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASCPO1	0.22	0.00	0.00	0.00	0.00	0.19	0.23	0.13	0.27	0.20	0.22	0.24
ASCPO2	0.23	0.00	0.00	0.00	0.00	0.17	0.22	0.59	0.26	0.21	0.23	0.25
ASCPO3	0.22	0.00	0.00	0.00	0.00	0.23	0.28	0.26	0.32	0.19	0.22	0.24
ASCPO4	0.36	0.00	0.00	0.00	0.00	0.20	0.25	0.33	0.29	0.31	0.35	0.41
ASCS1	0.00	0.10	0.10	0.10	0.10	0.19	0.28	0.29	0.27	0.34	0.21	0.26
ASCS2	0.00	0.15	0.15	0.15	0.15	0.20	0.30	0.25	0.25	0.13	0.10	0.09
ASCS3	0.00	0.23	0.23	0.23	0.23	0.20	0.20	0.35	0.26	0.14	0.17	0.10
ASCS4	0.00	0.14	0.14	0.14	0.14	0.11	0.20	0.10	0.05	0.20	0.14	0.32
ASCSF1	0.00	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00	1.00	0.00	0.00
ASCSF2	0.00	0.20	0.25	0.30	0.15	0.00	0.00	0.00	0.00	0.00	1.00	0.00
ASCSF3	0.00	0.10	0.15	0.20	0.14	0.00	0.00	0.00	0.00	0.00	0.00	1.00

5. *Relative importance weight for ASC success factors:* The final step in the ANP process is to obtain a priority ranking for each success factor. We will determine this ranking by calculating the influence of each of the factors on the objective of improving ASC effectiveness. The weighted supermatrix is constructed.

The calculations give the following results: Agile Working Performance = 0.372; Information Technology Management = 0.331; Strategic Planning = 0.297. Based on these results, "Agile Working Performance" is the factor that has the most impact on the ASC in the Turkish automotive industry. Knowing these results, the practitioners are able to make decisions that support effective agile management activities.

5. CONCLUSIONS AND PERSPECTIVES

Practicing ASC improves supply chain performance and helps maintain a sustainable competitive advantage. This paper addresses the need for a strategic analysis model to assist management in evaluating ASC success factors for improving ASC effectiveness. An evaluation model is developed based on a literature survey and refined with industrial experts through this line. The proposed evaluation framework is generic. However, the model is implemented in the Turkish automotive industry, and the results, based on the synthesized judgments, indicate that in the Turkish automotive sector, agile working performance is the most critical factor category for effective ASC. This research aims to help practitioners understand the relative importance of the factors and set then effective improvement plans as they may not have sufficient resources to deal with all the factors simultaneously.

ANP method used in this study offers a complete analysis by additionally considering interdependent relationships but requires more time and effort (additional interdependency relationships increase the number of pairwise comparison matrices geometrically). For this reason, an application of the fuzzy ANP approach, as proposed in this study, should be targeted at more strategic decisions, especially for long-term profit and long-term competitiveness considerations.

While we believe that the presented model provides value, further points can be included. The proposed model did not consider all possible dimensions and factors. Possible extensions include the consideration of other ASC supporting factors and the integration of them into the model. The model used in this study did not consider all possible interactions, either. Additional interactions between and within the decision levels could have been included.

Acknowledgements

References

[1] Goldman, S.L. & Nagel, R.N. (1993). Management, technology and agility: the emergence of a new era in manufacturing. *International Journal of Technology Management*, 8 (1/2), 18-38.

[2] Christopher, M. (2000). The agile supply chain: competing in volatile markets. *Industrial marketing management*, 29(1), 37-44.

[3] Gunnenson, A. (1997). *Transitioning to Agility: Creating the 21st Century Enterprise*. Addison Wesley Publishing Company, New York, NY.

[4] Centobelli, P., Cerchione, R., & Ertz, M. (2020). Agile supply chain management: where did it come from and where will it go in the era of digital transformation?. *Industrial Marketing Management*, 90, 324-345.

[5] Christopher, M., Harrison, A., & Hoek, R. V. (2016). Creating the agile supply chain: issues and challenges. *Developments in logistics and supply chain management*, 61-68.

[6] Gunasekaran, A., Yusuf, Y. Y., Adeleye, E. O., Papadopoulos, T., Kovvuri, D., & Geyi, D. A. G. (2019). Agile manufacturing: an evolutionary review of practices. *International Journal of Production Research*, 57(15-16), 5154-5174.

[7] Power, D.J., Sohal, A.S. & Rahman, S-U. (2001). Critical success factors in agile supply chain management - An empirical study. *International Journal of Physical Distribution & Logistics Management*, 31(4). 247-265.

[8] Jermsittiparsert, K., Sutduean, J., Sriyakul, T., & Khumboon, R. (2019). The role of customer responsiveness in improving the external performance of an agile supply chain. *Polish journal of management studies*, 19.

[9] Oliveira-Dias, D., Maqueira, J. M., & Moyano-Fuentes, J. (2022). The link between information and digital technologies of industry 4.0 and agile supply chain: Mapping current research and establishing new research avenues. *Computers & Industrial Engineering*, 108000.

[10] Raji, I. O., Shevtshenko, E., Rossi, T., & Strozzi, F. (2021). Industry 4.0 technologies as enablers of lean and agile supply chain strategies: an exploratory investigation. *The International Journal of Logistics Management*.

[11] Saaty, T.L. (1980). *The Analytic Hierarchy Process*. New York, New York: McGraw-Hill.

[12] Saaty, T.L. (1996). *Decision Making with Dependence and Feedback: The Analytic Network Process*. Pittsburgh: RWS Publications.

[13] Zadeh, L. A. (1965). Fuzzy sets. *Information and control*, 8(3), 338-353.

[14] Mikhailov, L., & Singh, M. G. (2003). Fuzzy analytic network process and its application to the development of decision support systems. *IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews)*, 33(1), 33-41.

[15] Büyüközkan, G., & Çifçi, G. (2012). A novel hybrid MCDM approach based on fuzzy DEMATEL, fuzzy ANP and fuzzy TOPSIS to evaluate green suppliers. *Expert Systems with Applications*, 39(3), 3000-3011.

[16] Mohanty, R. P., Agarwal, R., Choudhury, A. K., & Tiwari, M. K. (2005). A fuzzy ANP-based approach to R&D project selection: a case study. *International Journal of Production Research*, 43(24), 5199-5216.

[17] Saaty, T.L. & Vargas, L.G. (1998). Diagnosis with dependent symptoms: Bayes theorem and the analytic hierarchy process. *Operations Research*, 46 (4), 491–502.

Using a Hesitant Fuzzy Decision-Making Approach to Logistics Partner Selection

Gülçin BÜYÜKÖZKAN [a*], Merve GÜLER[b]

[a] *Galatasaray University, Faculty of Engineering and Technology, Department of Industrial Engineering, Istanbul, Turkey, gbuyukozkan@gsu.edu.tr*

[b] *Galatasaray University, Faculty of Engineering and Technology, Department of Industrial Engineering, Istanbul, Turkey, mguler@gsu.edu.tr*

Abstract

In recent years, many companies have established cooperative networks. Cooperation in the logistics sector often aims to reduce activity costs through joint-route planning, load consolidation, and group purchasing. The aim of this paper is to help logistics companies in selecting partners for strategic alliances. A hesitant fuzzy multi-criteria decision-making (MCDM) methodology based on a group decision-making approach is implemented for evaluating partner alternatives. The hesitant fuzzy simple additive weighting (SAW) method is used to weight the strategic alliance partner selection criteria. The hesitant fuzzy axiomatic design (AD) method is implemented to rank the alternatives. Lastly, a case study is provided to prove the potential of the proposed methodology.

Keywords: Axiomatic design, Hesitant fuzzy sets, Logistics, MCDM, Partner selection, SAW.

1. INTRODUCTION

Recently, many organizations have developed cooperative networks of companies. Collaboration in business networks supports companies in dealing with new market requirements and reaching their goals. Plus, it can facilitate accessing new markets, responding to market opportunities, sharing risks and resources, exchanging knowledge, and developing new products [1]. Therefore, the formation of strategic alliances has been increasing across the logistics sector [2].

Risks and potential cultural incompatibilities between partners can occur in any partnership. It is fundamental for partners to harbour different goals, have a clear understanding of each other, and, at the same time, distinguish the opportunities for mutual benefits under strategic alliances to be successful partnerships. Therefore, companies must select the most appropriate partner for themselves. The aim of this paper is to present a decision-making approach for supporting logistics partner selection.

In the partner selection problem, there are multiple factors to be considered simultaneously. For this reason, a multi-criteria decision-making (MCDM) approach is developed in this paper. MCDM methods help decision-makers incorporate objective measurements with individual judgments on collective group opinions [3]. This study uses hesitant fuzzy MCDM methods since the experts' judgments are not precise. In hesitant fuzzy MCDM methodology,

---

* Corresponding author.

experts can express their views with linguistic terms such as at least good, between bad, and medium. In this way, hesitant fuzzy MCDM methods can be easily adjusted into everyday life.

In this study, the logistics partner selection framework is constructed with the help of a literature review and expert advice. The criteria weights for partner selection are computed with the hesitant fuzzy simple additive weighting (SAW) method. The most appropriate partner is determined with the hesitant fuzzy axiomatic design (AD) method. The principles of AD [4] containing the information axiom (IA) offer an opportunity for MCDM. The IA proposes that the most appropriate alternative has minimum information content. In the related literature, the AD method is applied in various areas to design systems, products, software, and organizations [5]. AD is a powerful instrument for computing how well system competencies respond to functional requirements (FRs). Therefore, the hesitant fuzzy SAW-AD method is a solid and helpful technique in the partner selection problem. In this study, a group of experts is advised rather than a single expert to avoid partiality and minimalize partiality in decision-making [6]. Then, the hesitant fuzzy technique for order preference by similarity to the ideal solution (TOPSIS) method is used to justify the result of the proposed method. A case study for a logistics company is provided to validate the effectiveness and usefulness of the proposed approach. This study can be considered as a guide for companies targeting partner selection.

The paper is organized as follows. Section 2 provides the methods used in our proposed methodology. The case study is provided in Section 3. Finally, the last section provides concluding remarks.

2. METHODOLOGY

The methodology of this paper contains three stages. Fig. 1 illustrates the research methodology. The strategic alliance partner evaluation criteria are developed with a literature survey and expert views in the first stage. Then, partner alternatives to be evaluated are determined. In the third stage, experts determine the design range (i.e., the range of FRs) and system range (i.e., performances of alternatives). Then, hesitant fuzzy sets are transformed into fuzzy numbers, and expert opinions are aggregated. Afterwards, the hesitant fuzzy SAW method calculates the criteria weights. Each alternative's information contents, and weighted information contents are computed in the Hesitant fuzzy AD method. In the last step, the alternatives are ranked, and the most appropriate one is selected. Finally, the results are justified by applying the hesitant fuzzy TOPSIS method.
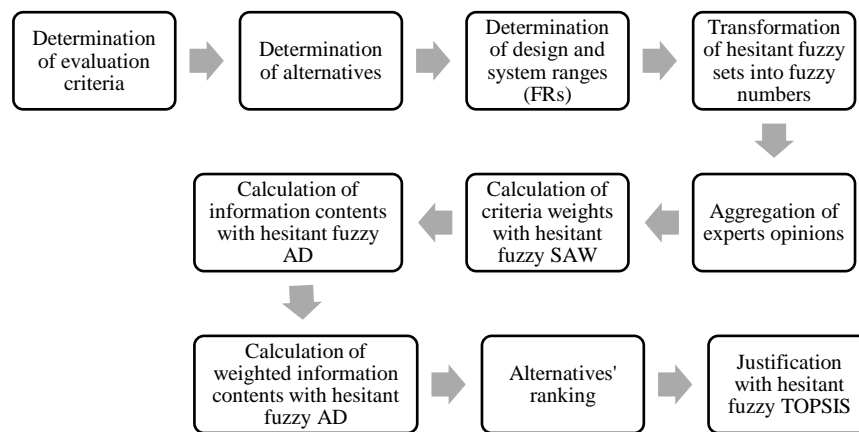

Fig. 1. The main stages of the methodology.

2.1. Strategic alliance logistics partner evaluation criteria

Logistics partnerships are established with certain expectations and objectives. Similar to other transportation sectors, the main goals are reducing activity costs through joint-route planning, load consolidation, and group purchasing in the logistics sector. Logistics firms must collaborate with partners with compatible aims, appropriate competencies, efficient motivation, and supplementary strategic directions. For this reason, executives are seeking to develop win-win situations and combine resources and competencies in their logistics networks. Such strategic alliances allow reaching more customers, using facilities more efficiently, obtaining more cargo, and developing more effective logistics solutions [1]. Therefore, executives must find and appreciate partner selection criteria. In our

evaluation framework, six evaluation criteria are determined based on a detailed literature survey as [2], [7], [8], [9], [10], [11], [12]:

- C1 - Complementary capabilities

Future partners should complement, strengthen and support each other. It is possible to improve productivity by delivering better service and greater market penetration with wisely utilizing the partners' resources.

- C2 - Financial health

Companies' service and operation activities will be directly affected by financial performance. It is essential to judiciously examine the partners' financial position before establishing an alliance; otherwise, it could ultimately destabilize or destroy the coalition.

- C3 - Intangible assets

In a financial statement, intangible assets are not revealed. Intangible assets, such as brand name, reputation, depth of experience, intellectual capital, and human resources, can considerably support alliance partners.

- C4 - Similarities match with partners

A certain degree of structural compatibility and similarities between partners is required to establish alliances.

- C5 - Market knowledge access

The know-how and capabilities of partners can efficiently function in a market.

- C6 - Adequate physical facilities and equipment

Adequate equipment and physical facilities play a key role in complicated collaboration arrangements to meet challenging market demands.

2.2. Hesitant fuzzy linguistic term sets

Hesitant fuzzy linguistic term sets (HFLTSs) are proposed by Rodriguez et al. [13] for decision making where experts assess alternatives with comparative linguistic terms. For the details of the technique, please refer to [13].

Definition 1: H_s is a subset of the sequential elements of the set $S = \{s_0, ..., s_g\}$.

Definition 2: E_{GH} transforms linguistic elements into H_S. G_H is a grammar that uses the linguistic term set in S.. The transformation procedure is realized with the following formulas:

$$E_{GH}: S_{II} \rightarrow H_s \qquad (1)$$

$$E_{GH}(s_i) = \{s_i | s_i \in S\} \qquad (2)$$

2.3. Hesitant fuzzy axiomatic design method

The principles of AD were introduced by Suh [4]. This technique is often used in engineering. AD has many application areas such as transportation, manufacturing, and maritime [14-17].
The method aims to measure how well the system responds to requirements [5]. The primary sense of AD is calculating the intersection of design and system ranges. Fig.2 shows the design and system ranges.
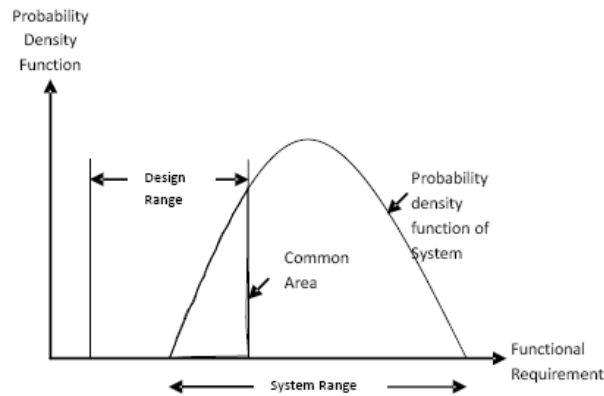
Fig. 2. The common area of design and system ranges.

The design goals are described with FRs, the smallest set of independent requirements. In this technique, the best design is determined as the design with the lowest information content [18].

In the literature, the hesitant fuzzy AD method is used for solving problems in the supply chain, healthcare, and environment [19-21]. In this study, the hesitant fuzzy SAW method is used for ranking the alternatives. The steps are listed as follows:

Step 1. Experts evaluate the criteria with a linguistic scale in Table 1.

Table 1. Membership functions for the system range in hesitant fuzzy AD [18]

Linguistic term	Abb.	TFN
Very High	VH	(7.5,10,10)
High	H	(5,7.5,10)
Medium	M	(2.5,5,7.5)
Low	L	(0,2.5,5)
Very Low	VL	(0,0,2.5)

Step 2. The evaluation matrix is changed into HFLTSs with the aid of E_{GH} provided in *Definition 2.*

Step 3. Experts' are aggregated by using the fuzzy weighed trapezoidal averaging operator as:

$$\tilde{S}_{ij} = \frac{1}{K}\left(\tilde{s}_{ij}^1 + \tilde{s}_{ij}^2 + \ldots \tilde{s}_{ij}^{1t} + \ldots \tilde{s}_{ij}^K\right), \tilde{s}_{ij}^{1t} = (a_{ij}, b_{ij}, c_{ij}) \qquad (3)$$

$\tilde{S}_{ij}$ is the alternatives' rating with ith alternative and jth criterion with K, number of experts.

Step 4. The information content is calculated as:

$$I = \log_2\left(\frac{TFN \ of \ System \ Design}{Common \ Area}\right) \qquad (4)$$

Step 5. The best alternative's selection is accomplished as [18]:

$$I_i^t = \sum_{j=1}^{n} I_{ij} \qquad (5)$$
$$\boldsymbol{WI}_i^t = (\boldsymbol{I}_i^t)^{w_j} \qquad (6)$$

$$I^* = \min \left\{ \begin{array}{c} WI_1^t \\ WI_2^t \\ \vdots \\ WI_m^t \end{array} \right\} \tag{7}$$

w_j is the the criteria weights with ith alternative and jth criterion.

2.4. Hesitant fuzzy SAW method

SAW is a widely used method in the literature. The SAW method was introduced by Hwang and Yoon [22]. Some application areas can be listed as logistics, transportation, technology, facility location, and agriculture [23-25]. In this study, the hesitant fuzzy SAW method proposed by [24] is used for calculating criteria weights. The steps are listed as [24]:

Step 1. Experts evaluate the alternatives with a linguistic scale in Table 2.

Step 2. The evaluation matrix is changed into HFLTSs with the aid of E_{GH} provided in *Definition 2*.

Step 3. The significance degree of each expert is represented as I_t, with $0 \leq I_t \leq 1$, $t = 1, 2, ..., k$, and $\sum_{t=1}^{k} I_t = 1$. I_t is calculated as:

$$I_t = \frac{d(\widetilde{w_t})}{\sum_{t=1}^{k} d(\widetilde{w_t})}, \ t=1,2,...,k \tag{8}$$

where $\widetilde{\omega_t}$ is weight of experts.

Table 2. Linguistic terms set [26]

Linguistic term	Abb.	Fuzzy Numbers
Perfect	P	(0.83,1,1)
Very Good	VG	(0.67,0.83,1)
Good	G	(0.5,0.67,0.83)
Medium	M	(0.33,0.5,0.67)
Bad	B	(0.17,0.33,0.5)
Very Bad	VB	(0,0.17,0.33)
None	N	(0,0,0.17)

Step 4. The fuzzy weights of C_j, $\widetilde{W_j}=(a_j,b_j,c_j,d_j)$, are aggregated as:

$$\widetilde{W_j}=(I_1 \otimes \widetilde{W_{j1}}) \oplus (I_2 \otimes \widetilde{W_{j2}}) \oplus ... \oplus (I_k \otimes \widetilde{W_{k1}}) \tag{9}$$

where $a_j = \sum_{t=1}^{k} I_t a_{jt}$, $b_j = \sum_{t=1}^{k} I_t b_{jt}$, $c_j = \sum_{t=1}^{k} I_t c_{jt}$, $d_j = \sum_{t=1}^{k} I_t d_{jt}$.

Step 5. $\widetilde{W_j}$ are defuzzified as:

$$d(\widetilde{W_j}) = \frac{1}{4} \ (a_j + b_j + c_j + d_j), \ where \ j=1, 2, ..., n \tag{10}$$

where $d(\widetilde{W_j})$ is the defuzzified weight.

Step 6. The weights are normalized as:

$$W_j = \frac{d(\widetilde{w_j})}{\sum_{j=1}^{n} d(\widetilde{w_j})}, j=1,2,...,n \tag{11}$$

where W_j is the normalized weights, and $\sum_{j=1}^{n} W_j = 1$.

2.5. Hesitant fuzzy TOPSIS method

The hesitant fuzzy TOPSIS method is used to justify the hesitant fuzzy AD method results. The steps are listed as [27]:

Step 1. Experts evaluate the alternatives with linguistic scale in Table 2.

Step 2. The evaluation matrix is changed into HFLTSs with the aid of E_{GH} provided in *Definition 2*.

Step 3. Experts evaluations are aggregated by using (3).

Step 4. The positive and negative ideal solutions are calculated as:

$$A* = \{h_1^*, h_2^*, ..., h_n^*\} \tag{12}$$

where $\quad h_j^* = \cup_{i=1}^{m} h_{ij} = \cup_{\gamma_{1j} \in h_{1j}, ..., \gamma_{mj} \in h_{mj}} max\{\gamma_{1j}, ..., \gamma_{mj}\} \quad j = 1, 2, ..., n$

$$A^- = \{h_1^-, h_2^-, ..., h_n^-\} \tag{13}$$

where $\quad h_j^* = \cap_{i=1}^{m} h_{ij} = \cap_{\gamma_{1j} \in h_{1j}, ..., \gamma_{mj} \in h_{mj}} min\{\gamma_{1j}, ..., \gamma_{mj}\} \quad j = 1, 2, ..., n$

Step 5. The weighted hesitant normalized Hamming distance is used for calculating the distances as:

$$D_i^+ = \sum_{j=1}^{n} w_j \left\| h_{ij} - h_j^* \right\| \tag{14}$$

$$D_i^- = \sum_{j=1}^{n} w_j \left\| h_{ij} - h_j^- \right\| \tag{15}$$

where w_j is the jth criterion's weight.

Two hesitant fuzzy numbers' closeness is calculated as:

$$\|h_1 - h_2\| = \frac{1}{l} \sum_{j=1}^{l} w_j \left| h_{1\sigma(j)} - h_{2\sigma(j)} \right| \tag{16}$$

Step 6. The relative distance to the ideal solution is computed as:

$$C_i = \frac{D_i^-}{D_i^+ + D_i^-} \tag{17}$$

Step 7. Alternatives are ranked in increasing order based on their C_i.

3. CASE STUDY

In this section, a case study is realized for a logistics firm. The name of the company will not be shared for confidentiality reasons. Company XYZ is a well-known Turkish logistics firm. Its central location is in İstanbul, with its offices in various places. Various national and international logistics activities are carried out in Company XYZ. Recently, the subject company has been offered many strategic alliances. This study has examined six such offers determined as possible essential partners. Due to the confidentiality, those companies will be named Company A, B, C, D, E, and F.

We communicated two different expert groups to assess the criteria, alternatives, and FRs reliably. The first group consists of three experts. These experts have knowledge and experience in the logistics industry for evaluating the alternatives. The other group consists of XYZ Company's executives, who determine FRs. Therefore, the partner selection problem for XYZ Company is implemented by applying the following steps:

Step 1. Determination of evaluation criteria

The six evaluation criteria have been summarized in *Section 2.1*.

Step 2. Determination of alternatives

Due to confidentiality, the determined six alternatives are named Company A, B, C, D, E, and F.

Step 3. Determination of design and system ranges (FRs)

In this study, the hesitant fuzzy linguistic scale used for assessing the alternatives is given in Table 1. The linguistic scale for experts' assessments for the FRs is provided in Table 3. The group of experts assesses a design range for FRs with the given scale.

Table 3. Membership functions for design range in hesitant fuzzy AD [18]

FRs	Abb.	Triangular fuzzy number
At least Very Good	AVG	(7.5,10,10)
At least Good	AG	(5,10,10)
At least Fair	AF	(4,10,10)
At least Very Fair	AVF	(3,10,10)
At least Very Very Fair	AVVF	(0.5,10,10)

Experts assessed the criteria and alternatives using linguistic scales given in Tables 1, 2, and 3. Table 4 displays the evaluation of the first expert for the alternatives.

Table 4. The evaluation of the first expert

	A	B	C	D	E	F
C1	At least H	At most L	Lower than L	Between M and H	Lower than L	At most L
C2	Between H and VH	At most L	Greater than H	Greater than H	At most L	Lower than L
C3	Between H and VH	Greater than M	Greater than H	At least H	At least H	At least VH
C4	Lower than L	At most L	Between L and VL	At most L	Greater than M	Between H and VH
C5	At least H	Greater than M	Between M and H	At most L	At least VH	Between H and VH
C6	Greater than M	At most L	Between H and VH	At least H	Greater than H	Lower than L

Step 4. Transformation of hesitant fuzzy sets into fuzzy numbers

The hesitant fuzzy sets are transformed into fuzzy numbers with the aid of the transformation function E_{GH}.

Step 5. Aggregation of experts' opinions

The experts' opinions are aggregated by using (3).

Step 6. Calculation of criteria weights with hesitant fuzzy SAW

Steps 3-6 of the hesitant fuzzy SAW method given in *Section 2.4.* are applied to calculate criteria weights. Table 5 displays the criteria weights.

Table 5. The criteria weights

C1	C2	C3	C4	C5	C6
0.167	0.217	0.183	0.183	0.133	0.117

Step 7-8. Calculation of information contents and weighted information contents with hesitant fuzzy AD

Steps 3-5 of the hesitant fuzzy AD method given in *Section 2.3.* are applied to calculate the information content and the weighted information content. Tables 6 and 7 display the unweighted and weighted contents, respectively.

Table 6. Unweighted information contents

	A	B	C	D	E	F

I_{C1}	5.829	10.311	∞	9.989	4.824	∞
I_{C2}	2.001	∞	∞	1.322	5.493	3.700
I_{C3}	1.287	3.398	0.580	1.532	4.824	1.228
I_{C4}	5.829	∞	3.398	2.927	0.580	1.415
I_{C5}	2.316	3.398	5.146	10.311	5.829	3.723
I_{C6}	0.458	3.570	1.558	2.302	2.215	7.860
I_{TOT}	17.719	20.676	10.682	28.382	23.765	17.926

Table 7. Weighted information contents

	A	B	C	D	E	F
WI_{C1}	1.342	1.475	∞	1.468	1.300	∞
WI_{C2}	1.162	∞	∞	1.062	1.446	1.328
WI_{C3}	1.047	0.905	1.081	1.334	1.038	1.038
WI_{C4}	1.038	∞	1.251	1.218	0.905	1.066
WI_{C5}	1.118	1.177	1.244	1.365	1.265	1.192
WI_{C6}	0.913	1.160	1.053	1.102	1.097	1.272
WI_{TOT}	9.964	4.717	**4.630**	7.549	7.052	5.895

Step 9. Alternatives' ranking

According to the hesitant fuzzy AD method's results, Company C is the most appropriate partner for strategic alliance. It is important to note that, Company B is very close to Company C. Therefore, Company B can be considered as a second alternative.

Step 10. Justification with hesitant fuzzy TOPSIS

To justify the results of hesitant fuzzy AD, hesitant fuzzy TOPSIS is applied as given in *Section 2.5*. Table 8 displays the ranking results of hesitant fuzzy TOPSIS method.

Table 8. The result of hesitant fuzzy TOPSIS

	A	B	C	D	E	F
Di+	5.491	3.958	2.741	4.037	4.718	4.032
Di-	2.370	3.903	5.120	3.824	3.144	3.829
Ci	0.302	0.496	0.651	0.486	0.400	0.487
Ranking	6	2	1	4	5	3

The hesitant fuzzy TOPSIS method has justified that, the most appropriate alternative for the XYZ Company is the C Company with its closest competitor, which is Company B. Therefore, both methods conclude that Company C and Company B are the most suitable ones for a strategic alliance.

4. CONCLUSION

This study proposes a hesitant fuzzy GDM framework for a practical strategic alliance partner selection problem. The six criteria and alternatives were constructed by investigating the related literature and advising the experts. Then, this evaluation framework was combined with hesitant fuzzy SAW and hesitant fuzzy AD methods.

A case study was provided to illustrate the practicality of the proposed approach. The result of the case study is justified by applying another hesitant fuzzy MCDM approach (i.e., hesitant fuzzy TOPSIS). Both hesitant fuzzy AD and hesitant fuzzy TOPSIS methods have produced similar results.

In future research, it is possible to extend this study by implementing different aggregation operators in a hesitant fuzzy MCDM approach. Moreover, the partner selection problem can be solved using other hesitant fuzzy MCDM methods or design techniques (e.g., VIKOR, MOORA, Quality Function Deployment).

Acknowledgments

References

[1] H. Abidi, W. Dullaert, S. De Leeuw, D. Lysko, M. Klumpp, Strategic partner evaluation criteria for logistics service provider networks. *The International Journal of Logistics Management*. 2019.

[2] Y. Doz. G. Hamel. *Alliance advantage: the art of creating value through partnering*. Harvard Business School Press. Boston. 1998.

[3] J.-C. Pomerol. S. Barba Romero. *Multicriterion Decision in Management: Principles and Practice*. Kluwer Academic Publishers. Norwell. 2000.

[4] N. P. Suh. *The principles of design*. New York: Oxford University Press. 1990.

[5] N.P. Suh. *Axiomatic design; advances applications*. New York: Oxford University Press. 2001.

[6] F. Herrera. E. Herrera-Viedma. F. Chiclana. "Multiperson decision-making based on multiplicative preference relations". *European Journal of Operational Research.* 129. 372–385. 2001.

[7] J.M. Geringer. Joint venture partner selection: Strategies for developed countries. Quorum Books. Westport. 1988.

[8] T.K. Das. B.-S. Teng. "A risk perception model of alliance structuring". *Journal of International Management* 7(1). 1–29. 2001.

[9] T.H. Oum. A. Zhang. "Key aspects of global strategic alliances and the impacts on the future of Canadian airline industry". *Journal of Air Transport Management* 7(5). 287–301. 2001.

[10] B.B. Nielsen. "An Empirical Investigation of the Drivers of International Strategic Alliance Formation". *European Management Journal* 21(3). 301–322. 2003.

[11] J.R.. Pandian. P. McKiernan. "Competence based management and strategic alliances". *Advances in Applied Business Strategy* 8. 135–146. 2004

[12] Y. Lee. S.T. Cavusgil. "Enhancing alliance performance: The effects of contractual-based versus relational-based governance". *Journal of Business Research* 59(8). 896–905. 2006.

[13] R. Rodriguez, L. Martinez, F. Herrera, Hesitant Fuzzy Linguistic Term Sets for Decision Making, IEEE Trans. on Fuzzy Syst. 20, 109-119, 2012.

[14] O. Kulak. C. Kahraman. "Fuzzy multi-attribute selection among transportation companies using axiomatic design and analytic hierarchy process". *Information Sciences*. 170. 191-210. 2005.

[15] O. Kulak. C. Kahraman. "Multi-attribute comparison of advanced manufacturing systems using fuzzy vs. crisp axiomatic design approach". *International Journal of Production Economics*. 95. 415–424. 2005.

[16] O. Kulak. "A decision support system for fuzzy multi-attribute selection of material handling equipments". *Expert Systems with Applications*. 29. 310–319. 2005.

[17] M. Celik. C. Kahraman. S. Cebi. I.D. Er. "Fuzzy axiomatic design-based performance evaluation model for docking facilities in shipbuilding industry: The case of Turkish shipyards". *Expert Systems with Applications*. 2009.

[18] D. Kannan, K. Govindan, S. Rajendran, Fuzzy axiomatic design approach based green supplier selection: A case study from Singapore, J. Clean. Prod. 96, 194–208, 2015.

[19] M.B. Ayhan, A New Decision Making Approach for Supplier Selection: Hesitant Fuzzy Axiomatic Design, Int. J. Inf. Technol. Decis. Mak. 17, 1085–1117, 2018.

[20] G.D. Batur Sir, Multi-Criteria Decision Making Using Axiomatic Design and Hesitant Fuzzy Linguistic Term Sets, J. Intell. Fuzzy Syst. 2018.

[21] S. Kir, H.R. Yazgan, Hesitant fuzzy axiomatic design technique: A case for humanitarian relief, in: J. Intell. Fuzzy Syst., 2018.

[22] C.-L. Hwang and K. Yoon, "Methods for Multiple Attribute Decision Making," 58–191, 1981.

[23] M. Orojloo, S. M. Hashemy Shahdany, and A. Roozbahani, "Developing an integrated risk management framework for agricultural water conveyance and distribution systems within fuzzy decision making approaches," *Sci. Total Environ.*, vol. 627, 1363–1376, 2018.

[24] G. Büyüközkan and M. Güler, "Smart watch evaluation with integrated hesitant fuzzy linguistic SAW-ARAS technique," *Measurement*, vol. 153, p. 107353, 2020.

[25] S. H. Zolfani, M. Sedaghat, and E. K. Zavadskas, "Performance Evaluating Of Rural Ict Centers (Telecenters), Applying Fuzzy Ahp, Saw-G And Topsis Grey, A Case Study In Iran," vol. 18, no.2, pp. 364–387, 2012..

[26] I. Beg, T. Rashid, TOPSIS for Hesitant Fuzzy Linguistic Term Sets, Int. J. Intell. Syst. 28, 1162-1171, 2013.

[27] S. Cevik Onar, B. Oztaysi, C. Kahraman, Strategic Decision Selection Using Hesitant fuzzy TOPSIS and Interval Type-2 Fuzzy AHP: A case study, Int. J. Comput. Intell. Syst. 7, 1002-1021, 2014.

CIAE
Czech Institute of Academic Education z.s.